DRAFT

ENVIRONMENTAL ASSESSMENT (EA)

for

MASTER PLAN UPDATE

at

Joint Personnel Recovery Agency White Bluff
Spokane County, Washington

Prepared for:

Joint Personnel Recovery Agency

April 2020

Letters or other written comments provided may be published in the Final EA. As required by law, substantive comments will be addressed in the Final EA and made available to the public. Any personal information provided will be kept confidential. Private addresses will be compiled to develop a mailing list for those requesting copies of the Final EA. However, only the names of the individuals making comments and their specific comments will be disclosed. Personal home addresses and phone numbers will not be published in the Final EA.

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DRAFT FINDING OF NO SIGNIFICANT IMPACT (FONSI)

MASTER PLAN UPDATE
AT JOINT PERSONNEL RECOVERY AGENCY WHITE BLUFF
SPOKANE COUNTY, WASHINGTON

Pursuant to provisions of the National Environmental Policy Act of 1969 (NEPA), Title 42 United States Code (USC) Sections 4321 to 4347, implemented by Council on Environmental Quality (CEQ) Regulations, Title 40, Code of Federal Regulations (CFR) Sections1500–1508, and 32 CFR Section 989, *Environmental Impact Analysis Process*, the Joint Personnel Recovery Agency (JPRA) and United States Air Force (USAF) assessed the potential environmental consequences associated with implementation of 21 projects programmed as approved development priorities for the next 5 years at White Bluff, Spokane County, Washington.

The purpose of the proposed Master Site Plan update is to address changes that have occurred since the prior Master Site Plan (USAF 2012), and to provide more specific information on planned future projects. The purpose of implementing the projects identified in the Master Site Plan update is to make infrastructure and functionality improvements necessary to support JPRA's mission. The Proposed Action consists of projects involving construction of new facilities and infrastructure, facility renovations and infrastructure improvements, and demolition of redundant or obsolete facilities. Each project has its own purpose and need. In general, however, the individual projects are needed to address deficiencies of function and capability in the facilities and infrastructure that result from obsolescence, deterioration, and evolving mission needs.

The Environmental Assessment (EA), incorporated by reference into this finding, analyzes the potential environmental consequences of activities associated with projects identified under the Proposed Action and provides environmental protection measures to avoid or reduce adverse environmental impacts.

The EA considers all potential impacts of the Proposed Action, associated project alternatives, and the No Action Alternative. The EA also considers cumulative environmental impacts with other projects in the Region of Influence (ROI).

PROPOSED ACTION/ALTERNATIVES

Section 2.3 of the EA provides a detailed description of the Proposed Action and associated alternatives. All 21 proposed projects have a Preferred Alternative and a No Action Alternative, and some projects have one or more alternatives to the Preferred Alternative. A summary of project components is provided in the following table:

Components of Projects Included in the Proposed Action

Project Name	Project Type	Project ID/ Alternatives	Approximate Size (square feet)	Planned Activity Fiscal Year
Training Aid Development Shop	Facility Construction	EC01 (Preferred)	2,500	2025
		EC01-1		
Replacement Fire Pump House and Pump	Infrastructure Improvement	EC02 (Preferred)	N/A	2020
Simulated Training Facility	Demolition and Facility Construction	EC03 (Preferred)	4,500	2022
		EC03-1	5,300	
		EC03-2	5,300	

Components of Projects Included in the Proposed Action

Project Name	Project Type	Project ID/ Alternatives	Approximate Size (square feet)	Planned Activity Fiscal Year
Maintenance Equipment Shed	Demolition and Facility Construction	EC04 (Preferred)	5,000	2021
Administration Processing Facility	Facility Construction	EC05 (Preferred)	2,000	2022
		EC05-1		
		EC05-2		
Training Support Storage	Facility Construction	SO01 (Preferred)	1,500	2020
Building 24 Training Expansion	Facility Construction	SO02 (Preferred)	8,400	2022
		SO02-1		
Training Planning	Facility Construction	SO03 (Preferred)	2,500	2021
Special Project Training Facility	Facility Construction	SO04 (Preferred)	2,000	2021
		SO04-1	2,300	
		SO04-2		
Urban Training Building	Facility Construction	SO05 (Preferred)	12,500	2024
		SO05-1	15,000	
		SO05-2		
Secure Holding Facility	Facility Construction	SO06 (Preferred)	1,500	2022
		SO06-1		
		SO06-2		
Two-Story Office and Storage Building	Facility Construction	SO07 (Preferred)	4,500	2024
		SO07-1	9,000	
		SO07-2		
Septic Field Expansion	Infrastructure	SO08 (Preferred)	2,200	2024
		SO08-1		
Building 101 Expansion	Renovation	SO09 (Preferred)	1,500	2021
Indoor Firing Range	Facility Construction	C01 (Preferred)	15,000	2025
		C01-1		
		C01-2		
Addition to Fitness Center	Renovation	C02 (Preferred)	2,500	2025
Heritage Observation Center	Facility Construction	C03 (Preferred)	1,250	2025
Upgrade Potable Water System	Infrastructure	C04 (Preferred)	1,200	2024
		C04-1	N/A	
Helicopter Landing Pad	Infrastructure	C05 (Preferred)	9,000	2025
		C05-1		

Components of Projects Included in the Proposed Action

Project Name	Project Type	Project ID/ Alternatives	Approximate Size (square feet)	Planned Activity Fiscal Year
Non-Secure Visitor and Training Facility	Facility Construction	SM01 (Preferred)	2,500	2021
		SM01-1	3,000	
Office, Administration, Research, Development, Testing, and Lab Facility	Facility Construction	SM02 (Preferred)	13,000	2021
		SM02-1	15,000	

N/A = not applicable (project occurs within an existing footprint).

Depending on projects selected and implemented, ground disturbance and site preparation for demolition, new construction, and infrastructure improvements would affect up to approximately 105,650 square feet (ft^2) (2.4 acres) throughout White Bluff.

NO ACTION ALTERNATIVE

Each specific project under the Proposed Action has an associated No Action Alternative, under which the specific project would not be implemented. In such cases, new facilities and infrastructure would not be constructed, buildings and other features would not be demolished, and personnel would continue to use existing facilities and infrastructure.

SUMMARY OF FINDINGS

The analyses of the affected environment and environmental consequences of implementing the Preferred Alternative for each proposed project presented in the EA concluded that by implementing standing environmental protection measures and operational planning, JPRA would be in compliance with all terms and conditions and reporting requirements.

The analysis of environmental impacts concluded that no significant adverse effects would result to the following resource areas: land use, noise, air quality, water resources, safety and occupational health, hazardous materials and wastes, biological resources, cultural resources, earth resources, socioeconomics, infrastructure, or visual resources. No significant adverse cumulative impacts would result from activities associated with any of the proposed projects when considered together and with other past, present, or reasonably foreseeable future actions on White Bluff or the larger ROI for pertinent resource areas.

Resources for which significant adverse effects would be avoided, mitigated, or compensated for include the following:

Water Resources (EA Section 4.5). White Bluff's is located over a Sole Source Aquifer, which is subject to federal regulation for the protection of the public drinking water supply. Construction contractors would follow all required procedures and best management practices to minimize the risks for contamination of groundwater, and new construction would include design features to promote groundwater infiltration and prevent impacts to groundwater. All projects would be designed and constructed in accordance with the Sole Source Aquifer Checklist (although the proposed projects are excluded from review). Additionally, a Wellhead Protection Plan would be developed for the proposed new drinking water well.

Biological (Natural) Resources (EA Section 4.8). Species federally listed under the Endangered Species Act are not known to occur on White Bluff. Additionally, the area has been significantly disturbed historically by farming/grazing activities and then government activities for many decades. High quality habitats are not present. Most of the project areas are within the current footprint or immediately adjacent to existing facilities. While Area A and Area H are noted as undeveloped land, these parcels are routinely used and disturbed for on-going training activities. Both foot traffic and equipment traverse the areas in support of training in addition to being routinely mowed, tilled, and otherwise maintained with minimal vegetation as fire breaks. Due to the historical impacts to the site and on-going training activities throughout the site, sensitive species are not expected to occur within the JPRA boundaries.

STAKEHOLDER INVOLVEMENT

Based on the description of the Proposed Action as set forth in the EA, all activities were found to comply with the criteria or standards of environmental quality and were coordinated with the appropriate federal, state, and local agencies. The attached EA and this FONSI will be made available to the public for a 30-day comment period. Comments will be incorporated into the analysis of potential environmental impacts performed as part of the EA as appropriate.

FINDING OF NO SIGNIFICANT IMPACT (FONSI)

Based on my review of the facts and analyses contained in the attached EA, conducted under the provisions of NEPA, CEQ Regulations, and 32 CFR Section 989, I conclude that implementation of the projects identified in the EA would not have a significant environmental impact, either by themselves or cumulatively with other known projects. Accordingly, an Environmental Impact Statement is not required. The signing of this FONSI completes the environmental impact analysis process.

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RONALD R. DANIELS, Deputy Base Civil Engineer Date

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GLOSSARY OF ABBREVIATIONS AND ACRONYMS

°F	Degree(s) Fahrenheit
$\mu g/m^3$	Microgram(s) per cubic meter
ACAM	Air Conformity Applicability Modeling
ACM	Asbestos-containing material
AFB	Air Force Base
AFI	Air Force Instruction
AFOSH	Air Force Occupational Safety and Health
ANSI	American National Standards Institute
APE	Area of Potential Effect
AQCR	Air Quality Control Region
AST	Aboveground storage tank
AT/FP	Antiterrorism/Force Protection
BGEPA	Bald and Golden Eagle Protection Act
BMP	Best management practice
CAA	Clean Air Act
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CO	Carbon monoxide
CWA	Clean Water Act
dB	Decibel(s)
dB(A)	A-weighted decibel(s)
DERP	Defense Environmental Restoration Program
DNL	Day-Night Level
DoD	Department of Defense
DoDI	Department of Defense Instruction
EA	Environmental Assessment
Ecology	Washington State Department of Ecology
ECRLS	Entry Control and Receiving Logistics Support
EIAP	Environmental Impact Analysis Process
EIS	Environmental Impact Statement
EISA	Energy Independence and Security Act
EO	Executive Order
ERP	Environmental Restoration Program
ESA	Endangered Species Act
ETL	Engineering Technical Letter
FPPA	Farmland Protection Policy Act
FONSI	Finding of No Significant Impact
ft^2	Square feet/foot
GHG	Greenhouse gas

GLOSSARY OF ABBREVIATIONS AND ACRONYMS

GSU	Geographically Separated Unit
HEPA	high-efficiency particulate air
Hz	Hertz
JPRA	Joint Personnel Recovery Agency
JWICS	Joint Worldwide Intelligence Communications System
kV	Kilovolt(s)
kW	Kilowatt(s)
kWh	Kilowatt-hour(s)
L_{Amax}	Maximum Sound Level
L_{Aeq}	Equivalent Sound Level
LAN	Local Area Network
LBP	Lead-based paint
LIA	Local Impact Area
LID	Low Impact Development
MBTA	Migratory Bird Treaty Act
MSA	Metropolitan Statistical Area
MSL	Mean sea level
N/A	Not applicable
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act of 1969
NFPA	National Fire Protection Association
NHPA	National Historic Preservation Act
NIPRNET	Non-Classified Internet Protocol Router Network
NO_2	Nitrogen dioxide
NOA	Notice of Availability
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
O_3	Ozone
OSHA	Occupational Safety and Health Administration
Pb	Lead
PCB	Polychlorinated biphenyl
pCi/L	Picocuries per liter
$PM_{2.5}$	Particulate matter less than 2.5 microns in diameter
PM_{10}	Particulate matter less than 10 microns in diameter
PPE	Personal protective equipment
ppm	Part(s) per million
RCRA	Resource Conservation and Recovery Act
RCW	Revised Code of Washington
ROI	Region of Influence

GLOSSARY OF ABBREVIATIONS AND ACRONYMS

SERE	Survival, Evasion, Resistance, and Escape
SHPO	State Historic Preservation Officer
SORD	Secure Office and Research and Development
SIPRNET	Secret Internet Protocol Router Network
SMRDT	Secure Mission Research, Development, and Testing
SO_2	Sulfur dioxide
SRCAA	Spokane Regional Clean Air Agency
TCP	Traditional Cultural Property
TCLP	Toxicity characteristic leaching procedure
TSCA	Toxic Substances Control Act
UFC	Unified Facilities Criteria
UGA	Urban Growth Area
USACE	United States Army Corps of Engineers
USAF	United States Air Force
USC	United States Code
USDA	United States Department of Agriculture
USEPA	United States Environmental Protection Agency
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
UST	Underground storage tank
VOC	Volatile organic compound
WAC	Washington Administrative Code
WDFW	Washington Department of Fish and Wildlife

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1.0 PURPOSE AND NEED

1.1 INTRODUCTION

The Joint Personnel Recovery Agency (JPRA) at White Bluff, a tenant unit of Fairchild Air Force Base (AFB) 92nd Air Refueling Wing, is developing an updated Master Site Plan that guides long-term development at the White Bluff site. White Bluff occupies 92 acres of land in the east-central portion of Washington State in Spokane County (Figure 1.2-1), approximately 5 miles west of the city of Spokane and 5 miles northeast of Fairchild AFB. It is considered a Geographically Separated Unit (GSU) of Fairchild AFB.

The White Bluff compound hosts JPRA's West Coast Joint Personnel Recovery operations. The site was originally constructed for use in 1954 as an Air Defense Command and Control Site and was later converted to a United States Air Force (USAF) satellite operations center. In 1997, the site was transferred to Air Mobility Command, which allowed JPRA to utilize the area. The JPRA mission is to teach, support, and integrate to enable commanders, forces, and individuals to prevent, prepare for, and respond to isolating events.

The Master Site Plan identifies development areas and long-term potential development projects that are likely to occur over the next 5 years (2020 to 2025). These projects are presented in Section 1.4. This Environmental Assessment (EA) was prepared to evaluate the potential environmental impacts of these proposed projects in compliance with the National Environmental Policy Act of 1969 (NEPA) (42 United States Code [USC] Section 4331 *et seq.*), the regulations of the President's Council on Environmental Quality (CEQ) that implement NEPA procedures (40 Code of Federal Regulations [CFR] Sections 1500–1508), and the Air Force Environmental Impact Assessment Process Regulations at 32 CFR Part 989.

The information presented in this document will serve as the basis for deciding whether the proposed action would result in a significant impact to the human environment, requiring the preparation of an Environmental Impact Statement (EIS), or whether no significant impacts would occur, in which case a Finding of No Significant Impact (FONSI) would be appropriate.

1.2 BACKGROUND

A Master Site Plan Revalidation Study for White Bluff prepared in 2012 (United States Army Corps of Engineers [USACE] 2013) identified development projects to consolidate JPRA's mission support and command activities into a single building that meets current Department of Defense (DoD) standards, and to reconfigure the main gate to bring it into compliance with DoD security guidance and best practices. These actions were analyzed in an EA (Fairchild AFB 2012), and a FONSI was issued. The 2012 Master Site Plan also identified available development sites and potential future development actions at White Bluff, which were considered in the cumulative effects analysis of the 2012 EA. Many of the same development actions are being considered as part of the Proposed Action in this EA.

Purpose and Need

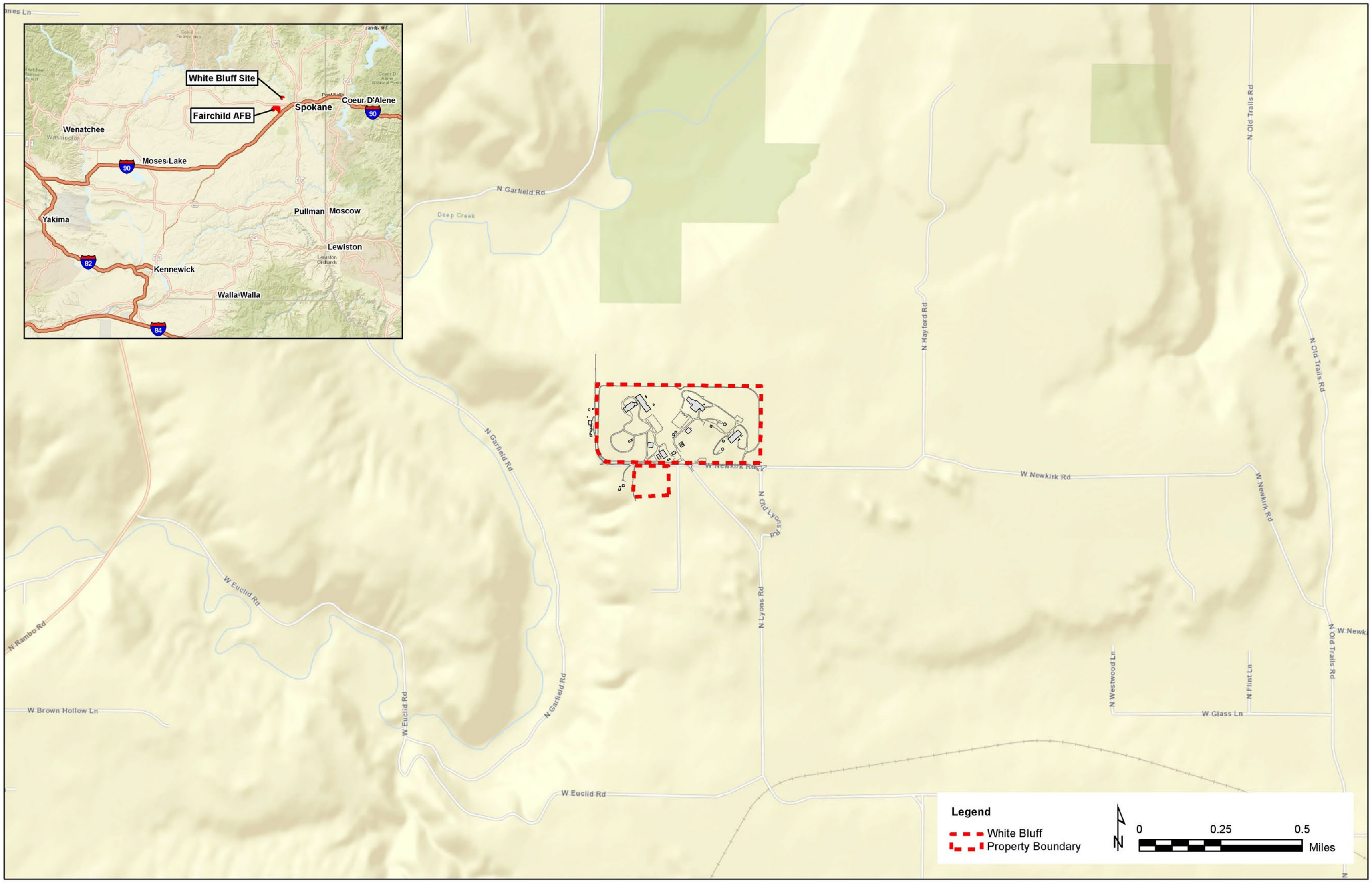

Figure 1.2-1: Location of White Bluff

Purpose and Need

The 2019 Master Site Plan update provides an updated list of future development projects at White Bluff, based on historical pace of operations and the need to continue to expand capabilities and training technology. The Master Site Plan update also divides White Bluff into planning districts based on land use patterns, and updates the available development sites based on the most recent Antiterrorism/Force Protection (AT/FP) building setbacks. Within the planning districts, proposed projects have been identified to address shortfalls in the existing capability, capacity, or relationship of resources with respect to their contribution to successful accomplishment of JPRA missions.

A thorough analysis of the existing conditions, as well as a study of the requirements, and the vision, goals, and objectives of JPRA White Bluff, allows the development of conceptual alternatives. These alternatives are evaluated against measurable criteria/selection standards and evaluated during the Environmental Impact Analysis Process (EIAP). Master site planning activities must integrate EIAP processes to ensure planning decisions reflect environmental values, identify alternatives to be considered, and document the rationale for dismissed alternatives. While the Master Site Plan update carries forward the headquarters building and main gate configuration projects that were originally identified in the 2012 Master Site Plan, these projects have already been analyzed for environmental impacts under NEPA in the 2012 EA and are not included for analysis in this EA.

1.3 PURPOSE AND NEED

The purpose of the Master Site Plan update is to incorporate changes to the White Bluff site and its facilities, organizational goals, regulatory practice, and DoD Unified Facilities Criteria (UFC) that have occurred since 2012. The update also provides more specific information on future projects than the 2012 Master Site Plan, which provided a general framework for future development but did not analyze the individual projects. The purpose of implementing the projects identified in the Master Site Plan update is to make infrastructure and functionality improvements necessary to support JPRA's mission.

The Master Site Plan update is needed to address deficiencies of function and capability in the facilities and infrastructure at White Bluff that result from obsolescence, deterioration, and evolving mission needs. These deficiencies are remedied through an ongoing process of construction of new facilities and infrastructure, renovation of existing facilities, and demolition of redundant or obsolete facilities. The projects identified in the Master Site Plan are needed to allow JPRA to successfully complete its missions. These projects must be developed in a manner that:

- Supports JPRA mission requirements;
- Meets all applicable DoD, federal, state, and local laws and regulations, such as but not limited to the Endangered Species Act (ESA), National Historic Preservation Act (NHPA), Clean Water Act (CWA), Clean Air Act (CAA), Resource Conservation and Recovery Act (RCRA), and Migratory Bird Treaty Act (MBTA). More detailed information regarding resource-specific laws and regulations is provided in the specific resource sections in Chapter 3;
- Aligns with the Air Force Civil Engineering Strategic Plan (USAF 2013);
- Provides reliable utilities and an efficient transportation system to support White Bluff and meets current USAF requirements for functional space, consistent with Air Force Manual 32-1084, *Facility Requirements* (26 February 2016);
- Meets applicable DoD AT/FP criteria, consistent with UFC 4-010-01, *DoD Minimum Antiterrorism Standards for Buildings* and the Air Force Installation Force Protection Guide;
- Reduces the consumption of fuel, energy, water, and other resources; maximizes the use of existing facilities; and reduces the footprint of unnecessary or redundant facilities and infrastructure in accordance with Executive Order (EO) 13693, *Planning for Federal Sustainability in the Next Decade,* and the Energy Policy Act of 2005;

- Supports and enhances the morale and welfare of personnel assigned to White Bluff, their families, and civilian staff, consistent with DoD Instruction 1015.10, *Military Morale, Welfare, and Recreation Programs* (6 July 2009).

1.4 PROJECTS IDENTIFIED IN THE MASTER SITE PLAN

JPRA White Bluff has identified twenty-one (21) individual projects throughout the four planning districts shown in the Master Site Plan update. These projects would be located within 11 available development sites, Areas A through K, as mapped in the Master Site Plan update. Many of the projects are related to development necessary to support future mission increases and upgrade or modernization of infrastructure. The proposed projects represent the type of development that is likely to occur over the next 5 years, but are somewhat conceptual in nature, and may require modification or adjustment as specific mission needs are identified. Table 1.4-1 summarizes the identified projects, which are intended to represent a maximum development scenario in each of the available development sites identified in the Master Site Plan. Similar projects with equivalent or smaller impacts than those of the projects listed here would also be covered by this EA analysis.

Table 1.4-1: Projects Identified in the Master Site Plan

Project ID	Project Name	Description of Project	Approximate Implementation Year
Entry Control and Receiving Logistics Support District			
EC01	Training Aid Development Shop	Construct a new 2,000-ft^2 structure to house the training aid development shop.	2025
EC02	Replacement Fire Pump House and Pump	Replace existing fire pump house and pump at Building 82 with a newer model.	2020
EC03	Simulated Training Facility	Demolish an existing tennis court and construct a 4,500-ft^2 training facility and associated access road.	2022
EC04	Maintenance Equipment Shed	Demolish an existing Mylar tent and replace with a storage shed for maintenance equipment.	2021
EC05	Administration Processing Facility	Construct an 800-ft^2 building to house administrative tasks.	2022
Special Operations Training District			
SO01	Training Support Storage	Add 1,500 ft^2 of storage space to support the training program conducted at Building 24.	2020
SO02	Building 24 Training Expansion	Provide an additional 8,400 ft^2 of building space for the training program conducted at Building 24.	2022
SO03	Training Planning	Decommission an existing trailer and replace it with a permanent building for specific training uses.	2021
SO04	Special Project Training Facility	Construct a 2,000-ft^2 structure to house special training activities.	2021
SO05	Urban Training Building	Construct an 11,000-ft^2 warehouse that can be configured for different training activities.	2024

Table 1.4-1: Projects Identified in the Master Site Plan

Project ID	Project Name	Description of Project	Approximate Implementation Year
SO06	Secure Holding Facility	Construct a 1,200-ft^2 building in an isolated area for use as a secure holding facility.	2022
SO07	Two-Story Office and Storage Building	Construct a two-story, 8,000-ft^2 office and storage building.	2024
SO08	Septic Field Expansion	Expand the septic fields to increase the capacity and support planned future development.	2024
SO09	Building 101 Expansion	Provide an additional 1,500 ft^2 of building space for the training program conducted at Building 101.	2021
Command Mission Support District			
C01	Indoor Firing Range	Construct a 12,000-ft^2 building to house indoor firing range/simulation training.	2025
C02	Addition to Fitness Center	Construct a 2,500-ft^2 addition to the existing fitness center.	2025
C03	Heritage Observation Center	Construct a 1,250-ft^2 observation center on the existing foundation of Building 5.	2025
C04	Upgrade Potable Water System	Upgrade the potable water system serving White Bluff, to include a new aboveground tank and pump/chlorination house.	2024
C05	Helicopter Landing Pad	Construct a 9,000-ft^2 paved helicopter landing pad.	2025
Secure Mission Research, Development, and Testing District			
SM01	Non-Secure Visitor and Training Facility	Construct a 2,500-ft^2 building that can be used for non-secure activities.	2021
SMO2	Office, Administration, Research, Development, Testing, and Lab Facility	Construct a 12,000-ft^2 building to house development and testing related to operations in Building 15.	2021

ft^2 = square feet/foot

1.5 ENVIRONMENTAL ANALYSIS APPROACH FOR THE MASTER SITE PLAN UPDATE

The proposed projects identified in this EA represent a maximum buildout scenario for the next 5 years, and may include projects that are unlikely to be funded during the 5-year period. The intent of this EA is to provide an environmental analysis that considers the impacts of all possible projects, in order to allow flexibility in future development activities on White Bluff. It is anticipated that all development projects over the next 5 years will be of a scope that is similar to or lesser than that of projects analyzed in this EA, and will occur in the same general areas as projects analyzed in this EA. Any additional projects or future activities that would be of a larger scope or include elements with the potential to result in impacts not analyzed in this EA must be evaluated on their own merit under applicable EIAP guidelines to determine their environmental impacts and appropriate level of NEPA analysis required.

1.6 PURPOSE OF AND NEED FOR INDIVIDUAL PROPOSED ACTIONS

Each of the proposed actions included in the EA has a specific purpose and need as presented in Table 1.6-1.

Table 1.6-1: Purpose and Need for Each Proposed Action

Project ID	Project Name	Purpose	Need
Entry Control and Receiving Logistics Support District			
EC01	Training Aid Development Shop	The purpose of the project is to improve the capacity and environment for the production of mission-specific training aids.	The project is needed because the activity is currently housed in a building located 50 feet from the perimeter fence, which does not have restrooms or water.
EC02	Replacement Fire Pump House and Pump	The purpose of the project is to upgrade the fire pump to improve its capabilities.	The project is needed because the existing pump and motor are no longer supported by the manufacturer and replacement parts are not available, and because the current system is not in compliance with NFPA regulations.
EC03	Simulated Training Facility	The purpose of the project is to provide a suitable facility in which to support simulated training scenarios.	The project is needed because the mission requires a realistic facility in which to conduct simulated training scenarios. The activity is currently taking place in a building that will soon be demolished, and the activity must occur in a different suitable location.
EC04	Maintenance Equipment Shed	The purpose of the project is to provide a facility of suitable size for long-term storage of motorized support equipment (e.g., loaders, snow plows, tractors, man lift, and gators).	The project is needed because the current temporary shelter is 10 years old and has reached its life expectancy. It is also at maximum capacity, requiring some equipment to be parked outside without protective cover.
EC05	Administration Processing Facility	The purpose of the project is to provide a private location to interview and process prospective employees and trainees, and to perform security clearance updates.	The project is needed because near-term building demolition will result in the loss of the current facility in which the tasks are performed.

Table 1.6-1: Purpose and Need for Each Proposed Action

Project ID	Project Name	Purpose	Need
Special Operations Training District			
SO01	Training Support Storage	The purpose of the project is to provide 1,500 ft^2 of additional storage space for training activities that occur in Building 24.	The project is needed because containers are currently being used for storage, and the amount of storage they provide is not large enough to meet near-term needs.
SO02	Building 24 Training Expansion	The purpose of the project is to provide 8,400 ft^2 of additional space to allow expansion of a training program taking place in Building 24.	The project is needed because the existing space is inadequate to support mission requirements.
SO03	Training Planning	The purpose of the project is to modernize the facility that houses a specific training mission.	The project is needed because the activity is currently being housed in a trailer, which runs on a generator and has no running water. It is not an appropriate facility for the mission it supports.
SO04	Special Project Training Facility	The purpose of the project is to provide a facility for special training activities that is located in a controlled and secluded area.	The project is needed because use of suitable existing buildings precludes other training activities for stretches of 1 to 2 weeks. The existing facilities do not provide the necessary amount of seclusion.
SO05	Urban Training Building	The purpose of the project is to provide a facility with an open interior that can be configured for different training activities as needed.	The project is needed because many training activities are conducted outside, and weather conditions can cause logistical challenges.
SO06	Secure Holding Facility	The purpose of the project is to provide a secure facility to hold personnel while waiting for training activities to begin.	The project is needed because the current holding space in Building 12 requires movement of personnel that is inefficient.
SO07	Two-Story Office and Storage Building	The purpose of the project is to expand the amount of office and storage space on White Bluff by 8,000 ft^2 to accommodate likely future increases in training.	The project is needed because the amount of existing building space is inadequate to house offices and equipment associated with likely training increases in this area.
SO08	Septic Field Expansion	The purpose of the project is to provide sewer service for planned new training and office buildings in Area H.	The project is needed because the existing infrastructure will not support the projected amount of sewer usage associated with operation of projects identified in the Master Site Plan update.

Table 1.6-1: Purpose and Need for Each Proposed Action

Project ID	Project Name	Purpose	Need
SO09	Building 101 Expansion	The purpose of the project is to provide 1,500 ft^2 of additional space to allow expansion of a training program taking place in Building 101.	The project is needed because the building was scaled down from the original design due to funding limits, and the current building does not meet mission needs.
Command Mission Support District			
C01	Indoor Firing Range	The purpose of the project is to provide an indoor facility that will allow live fire and simulation training to occur at White Bluff.	The project is needed because this type of training cannot occur at White Bluff presently, and providing this option would improve efficiency, as personnel currently must go elsewhere for this training.
C02	Addition to Fitness Center	The purpose of the project is to expand the existing facility to accommodate projected increased demand.	The project is needed because the existing fitness center will reach maximum capacity if the mission expands and the number of people training on White Bluff increases.
C03	Heritage Observation Center	The purpose of the project is to provide a site where students and staff can relax and enjoy refreshments to improve quality of life.	The project is needed because there are not currently any locations on White Bluff dedicated to this purpose.
C04	Upgrade Potable Water System	The purpose of the project is to provide a second, reliable source of potable water to White Bluff, which is an upgrade to the existing, old system.	The project is needed because there is currently only one source of water at White Bluff, and the existing system is outdated. Loss of function of the current system would result in a loss of water until the system can be repaired.
C05	Helicopter Landing Pad	The purpose of the project is to provide a paved surface for helicopter landings, to be used for emergency evacuation, fire-fighting refueling, and other needs.	The project is needed because the only landing zone is unpaved and can cause safety risks associated with flying debris.
Secure Mission Research, Development, and Testing District			
SM01	Non-Secure Visitor and Training Facility	The purpose of the project is to provide a suitable space for visitors who cannot access Building 15 and for training activities that cannot take place in Building 15.	The project is needed because the current locations for these activities are scheduled for demolition or do not have suitable infrastructure for this use.

Table 1.6-1: Purpose and Need for Each Proposed Action

Project ID	Project Name	Purpose	Need
SM02	Office, Administration, Research, Development Testing, and Lab Facility	The purpose of the project is to provide a location in which to develop and test products related to Building 15 without affecting the operations in Building 15.	The project is needed because there is not currently a space for these activities, and they would continue to be performed at a different JPRA location that has space limitations.

ft^2 = square feet/foot; JPRA = Joint Personnel Recovery Agency; NFPA = National Fire Protection Association

1.7 INTERAGENCY/INTERGOVERNMENTAL COORDINATION AND CONSULTATIONS

1.7.1 Interagency Coordination and Consultations

EO 12372, *Intergovernmental Review of Federal Programs*, as amended by EO 12416 with the same title, requires federal agencies to provide opportunities for consultation with officials of state and local governments that could be affected by a federal proposal. Per the requirements of the Intergovernmental Cooperation Act of 1968 (42 USC Section 4231(a)) and EO 12372, Fairchild AFB notifies relevant federal, state, and local agencies of proposed actions and alternatives occurring on White Bluff, through the interagency and intergovernmental coordination process, and provides them with sufficient time to make known their environmental concerns. The process also provides Fairchild AFB and JPRA with the opportunity to cooperate with and consider state and local views in implementing the federal proposal.

The Draft EA and Draft FONSI are made available to relevant federal, state, and local government agencies for a 30-day review. Section 6 contains the list of agencies consulted during this analysis. Appendix A provides copies of correspondence. Government agency comments are considered in the development of the Final EA and prior to a decision being made on whether or not to sign the FONSI and proceed with the Proposed Action or its alternatives.

1.7.2 Government-to-Government Consultations

EO 13175, *Consultation and Coordination with Indian Tribal Governments* directs federal agencies to coordinate and consult with Native American tribal governments whose interests might be directly and substantially affected by activities on federally administered lands. Consistent with that executive order, DoD Instruction 4710.02, *Interactions with Federally-Recognized Tribes*, and Air Force Instruction (AFI) 90-2002, *Air Force Interaction with Federally-Recognized Tribes*, federally recognized tribes that are historically affiliated with the White Bluff geographic region are invited to consult on all proposed undertakings that have a potential to affect properties of cultural, historical, or religious significance to the tribes. The tribal consultation process is distinct from NEPA consultation or the interagency coordination process, and it requires separate notification of all relevant tribes. The timelines for tribal consultation are also distinct from those of other consultations. The point of contact for Native American tribes is Jeff Johnson, 92nd Mission Support Group Strategic Advisor at Fairchild AFB.

The Native American tribal governments that have been coordinated or consulted with regarding these actions are listed in Section 6. Appendix A provides copies of correspondence.

1.7.3 Other Agency Consultations

Per the requirements of Section 106 of the NHPA findings of effect and request for concurrence are sent to the Washington State Historic Preservation Officer (SHPO). Correspondence is included in Appendix A.

1.8 PUBLIC AND AGENCY REVIEW OF ENVIRONMENTAL ASSESSMENT

A Notice of Availability (NOA) of the Draft EA and FONSI was published in Spokesman-Review, announcing the availability of the EA for review on Day Month Year. The NOA invited the public to review and comment on the Draft EA. The public and agency review period will end on Day Month Year. The NOA is provided in Appendix B.

Copies of the Draft EA and FONSI have been made available for review on the Fairchild AFB website at [insert URL]. The Air Force is aware of the potential impact of the ongoing coronavirus (COVID-19) pandemic on the usual methods of access to information and ability to communicate, such as the mass closure of local public libraries and challenges with the sufficiency of an increasingly overburdened internet. The Air Force seeks to implement appropriate additional measures to ensure that the public and all interested stakeholders have the opportunity to participate fully in this EA process. Accordingly, the Air Force is requesting those parties with questions and comments to contact them directly by e-mailing 92arw.pa@us.af.mil or calling (509) 247-5705; they will be available to discuss and help resolve issues involving access to the Draft EA and Proposed FONSI, or the ability to comment.

1.9 DECISION TO BE MADE

The EA evaluates whether the proposed action would result in significant impacts on the human environment. If significant impacts are identified, JPRA would undertake mitigation to reduce impacts to below the level of significance, undertake the preparation of an EIS addressing the proposed action, or abandon the proposed action.

This EA is a planning and decision-making tool that will be used to guide JPRA in implementing the proposed action in a manner consistent with applicable standards for environmental stewardship.

2.0 DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVES

2.1 PROPOSED ACTION

This EA evaluates the potential environmental impacts that may arise from implementation of the 21 projects identified in the Master Site Plan as development actions to occur over the next 5 years (2020 through 2025) at White Bluff. This document treats each project as a discrete proposed action, and evaluates each project and its alternatives separately. These projects are categorized within the four proposed planning districts outlined in the Master Site Plan update. Project locations are described in terms of available development sites (Areas A through K) (Figure 2.2-1**)**.

2.2 SELECTION STANDARDS FOR PROJECT ALTERNATIVES

The scope and location of the proposed actions and, where applicable, their alternatives, have undergone extensive review by JPRA personnel. Developing the Proposed Action and potential alternatives is a critical component of the planning process, and NEPA requires consideration of various alternatives to minimize adverse impacts on the environment. Evaluation of multiple options in the planning process allows the viable alternatives to be carried forward. Planners review functional and spatial relationship concepts, current facility locations, environmental conditions, and the existing on-base environment. This analysis supports the NEPA process by considering several alternatives and evaluating their viability.

Potential alternatives to the proposed actions were evaluated based on three universal selection standards, which were applied to all alternatives. Each project description provided in Section 2.3 provides details about how these universal selection standards apply to specific project requirements.

Standard 1: ***Planning Constraints***—Planning constraints are human-made or natural elements that can create significant limitations to the operation or construction of buildings, roadways, utility systems, and other facilities. These constraints, when considered collectively with the site's capacity opportunities, inform the identification of potential areas for development, as well as areas that can be redeveloped to support growth. This standard addresses the compatibility with White Bluff operational aspects, natural and built resources, and land use compatibility, as presented below:

- Operational—Operational constraints are generally related to operational requirements that can limit future development activity. At White Bluff, operational constraints include, but are not limited to, AT/FP, logistical concerns, and security issues associated with the specialized training conducted in certain locations.
- Natural—Natural constraints include environmental and cultural resources at White Bluff. These provide positive aesthetic, social, cultural, and recreational attributes that substantially contribute to the overall quality of life on-site.
- Built—Built constraints are related to the condition, functionality, or effectiveness of infrastructure systems, facilities, and other human-made improvements.
- Land Use Compatibility—Land use compatibility constraints are associated with ensuring that planning considerations account for compatibility between proposed and existing uses. The planning districts identified in the Master Site Plan update were developed to address land use compatibility constraints.

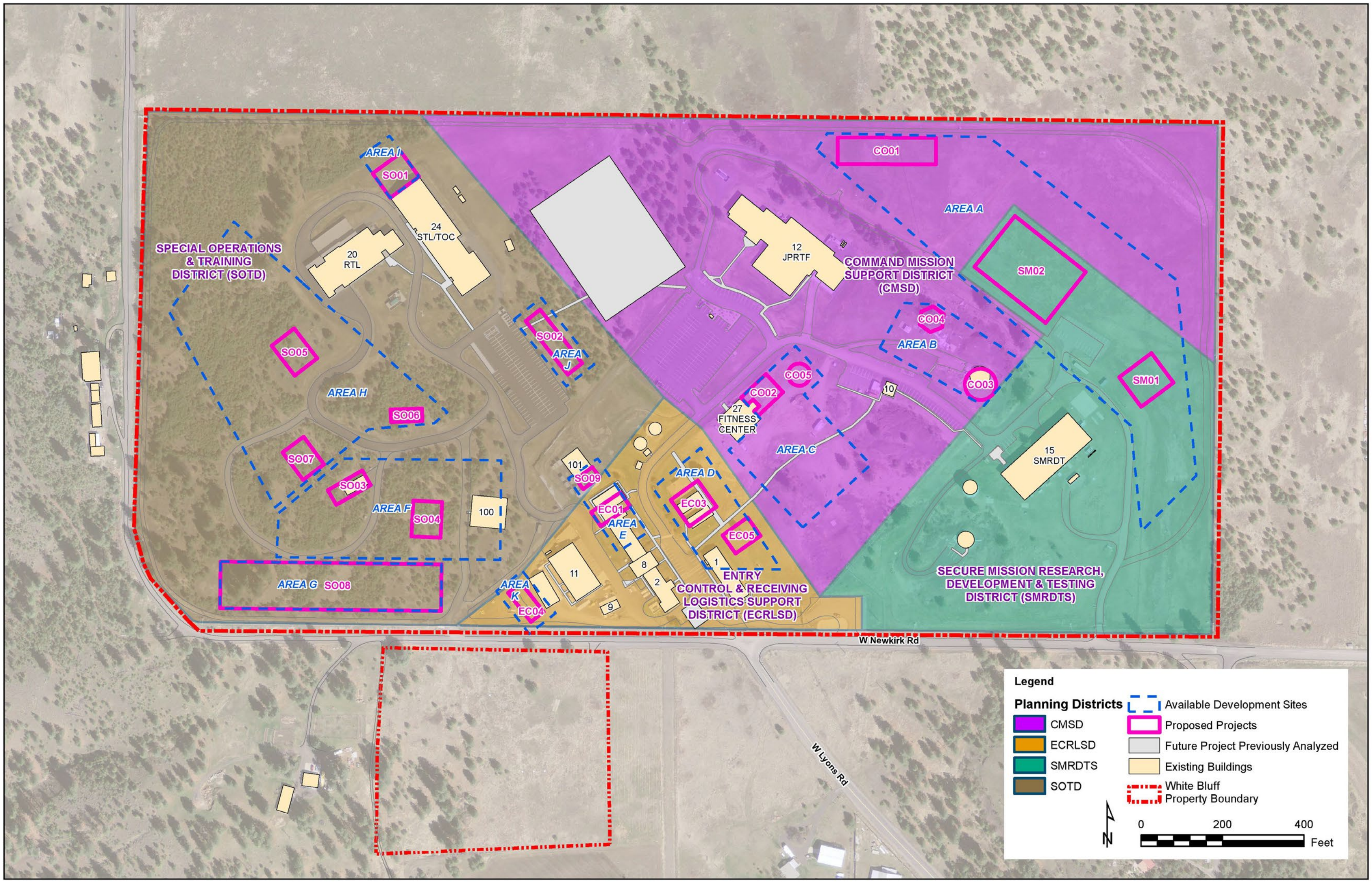

Figure 2.2-1: Location on White Bluff of Projects Included in the Proposed Action

Standard 2: ***Installation Capacity Opportunities***—This refers to the capabilities of the existing facilities/infrastructure to meet existing and future mission needs. This standard largely drives the scope of the facility/infrastructure development and/or improvement and requires that proposed facility/infrastructure development and improvements support the following aspects:

- Mission operations, mission support, built infrastructure, and quality of life

Standard 3: ***Sustainability Development Indicators***—This refers to the ability to operate into the future without a decline in either the mission or the natural and human-made systems that support it. Sustainability is a holistic approach to asset management that seeks to minimize the negative impacts of JPRA's mission and operations on the environment. This standard also generally drives the scope of facility/infrastructure development and/or improvement and supports the sustainability of White Bluff through consideration of the following:

- Energy, water, wastewater, air quality, facilities space optimization, encroachment, and natural/cultural resources.

2.3 PROPOSED ACTIONS AND ALTERNATIVES

NEPA and CEQ regulations mandate the consideration of reasonable alternatives to the proposed actions. "Reasonable alternatives" are those that also could be utilized to meet the purpose of, and need for, each proposed action.

The NEPA process is intended to support flexible, informed decision-making; the analysis provided by this EA, and feedback from the public and other agencies, will inform decisions made about whether, when, and how to execute the proposed actions. Among the alternatives evaluated for each project is a No Action Alternative. The No Action Alternative will substantively analyze the consequences of not undertaking the proposed action (not simply conclude no impact) and will serve to establish a comparative baseline for analysis.

The scope, location, and objectives of the proposed actions are described here; grouped by planning district. This section also presents reasonable and practicable alternatives for projects where multiple viable courses of action exist. Those alternatives are assessed relative to the selection standards, where applicable. Alternatives that met all three selection standards were considered reasonable and retained for consideration in this EA. Alternatives that did not meet one or more of the standards were considered unreasonable and were not retained for consideration in the EA. The alternatives discussed below, both those included in the analysis and those eliminated from further analysis, represent the full range of viable alternatives considered for the proposed projects.

Note that none of the proposed projects are located at or near Environmental Restoration Program (ERP) sites or areas with environmental restoration/remediation concerns. There are also no Land Use Controls in place that apply to any of the proposed project locations (apart from general access control onto White Bluff).

2.3.1 Entry Control and Receiving Logistics Support District

Project EC01: Training Aid Shop Development

The proposed action is to provide 2,000 ft^2 of building space for a training aid development shop within the proposed Entry Control and Receiving Logistics Support (ECRLS) District.

Project-Specific Selection Standards: The project must be located at an available development site where it can be connected to utilities (Selection Standard 1).

Alternatives Considered but Eliminated from Further Analysis: Locations in other available development sites on White Bluff were eliminated because they would not allow the training aid development shop to be located near the maintenance area (Building 11). These other locations would not meet Selection Standard 1.

Alternatives Considered for this Project:

Alternative EC01 (Preferred Alternative): This alternative would locate the new shop at the site of the northeast end of Building 3 (Area E), which is scheduled to be demolished. The building would be 2,000 ft^2 in size, and would require new utilities and associated trenching. Excavation would be needed to prepare the site for construction. A new access road to the building would be constructed. The total increase in impervious surface would be 2,500 ft^2. This site is the preferred location because it reuses the Building 3 site and existing infrastructure is already present. Construction would occur in 2025 over a period of 7 months.

Alternative EC01-1: Under this alternative the new building would be constructed at another location on White Bluff at an available development site. Likely options would be other locations in the ECRLS District in Area D, such as the site of the existing tennis courts (proposed location for Project EC03) or an undeveloped area northeast of existing Building 1 (proposed location for Project EC05). The size of the building would be as described for Alternative EC01, although the amount of associated access road would vary depending on the building's location. The maximum amount of new impervious surface would be 2,500 ft^2. The construction timing and duration would be as described for Alternative EC01.

No Action Alternative: Under this alternative the shop would continue to be housed in its current location (Building 9), which is a converted garage with no running water or bathrooms, and does not meet Selection Standard 2 for likely future mission needs. The use would continue to occur a short distance (50 feet) from a County road and the perimeter fence, which would not meet Selection Standard 1.

Project EC02: Replacement Fire Pump House and Pump

The proposed action is to replace the fire pump house and pump at Building 82 with a newer model.

Project-Specific Selection Standards: The new pump house and pump must be up to current codes and National Fire Protection Association (NFPA) standards and meet the fire protection needs of White Bluff (Selection Standard 2).

Alternatives Considered but Eliminated from Further Analysis: Incorporating the upgrade into Project C04 was eliminated from further analysis, because funding for that project will not be available for several years and the fire pump house upgrade is an immediate need. Therefore, this alternative would not meet Selection Standard 2.

Alternatives Considered for this Project:

Alternative EC02 (Preferred Alternative): This alternative would replace the existing fire pump house and pump at Building 82 with newer equipment. Because the project would occur in an existing structure, no additional impervious surface, excavation, or trenching would be required. The new equipment would be powered by an existing generator. This is the preferred alternative because it allows deficiencies in the equipment to be addressed quickly. Since the equipment is housed in an existing structure, this is the only location for this project. This project would occur in 2020.

No Action Alternative: Under the No Action Alternative, the existing fire pump house and pump would continue to be used. Future failure of the system would be likely, as the existing system cannot be repaired because replacement parts for it are not readily available. The system would continue to not have a test header and would continue to fail inspections because it does not comply with NFPA regulations; therefore, this alternative would not meet Selection Standard 2.

Project EC03: Simulated Training Facility

The proposed action is to construct a 4,500-ft^2 building and associated access road in the proposed ECRLS District to house training activities that are currently being conducted in a building that is scheduled for demolition.

Project-Specific Selection Standards: The training facility must be located at an available development site that already has water, sewer, and power (Selection Standard 1).

Alternatives Considered but Eliminated from Further Analysis: Movement of the simulation training to existing Building 100 was considered but eliminated from further analysis, because it would displace a current use at that building and therefore would not meet Selection Standard 2.

Alternatives Considered for this Project:

Alternative EC03 (Preferred Alternative): This alternative would include the demolition of an existing tennis court, followed by construction of a 4,500-ft^2 building and associated access road within the existing footprint. The building would tie into existing power, water, and sewer lines, which would require some trenching. A new generator would be installed for the building. This is the preferred alternative because it reuses the tennis court site and there would be no increase in impervious surface at this location. Construction would occur in 2022 over a period of 9 months.

Alternative EC03-01: This alternative would place the new building at another location within the ECRLS District, in a different location in Area D. The most likely option would be the undeveloped area northeast of existing Building 1 (proposed location for Project EC05). The size of the building would be as described for Alternative EC03, although the amount of associated access road would vary, and new utilities would be needed. A new generator would be installed for the building. The maximum amount of new impervious surface under this alternative would be 5,300 ft^2. The construction timing and duration would be as described for Alternative EC03.

Alternative EC03-02: This alternative would place the new building at another location within the ECRLS District, in Area E. The most likely option would be at the northeast end of Building 3 (proposed location for Project EC01). The size of the building would be as described for Alternative EC03, although the amount of associated access road would vary, and new utilities would be needed. A new generator would be installed for the building. The maximum amount of new impervious surface would be 5,300 ft^2. The construction timing and duration would be as described for Alternative EC03.

No Action Alternative: Under this alternative, there would be no dedicated location on White Bluff to support mission-essential simulation training; therefore, this alternative would not meet Selection Standard 2. An outcome of the No Action Alternative would be to conduct the training in another JPRA location, where it would displace another use.

Project EC04: Maintenance Equipment Shed

The proposed action is to demolish an existing Mylar tent that is currently providing storage for maintenance equipment, and replace it with a larger storage shed.

Project-Specific Selection Standards: The maintenance equipment shed must be located near existing Building 11, which houses maintenance activities (Selection Standard 1).

Alternatives Considered but Eliminated from Further Analysis: Refurbishing the existing tent to extend its lifespan was considered but eliminated from further analysis because the tent has already exceeded its capacity, requiring equipment to be parked outside and in other locations. Because this alternative would not address capacity issues, it would not meet Selection Standard 2. Building an addition to Building 11 was eliminated because of real estate and mechanical constraints. All possible areas where an addition could be located either do not offer the required square footage, or would impact existing infrastructure. Therefore, these alternatives would not meet Selection Standard 1.

Alternatives Considered for this Project:

Alternative EC04 (Preferred Alternative): This alternative would entail removal of the existing storage tent and construction of a 5,000-ft^2 storage shed on the same location. The building would have power and possibly water, but no sewer. Excavation would be required to prepare the site for construction. This is the preferred alternative because it creates a new permanent structure in the correct location (near Building 11) and would provide the necessary storage space. The total increase in impervious surface would be 1,000 ft^2. Construction would occur in 2021 over a period of 6 months.

No Action Alternative: Under this alternative, JPRA would continue to use the existing tent for equipment storage. The tent is 10 years old, nearing the end of its life expectancy, and would not continue to provide a viable storage option. Additionally, equipment storage needs will likely increase at White Bluff, which would increase the capacity issues that currently exist. This alternative does not meet Selection Standard 2.

Project EC05: Administration Processing Facility

The proposed action is to construct an 800-ft^2 building for routine administrative tasks with associated parking facilities.

Project-Specific Selection Standards: The building would support interviewing and processing of prospective employees and trainees and updating security clearances, which must occur in a private location in the ECRLS District (Selection Standard 1). The building must be located at a site that can tie into existing utilities, in a location that has been identified as an available development site (Selection Standard 1).

Alternatives Considered but Eliminated from Further Analysis: Movement of the administrative activities to space in an existing building was considered but eliminated from further analysis because no locations were identified with the required amount of space and appropriate configuration to support these tasks. This alternative did not meet Selection Standard 2.

Alternatives Considered for this Project:

Alternative EC05 (Preferred Alternative): This alternative would entail construction of an 800-ft^2 building in an undeveloped area northeast of existing Building 1. The project would also include 700 ft^2 of parking and new utilities, and would require trenching and excavation. This is the preferred location based on likely locations of other proposed projects in the ECRLS District. The total increase in impervious surface would be 2,000 ft^2. Construction would occur in 2022 over a period of 1 year.

Alternative EC05-1: This alternative would place the new building at another location within the ECRLS District, in Area E. The most likely option would be at the northeast end of Building 3 (proposed location for Project EC01). The size of the building would be as described for Alternative EC05, although access roads and new utilities would be needed. The maximum amount of new impervious surface under this alternative would be 2,000 ft^2. The construction timing and duration would be as described for Alternative EC05.

Alternative EC05-2: This alternative would place the new building at another location within the ECRLS District, at another location in Area D. The most likely option would be the site of the existing tennis courts (proposed location for Project EC01). The size of the building would be as described for Alternative EC05. An access road and new utilities would likely be required. The maximum amount of new impervious surface associated with locating the building in a different location would be 2,000 ft^2. The construction timing and duration would be as described for Alternative EC05.

No Action Alternative: Under this alternative, there would be no dedicated location on White Bluff to support the administrative tasks mentioned above. Therefore, this alternative would not meet Selection Standard 2. An outcome of the No Action Alternative would be to perform these activities in an unsuitable location or displace another use.

2.3.2 Special Operations Training District

Project SO01: Training Support Storage

The proposed action is to provide 1,500 ft^2 of additional storage space for Building 24.

Project-Specific Selection Standards: The new storage space must be located in the vicinity of Building 24 (Selection Standard 1) and must provide the required amount of storage for supplies to support mission-essential training in Building 24 (Selection Standard 2).

Alternatives Considered but Eliminated from Further Analysis: The identified site is the only feasible location for the new storage space based on the configuration of Building 24. Locating a stand-alone storage facility to the east of Building 24 was eliminated from further analysis because of reduced operational efficiencies associated with staff walking around the building to access the facility (Selection Standard 2). Putting an addition on the east side of Building 24 was eliminated because accessing the storage area would disrupt training exercises within the building (Selection Standard 2). Putting the addition at the south end of the building would eliminate windows for administrative staff, and training support storage would be incompatible with administrative activities from a building use standpoint (Selection Standard 1).

Alternatives Considered for this Project:

Alternative SO01 (Preferred Alternative): This alternative would entail the construction of a 1,500-ft^2 addition onto the northwest end of Building 24, in a currently undeveloped area. Excavation would be needed to prepare the site for construction. The building addition would tie into the existing power line running to the building. This is the preferred alternative because it provides the necessary amount of additional storage at Building 24. The total increase in impervious surface would be 1,500 ft^2. Construction would occur in 2020 over a period of 6 months.

No Action Alternative: Under the No Action Alternative, supplies for training activities in Building 24 would continue to be kept in the storage containers located approximately 300 feet east of Building 24. Given that these containers are already at capacity, additional containers would likely be needed. Use of containers for the required storage purposes would not meet Selection Standard 1, as they are not accessible by road, and do not have any power. Because of inefficiencies associated with accessing these containers and their limited capacity, this alternative also does not meet Selection Standard 2.

Project SO02: Building 24 Training Expansion

The proposed action is to provide an additional 8,400 ft^2 of building space for the training program conducted in the Building 24 lab.

Project-Specific Selection Standards: The additional training space must be located in the vicinity of Building 24 (Selection Standard 1) and must be constructed to support mission-essential training in Building 24 (Selection Standard 2).

Alternatives Considered but Eliminated from Further Analysis: Other locations on White Bluff were considered for a stand-alone building but eliminated because they were not close to Building 24 and did not meet Selection Standard 1. Other locations along Building 24 were considered for a building addition but eliminated based on site constraints and the building's current layout (Selection Standard 1).

Alternatives Considered for this Project:

Alternative SO2 (Preferred Alternative): This alternative would entail the construction of an 8,400-ft^2 building just northwest of the parking lot for Building 24, on land that is currently undeveloped. This is the preferred location because it maximizes use of available space. The building would connect to the existing electrical system in the vicinity and utilize an existing generator. Excavation and grading would be required to prepare the site for the new building. The total increase in impervious surface would be 8,400 ft^2. Construction would occur in 2022 over a period of 13 months.

Alternative SO2-1: This alternative would entail an 8,400-ft^2 addition to Building 24 along its northeast side. This Alternative would be similar to Alternative SO2, with the same increase in impervious surface but in a different location. This location is more disturbed than the location identified for Alternative SO2. The construction timing and duration would be as described for Alternative SO02.

No Action Alternative: Under the No Action Alternative, there would not be additional training space on White Bluff to support the identified mission-essential training. In order to accommodate this training, the existing space in Building 24 would be utilized, but with classroom hours extended to meet the additional need. As the program continues to grow, the space limitations would impact the ability to meet mission needs to an increasing degree; therefore, this alternative would not meet Selection Standard 2.

Project SO03: Training Planning

The proposed action is to replace an existing double-wide trailer used for a specific training purpose with a permanent structure better suited to this usage.

Project-Specific Selection Standards: This building supports specific training that must be located in a secluded spot that is not in the sight line of other buildings (Selection Standard 1). The building must support existing and future mission-essential training needs (Selection Standard 2).

Alternatives Considered but Eliminated from Further Analysis: Location of the building along the parking lot for Buildings 20 and 24 was eliminated from further analysis because it is a visible location and would not meet Selection Standard 2.

Alternatives Considered for this Project:

Alternative SO3 (Preferred Alternative): This alternative would entail decommissioning the existing trailer and constructing a 1,000-ft^2 building in the same location. An access road to the new building would also be constructed, and trenching would be required to extend utilities to the site. A new generator would be installed for the building. Excavation and grading would be required to prepare the site for a permanent structure. This is the preferred alternative because it entails construction of permanent, adequate training facilities in the same location as the existing temporary facilities, and because it is the lowest point on White Bluff that is surrounded by trees for optimal seclusion. This is the only location that meets Selection Standards 1 and 2. The total increase in impervious surface would be 2,500 ft^2. Construction would occur in 2021 over a period of 9 months.

No Action Alternative: Under the No Action Alternative, the existing double-wide trailer would continue to be used, and would not provide adequate facilities for the specific training purpose. Additionally, a generator would continue to be used to provide power to the trailer, and a portable toilet would continue to provide the only bathroom facilities.

Project SO04: Special Project Training Facility

The proposed action is to provide a stand-alone, secluded facility within the Special Operations Training District to house a specific training mission.

Project-Specific Selection Standards: The new training facility must be located in the Special Operations Training District (Selection Standard 1) and must provide the necessary requirements to support specific mission-essential training (Selection Standard 2).

Alternatives Considered but Eliminated from Further Analysis: Available development sites outside of the Special Operations Training District were eliminated because no other areas offer the seclusion afforded by Areas F and H, and the facility would not be easily accessible via the west (non-public) gate. Because of the specific mission that would occur in the building, other alternatives besides those carried forward for analysis would not meet Selection Standards 1 or 2.

Alternatives Considered for this Project:

Alternative SO04 (Preferred Alternative): This alternative would entail construction of a new 2,000-ft^2 building within Area F, west of the north-south access road. This is the preferred location because the building could be accessed directly from the secondary gate road, and it is in close proximity to Building 100. There would not be a new access road to the building; however, a new parking area would be required, and trenching would be required to extend utilities to the site. Excavation and grading would be required to prepare the site for a permanent structure. A new generator would be installed for the building. The total increase in impervious surface would be 2,000 ft^2. Construction would occur in 2021 over a period of 10 months.

Alternative SO04-1: Under this alternative the new building would be constructed at another location within the Special Operations Training District, in Area F. Under this alternative, trenching would be required to extend utilities to the site, a new generator would be installed, and excavation and grading would be required to prepare the site for a permanent structure. A new parking area would be required and, depending on the location, a new access road may be required. The maximum amount of new impervious surface would be 2,300 ft^2. The construction timing and duration would be as described for Alternative SO04.

Alternative SO04-2: Under this alternative the new building would be constructed at another location within the Special Operations Training District, in Area H. Likely options would be at the proposed locations of Projects SO05, SO06, or SO07. At all possible locations, trenching would be required to extend utilities to the site, a new generator would be installed, and excavation and grading would be required to prepare the site for a permanent structure. A new parking area would be required and, depending on the location, a new access road may be required. The maximum amount of new impervious surface under this alternative would be 2,300 ft^2. The construction timing and duration would be as described for Alternative SO04.

No Action Alternative: Under the No Action Alternative, the training mission would continue to occur in Building 100 or Building 20. This alternative does not meet Selection Standards 2 or 3, since it temporarily occupies large buildings with a small group of instructors and students, precluding use of these spaces for other uses. Therefore, it does not optimize facilities space and would continue to not meet mission needs.

Project SO05: Urban Training Building

The proposed action is to construct an 11,000-ft^2 warehouse that can be configured for different training activities.

Project-Specific Selection Standards: The new building must be located in the Special Operations Training District in the vicinity of Building 24 (Selection Standard 1).

Alternatives Considered but Eliminated from Further Analysis: Locating the building in Area A was considered but eliminated because it would not be compatible with land uses in the Command Mission

Support District, and it would be inefficient to locate the building so far away from Buildings 20 and 24 (Selection Standard 1).

Alternatives Considered for this Project:

Alternative SO05 (Preferred Alternative): This alternative would entail construction of a new 11,000-ft^2 warehouse within Area H, southwest of Building 20. This is the preferred location because of its proximity to Building 24. There would be a new access road to the building, as well as a new parking area. Trenching would be required to extend utilities to the site, and a new generator would be installed for the building. Excavation and grading would be required to prepare the site for a permanent structure. The total increase in impervious surface would be 12,500 ft^2. Construction would occur in 2024 over a period of 14 months.

Alternative SO05-1: This alternative would place the new building at another location within the Special Operations Training District, in Area H. Likely options would be the proposed location for Projects SO06 or SO07. At all possible locations, trenching would be required to extend utilities to the site, a new generator would be installed, and excavation and grading would be required to prepare the site for a permanent structure. The maximum amount of new impervious surface associated with locating the building in any of these development sites would be 15,000 ft^2, with the amount dependent on the length of new access road and the size of the parking area. The construction timing and duration would be as described for Alternative SO05.

Alternative SO05-2: This alternative would place the new building at another location within the Special Operations Training District, in Area F. Likely options would be the proposed location for Project SO04. Trenching would be required to extend utilities to the site, a new generator would be installed, and excavation and grading would be required to prepare the site for a permanent structure. The maximum amount of new impervious surface under this alternative would be 15,000 ft^2, with the amount dependent on the length of new access road and the size of the parking area. The construction timing and duration would be as described for Alternative SO05.

No Action Alternative: Under the No Action Alternative, there would be no indoor option for many training activities that are currently being done outdoors. Weather conditions would continue to be a factor in determining whether some of the training can take place, and would continue to add logistical and scheduling challenges.

Project SO06: Secure Holding Facility

The proposed action is to construct a building in an isolated area that would be used as a secure holding facility for students waiting for training activities to begin.

Project-Specific Selection Standards: The new building must be located in the Special Operations Training District in the vicinity of Building 24 at a site where it can tie into utilities but that is fairly isolated (Selection Standard 1).

Alternatives Considered but Eliminated from Further Analysis: Locating the new building in Area C or D was considered but these locations were eliminated because all available development sites in these areas are visible from the road (Selection Standard 1).

Alternatives Considered for this Project:

Alternative SO06 (Preferred Alternative): This alternative would entail construction of a 1,200-ft^2 building within Area H, on the north side of Access Loop Road. There would not be a new access road to the building; however, a parking area would be constructed, and trenching would be required to extend utilities to the site. A new generator would be installed for the building. Excavation and grading would be required to prepare the site for a permanent structure. This is the preferred location because it best meets the project-specific selection standards described above. The total increase in impervious surface would be 1,500 ft^2. Construction would occur in 2022 over a period of 10 months.

Alternative SO06-1: This alternative would place the new building at another location within the Special Operations Training District, in Area H. Likely options would be at the proposed locations for Projects SO05 or SO07. Trenching would be required to extend utilities to the site, a new generator would be installed, and excavation and grading would be required to prepare the site for a permanent structure. The maximum amount of new impervious surface under this alternative would be 1,500 ft^2. The construction timing and duration would be as described for Alternative SO06.

Alternative SO06-2: This alternative would place the new building at another location within the Special Operations Training District, in Area F. The most likely option would be at the proposed location for Project SO04. Trenching would be required to extend utilities to the site, a new generator would be installed, and excavation and grading would be required to prepare the site for a permanent structure. The amount of new impervious surface would be 1,500 ft^2. The construction timing and duration would be as described for Alternative SO06.

No Action Alternative: Under the No Action Alternative, JPRA would continue to take the students to Building 12 to wait for training to begin. Since this building is located in a different district than the training, there would continue to be inefficiencies associated with movement of the students to multiple locations and this alternative would not meet Selection Standard 2.

Project SO07: Two-Story Office and Storage Building

The proposed action is to construct an office and storage building to accommodate staff and storage space needed to support planned future training in this area.

Project-Specific Selection Standards: The new building must be located in the Special Operations Training District at a site where it can tie into utilities (Selection Standard 1).

Alternatives Considered but Eliminated from Further Analysis: Locating the new building in Area C was considered but eliminated because all possible building locations are visible from the road. This location is also inefficient from a mission standpoint because of its distance from the training it would support. Therefore, this alternative would not meet Selection Standards 1 or 2.

Alternatives Considered for this Project:

Alternative SO07 (Preferred Alternative): This alternative would entail construction of a two-story, 8,000-ft^2 building within Area H, on the southwest side of Access Loop Road. There would be a new access road to the building, and trenching would be required to extend utilities to the site. A new generator would be installed for the building. Excavation and grading would be required to prepare the site for a permanent structure. This is the preferred location based on likely locations of other proposed projects in the Special Operations Training District. The total increase in impervious surface would be 4,500 ft^2. Construction would occur in 2024 over a period of 19 months.

Alternative SO07-1: This alternative would place the new building at another location within the Special Operations Training District, in Area H. Likely options would include the proposed locations for Projects SO05 or SO06. Trenching would be required to extend utilities to the site, a new generator would be installed, an access road would be needed, and excavation and grading would be required to prepare the site for a permanent structure. The maximum amount of new impervious surface under this alternative would be 9,000 ft^2. The construction timing and duration would be as described for Alternative SO07.

Alternative SO07-2: This alternative would place the new building at another location within the Special Operations Training District, in Area F. The most likely option would be the proposed location for Project SO04. Trenching would be required to extend utilities to the site, a new generator would be installed, an access road would be needed, and excavation and grading would be required to prepare the site for a permanent structure. The amount of new impervious surface would be 9,000 ft^2. The construction timing and duration would be as described for Alternative SO07.

No Action Alternative: Under the No Action Alternative, future storage and staff office space would need to be located in one or more existing buildings. These buildings do not have the capacity to support projected increases in space requirements; therefore, this alternative would not meet Selection Standard 2.

Project SO08: Septic Field Expansion

The proposed action is to provide sewer service for the proposed new office and training buildings in Areas F and H.

Project-Specific Selection Standards: The new septic system must be located in a site with suitable soils and topography (Selection Standard 1).

Alternatives Considered but Eliminated from Further Analysis: Locating the new septic fields in the northeast corner of White Bluff was eliminated because of its distance from Areas F and H, boring through rock would be needed to install piping, and pumps would also be required. This alternative would not meet Selection Standards 1 or 3.

Alternatives Considered for this Project:

Alternative SO08 (Preferred Alternative): This alternative would construct new septic fields in the area just north of the perimeter fence, south of Training Loop Road. The project would include a new drain field and septic tank, and would require excavation and trenching for installation of the septic tank and piping. The total area of temporary disturbance would be approximately 2,200 ft^2. No new impervious surface would be created. This site is the preferred location because it is a gently sloping area located downhill from most other portions of the site, and because it is the only site that meets the development constraints listed above. The project would occur in 2024 over a period of 6 months.

Alternative SO08-1: This alternative would expand the existing septic field outside the perimeter fence and south of Newkirk Road, providing it with additional capacity to support long-term development on the site. The project would require the existing system to be re-engineered, and would require a new septic tank and piping, and an expanded drain field. Excavation and trenching would be required. The total area of temporary disturbance would be approximately 2,200 ft^2. No new impervious surface would be created. The construction timing and duration would be as described for Alternative SO08.

No Action Alternative: Under this alternative, the existing septic field outside the perimeter fence and south of Newkirk Road would serve the new buildings proposed for Areas F and H. While this septic field currently has additional capacity, it is likely that it would be insufficient to support long-term development on the site and would not meet Selection Standard 2. Additionally, use of this septic field for proposed new development in Areas F and H would require use of pumps.

Project SO09: Building 101 Expansion

The proposed action is to provide an additional 1,500 ft^2 of building space for the training program conducted in Building 101.

Project-Specific Selection Standards: The additional training space must be added on to Building 101 (Selection Standard 1) and must be constructed to support mission-essential training in Building 101 (Selection Standard 2).

Alternatives Considered but Eliminated from Further Analysis: Other areas of Building 101 were considered for the addition but eliminated because of site features that present obstacles to construction, including sidewalks, a water main, uneven topography, and drainage ditches (Selection Standard 1).

Alternatives Considered for this Project:

Alternative SO09 (Preferred Alternative): This alternative would entail the construction of a 1,500-ft^2 addition onto the southeast wall of Building 101, on land that is currently undeveloped. Excavation would be required to prepare the site for the addition. The total increase in impervious surface would be 1,500 ft^2. The project would occur in 2021 over a period of 6 months. This is the preferred alternative because it is the only feasible location for an addition to Building 101, as described above.

No Action Alternative: Under this alternative, Building 101 would remain at its current size and would not be expanded to the full square footage of the original building design. As the training program housed in the building continues to grow, the space limitations in the building would impact the ability to meet mission needs. Therefore, this alternative would not meet Selection Standard 2.

2.3.3 Command Mission Support District

Project C01: Indoor Firing Range

The proposed action is to construct a new indoor firing range to house live fire and simulated virtual reality range training.

Project-Specific Selection Standards: The firing range would need to be located in an area identified as an available development site and with enough available development area to support a 12,000-ft^2 building (Standard 1).

Alternatives Considered but Eliminated from Further Analysis: Use of facilities at Fairchild AFB was considered but eliminated from further analysis because the operators of the range at Fairchild do not have the appropriate clearance to support training by JPRA personnel. Location of the firing range in Area H was considered but eliminated because it would increase on-base traffic in the area and would impact other training that requires secluded conditions (Selection Standard 1).

Alternatives Considered for this Project:

Alternative C01 (Preferred Alternative): This alternative would entail construction of a 12,000-ft^2 building to the northeast of Building 12, in Area A. There would be a new access road, and trenching would be required to extend utilities to the site. A new generator would be installed for the building. Excavation and grading would be required to prepare the site for a permanent structure. The total increase in impervious surface would be 15,000 ft^2. This is the preferred location based on the size of the building and considering the likely locations of other proposed projects in the ECRLS District. Construction would occur in 2025 over a period of 14 months.

Alternative C01-1: This alternative would place the new firing range at another location in Area A. At most locations, trenching would be required to extend utilities to the site, a new generator would be installed, an access road and parking would be needed, and excavation and grading would be required to prepare the site for a permanent structure. The maximum amount of new impervious surface would be 14,500 ft^2. The construction timing and duration would be as described for Alternative C01.

Alternative C01-2: This alternative would place the new firing range within Area C. There would be a new access road, and trenching would be required to extend utilities to the site. A new generator would be installed for the building. Excavation and grading would be required to prepare the site for a permanent structure. The maximum increase in impervious surface would be 15,000 ft^2. The construction timing and duration would be as described for Alternative C01.

No Action Alternative: Under this alternative, there would not be an option to conduct live fire or simulation range training. Personnel would receive this training at a different JPRA facility.

Project C02: Addition to Fitness Center

The proposed action is to construct a 2,500-ft^2 addition to the fitness center.

Project-Specific Selection Standards: The addition must be attached to the current facility.

Alternatives Considered but Eliminated from Further Analysis: Various configurations for the addition were considered, but other alternatives were eliminated from further analysis because features such as the air conditioning unit, a propane tank, power lines, and the adjacent road restrict locating the addition in other areas along the building's perimeter.

Alternatives Considered for this Project:

Alternative C02 (Preferred Alternative): This alternative would include construction of a 2,500-ft^2 addition on the northeast side of the existing fitness center. As an expansion of an existing facility, the project would not include a new access road, or new water or sewer lines. Electricity would tie into the existing system. Excavation and grading would be required. The total increase in impervious surface would be 2,500 ft^2. Construction would occur in 2025 over a period of 7 months. This is the preferred alternative because all other possible configurations for an addition were eliminated from further analysis (see above).

No Action Alternative: Under this alternative, there would be no increase in capacity to the existing fitness center. Over time, the fitness center would likely reach its maximum capacity and no longer meet the needs of its users. Therefore, this alternative would not meet Standard 2.

Project C03: Heritage Observation Center

The proposed action is to construct a recreational observation center at the site of the old dome building (Building 5), to house interpretive displays and a restaurant.

Project-Specific Selection Standards: The center must be located in the Command Mission Support District within an identified development site (Selection Standard 1).

Alternatives Considered but Eliminated from Further Analysis: Locating the observation center at the back of the C4 Building was considered but eliminated because the structure would need to be elevated, and given its vicinity to the perimeter fence, would visually impact adjacent areas (Selection Standard 1).

Alternatives Considered for this Project:

Alternative C03 (Preferred Alternative): Under this alternative, a 1,250-ft^2 building would be constructed on the existing foundation of Building 5. Other site improvements would include a new sidewalk and a parking area. There is an existing access road to the site, but it would likely need to be resurfaced as part of the project. New utilities would be run to the facility, with associated trenching disturbance. Excavation would be required to prepare the site for construction. The total increase in impervious surface would be approximately 700 ft^2. Construction would occur in 2025 over a period of 15 months. This is the preferred alternative because it is an appropriate reuse of a developed site that is no longer needed for its original purpose. As the highest point on White Bluff, it is the most appropriate location for an observation center.

No Action Alternative: Under this alternative, no observation center/restaurant or similar amenity would be built on White Bluff. The associated quality-of-life benefits to students and staff would not occur.

Project C04: Upgrade Potable Water System

The proposed action is to upgrade the potable water system at White Bluff to provide a second source of water. The action would include a new storage tank and pump/chlorination house, and would either include a new well or tie into the existing well.

Project-Specific Selection Standards: The project must be located either near the existing well or in a location where site conditions would allow drilling of a new well (Selection Standard 1). The project must be located in an available development site (Selection Standard 1). The new water tank must be a minimum of 104,000 gallons to meet NFPA code requirements, as not all buildings on White Bluff have sprinklers.

Alternatives Considered but Eliminated from Further Analysis: Connection to the City of Spokane's potable water system was eliminated from further analysis based on the findings of a 1988 study, which determined that obtaining a right-of-way and installing a water line to the nearest connection point (4 miles away) would be cost prohibitive (Selection Standard 3).

Alternatives Considered for this Project:

Alternative C04 (Preferred Alternative): This alternative would entail construction of a new water system, to include a well, a 110,000-gallon elevated holding tank, a pump/chlorination house, water mains, and fire-suppression infrastructure in Area B of the Command Mission Support District. The new tank would be located on stilts. This site is the preferred location because it is the highest point on White Bluff, which would allow for potable water distribution within the site via gravity flow. A new generator would be installed to power the chlorination facility and booster pumps, as needed. The total increase in impervious surface would be 1,200 ft^2. Construction would occur in 2024 over a period of 15 months.

Alternative C04-1: This alternative would include a new holding tank and pump/chlorination house, which would be supplied by the existing well located in the parking lot for Building 12 (a different location than the Preferred Alternative). While the existing well would be used, the new holding tank and pump/chlorination house would provide a redundancy in the water system. The new tank and pump/chlorination house would be located where the existing tanks are currently located. There would be no increase in impervious surface under this alternative. The construction timing and duration would be as described for Alternative C04.

No Action Alternative: Under this alternative, JPRA would continue to use the existing potable water system, with no additional well, holding tank, or pump/chlorination house. JPRA would rely on a single source of water, and would be at risk for a loss of water service; therefore, this alternative would not meet Selection Standard 2.

Project C05: Helicopter Landing Pad

The proposed action is to construct a paved helicopter landing pad on White Bluff that would replace an existing unpaved landing pad.

Project-Specific Selection Standards: The helicopter landing pad must be in an approved landing zone and should be centrally located (Selection Standard 1).

Alternatives Considered but Eliminated from Further Analysis: Locating the landing pad on the rock outcrop by Building 19 was eliminated from further analysis because although it is a high point on White Bluff, there are safety concerns associated with its proximity to existing radio antennae in this area (Selection Standard 1).

Alternatives Considered for this Project:

Alternative C05 (Preferred Alternative): This alternative would entail construction of a paved helicopter landing pad at the location of the existing unpaved landing pad, in the Command Mission Support District northeast of the fitness center. No maintenance operations or support facilities would be constructed as part of this project. There would be no increase in flight operations associated with this project; the landing pad would continue to function primarily as emergency infrastructure. Excavation and grading would be needed to make the site level for landing. The total increase in impervious surface would be 9,000 ft^2. Construction would occur in 2025 over a period of 2 months. This alternative is preferred because of the approved landing zones on White Bluff, it is the most central location identified, with roads nearby.

Alternative C05-1: Under this alternative the paved helicopter landing pad would be located at a different location within an identified development site and an approved landing zone. The most likely location would be in Area A, east of the parking lot for Building 15. The total increase in impervious surface would be 9,000 ft^2. The construction timing and duration would be as described for Alternative C05.

No Action Alternative: There would be no paved helicopter landing pad on White Bluff. The current unpaved landing pad would continue to be used, and landing safety would continue to be a concern. The No Action Alternative would not meet Selection Standard 2 because of operational safety concerns.

2.3.4 Secure Mission Research, Development, and Testing District

Project SM01: Non-Secure Visitor and Training Facility

The proposed action is to construct a 2,500-ft^2, non-secure building for visitors and training related to Building 15.

Project-Specific Selection Standards: The new building must be located in the Secure Mission Research, Development, and Testing (SMRDT) District near Building 15 at an available development site (Selection Standard 1).

Alternatives Considered but Eliminated from Further Analysis: Locations in other land use districts (i.e., Areas B, C, D, and E, and other locations in Area A) were eliminated from further analysis on the basis of Selection Standard 1 because of their distance from Building 15, and because available development sites in other districts are more appropriate locations for other projects identified in the Master Site Plan.

Alternatives Considered for this Project:

Alternative SM01 (Preferred Alternative): This alternative would include construction of a 2,500-ft^2 building to the northeast of Building 15 in Area A. Trenching would be required to extend utilities to the site, and excavation and grading would be required to prepare the site for a permanent structure. A new generator would be installed for the building. The total increase in impervious surface would be 2,500 ft^2. Construction would occur in 2021 over a period of 1 year. This location is preferred because of its proximity to Building 15 and accessibility from an existing road.

Alternative SM01-1: This alternative would place the new building at another location within the SMRDT District, in Area A, subject to AT/FP setbacks. At all possible locations, trenching would be required to extend utilities to the site, and excavation and grading would be required to prepare the site for a permanent structure. A new parking area would be required. Therefore, the maximum amount of new impervious surface associated with the project under this alternative would be 3,000 ft^2. The construction timing and duration would be as described for Alternative SM01.

No Action Alternative: Under the No Action Alternative, a non-secure facility would not be constructed to support visitors and students who interact with staff at Building 15. These functions would continue to occur at an existing building on White Bluff, which would likely be one without sewer or water (Building 10) or one that does not have the capacity to support this use. Therefore, the No Action Alternative does not meet Selection Standards 1 or 2.

Project SM02: Office, Administration, Research, Development, Testing, and Lab Facility

The proposed action is to construct a 12,000-ft^2 building in the proposed SMRDT District that would be used for development and testing related to operations in Building 15.

Project-Specific Selection Standards: The new building must be located in the SMRDT District near Building 15 at an available development site (Selection Standard 1).

Alternatives Considered but Eliminated from Further Analysis: Locating the building in Area H was considered but eliminated because it is not in the SMRDT District near Building 15 and does not meet Selection Standard 1. A location in the vicinity of the C4 Building was considered but eliminated because this area is not located near Building 15 and has not been identified as an available development site (Selection Standard 1).

Alternatives Considered for this Project:

Alternative SM02 (Preferred Alternative): This alternative would entail construction of the 12,000-ft^2 building to the north of Building 15, on the east side of the existing access road in Area A. This location is adjacent to an existing parking area. A new access road would be constructed, and trenching would be required to extend utilities to the site. A new generator would be installed for the building. Excavation and grading would be required to prepare the site for a permanent structure. The total increase in impervious surface would be 13,000 ft^2. Construction would occur in 2024 over a period of 2 years. This location is preferred because of its proximity to Building 15 and because there would be easy access from an existing road.

Alternative SM02-1: This alternative would place the new building at another location within the SMRDT District, in Area A, subject to AT/FP setbacks. At all possible locations, trenching would be required to extend utilities to the site, a new generator would be installed, and excavation and grading would be required to prepare the site for a permanent structure. Depending on the building's location in proximity to the road, the length and location of the new access road would vary. A new parking area would likely be required. The maximum amount of new impervious surface associated with the project under this alternative would be 15,000 ft^2. The construction timing and duration would be as described for Alternative SM02.

No Action Alternative: Under the No Action Alternative, a new facility would not be constructed at White Bluff, and the mission activities that require the facility would continue to occur at a JPRA location in Virginia. This alternative would not allow the increase in mission efficiency that would be offered under the action alternatives. Additionally, space limitations and encroachment at the Virginia location would increase as the mission grows. Therefore, this alternative would not meet Selection Standard 2.

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3.0 AFFECTED ENVIRONMENT

The Region of Influence (ROI) for the Proposed Action is the area within the boundaries of JPRA White Bluff, unless otherwise specified for a particular resource area that would have a different ROI. For most resources included in this section, much of the information on the affected environment was obtained from a 2012 EA completed for White Bluff (Fairchild AFB 2012) or the draft Master Site Plan update (USACE 2019), with pertinent updated information included as needed and available.

3.1 SCOPE OF THE ANALYSIS

This section describes the current conditions of the environmental resources, either human-made or natural, that would be affected by implementing the proposed actions, their alternatives, or the No Action Alternative. In compliance with NEPA, CEQ guidelines, and USAF guidance in 32 CFR Section 989, as amended, the description of the affected environment focuses on those resources and conditions potentially subject to impacts.

Based on the scope of the Proposed Action, issues with minimal or no impacts were identified through a preliminary screening process. The following resource area was not carried forward for a detailed analysis:

- *Environmental Justice*: Evaluation of impacts on environmental justice populations is directed by EO 12898 and evaluation of impacts on children is directed by EO 13045. No minority or low-income populations or areas frequented by children were identified within the White Bluff ROI. Additionally, it was determined that off-base human populations would not be adversely affected by the Proposed Action. Therefore, there would be no disproportionate adverse impacts to low-income or minority populations or children, and this resource area is not carried forward for detailed analysis.

Additionally, since the Proposed Action is not expected to result in a change in the number of permanent staff employed at White Bluff, the socioeconomic analysis presented in this EA does not address housing, education, or public services. It has been determined that there would not be impacts to these resources.

3.2 LAND USE

In most cases, the ROI for land use is White Bluff. However, for proposed projects that occur near the GSU boundary, the ROI would extend to adjacent properties.

3.2.1 Definition of the Resource

Land use generally refers to the management and use of land by people. The attributes of land use include general land use patterns, land ownership, land management plans, and special use areas. General land use patterns characterize the types of uses within a particular area. Specific uses of land typically include residential, commercial, industrial, agricultural, military, and recreational, although these categories are not specifically called out in the Master Site Plan. Land use also includes areas set aside for preservation or protection of natural resources, wildlife habitat, vegetation, or unique features. Management plans, policies, ordinances, and regulations determine the types of uses that protect specially designated or environmentally sensitive uses.

In appropriate cases, the location and extent of a proposed action must be evaluated for its potential impacts on a project site and adjacent land uses. The foremost factor affecting a proposed action in terms of land use is its compliance with any applicable land use or zoning regulations. Other relevant factors include matters such as existing land use at the project site, the types of land use on adjacent properties and their proximity to a proposed action, the duration of a proposed activity, and its permanence.

3.2.2 Existing Conditions

White Bluff rests primarily within a 92-acre parcel that comprises the southern half of the southwest quarter of Section 36, Township 26 North, Range 41 East of the Willamette Meridian. Developed portions of the site are limited to the rectangular 92-acre parcel, which is generally oriented lengthwise east-west. The facility is located among sparse rural farmsteads and agricultural fields approximately 4 miles west of the municipal boundaries of Spokane, Washington (Fairchild AFB 2012).

GSU Land Use

While not specifically called out in the 2012 Master Site Plan, the existing facilities at White Bluff fall into administrative, industrial, community, outdoor recreation and open space land use classifications (Fairchild AFB 2012). The 2012 Master Site Plan designated four land use zones on White Bluff:

- The main entrance, communications hub or Point of Presence (POP, in a portion of Building 3), and the Logistics Support Center
- The future headquarters facility, the Joint Personnel Recovery Training Facility, and the fitness center
- The Specialized Survival, Evasion, Resistance, and Escape (SERE) Training Area
- Secure Office and Research and Development (SORD; Building 15)

Existing land uses on White Bluff correspond to these zones, which would be updated by the Master Site Plan update. On-site perimeter land uses currently in violation of the AT/FP setback guidance include Buildings 1 and 2, which are scheduled for demolition (see Figure 2.2-1). Buildings 8, 9, and 11 are located within the existing perimeter setback, but are not subject to setback requirements since they are not occupied.

Surrounding Area Land Use

White Bluff is located in Spokane County, Washington. Based on Spokane County zoning maps (Spokane County 2016), lands surrounding the GSU are zoned as Rural Conservation and Rural Traditional. The Rural Conservation zone applies to environmentally sensitive areas, including critical areas and wildlife corridors. The Rural Conservation designation near White Bluff is mapped west and north of the GSU and is associated with Deep Creek. This zoning category encourages low-impact uses and clustering and/or other open space techniques to protect sensitive areas and preserve open space. The density of this zone is one dwelling unit per 10 or 20 acres. The Rural Traditional designation, which is mapped south and east of White Bluff, includes large-lot residential uses and resource-based industries, including ranching, farming, and wood lot operations. The density of this zone is one dwelling per 10 acres (Spokane County 2016).

The property surrounding White Bluff is primarily privately owned single-family residences, located on low-density, rural residential lots. Private residences are sparse within a half-mile radius of the facility, with the nearest residences occurring south, east, and northwest of the facility. This low-density residential development has slowly become established around White Bluff over the last 15 to 20 years.

There are no industrial or commercial land uses within a 1-mile radius of White Bluff. Farming activities occur on cleared land north of the facility. The cities nearest to White Bluff are Airway Heights (3 miles south) and Spokane (5 miles east). Riverside State Park lands are roughly 1 mile north of the facility.

Long-range land use planning for the White Bluff area is achieved via the Spokane County Comprehensive Plan, which is updated annually (Spokane County 2019a).

3.3 NOISE

The ROI for noise includes White Bluff and surrounding areas that could be affected by noise originating on the GSU and where noise-sensitive receptors may be located.

3.3.1 Definition of the Resource

Noise is considered to be unwanted sound. That is, it interferes with normal activities or otherwise diminishes the quality of the environment. Noise is often generated by activities essential to a community's quality of life, such as aircraft operations, construction, or vehicular traffic. Responses to noise vary widely according to the characteristics of the sound source (intensity and frequency), the distance between the noise source and the receptor, and the time of day, as well as the sensitivity and expectations of the receptor.

Sound intensity, related to the pressure variations of the sound, varies widely (from a soft whisper to a jet engine). To accommodate this wide range in pressure fluctuations, sound is measured on a logarithmic scale and is called sound pressure level or often just sound or noise level. Sound pressure level, designated by the units of decibels (dB), provides a quantification of the sound intensity.

The frequency (or pitch) of sound is measured in cycles per second, or hertz (Hz). This measurement reflects the number of times per second the air vibrates from the acoustic energy. Low-frequency sounds are heard as rumbles or roars, and high frequency sounds are heard as screeches. A healthy human ear can detect sounds that range in frequency from about 20 to 20,000 Hz. However, not all sounds in this range are heard equally well. Therefore, a scale to correct for this change in hearing perception by frequency is used and the sound pressure levels in dB are termed "A-weighted" and designated by dB(A). For the purposes of this document, all sound pressure levels are dB(A). Examples of typical A-weighted sound levels are shown in Table 3.3-1.

Table 3.3-1: Typical A-Weighted Sound Levels

Outdoor	Sound Level (dB(A))	Indoor
Impact pile driver at 50 feet	100	Rock band
Gas lawnmower at 3 feet	90	Food blender at 3 feet
Downtown (large city)	80	Garbage disposal
Heavy traffic at 150 feet	70	Vacuum cleaner at 10 feet
Normal conversation	60	Normal speech at 3 feet
Quiet urban daytime	50	Dishwasher in next room
Quiet urban nighttime	40	Theater, large conference room

Source: Caltrans 2013

During environmental noise analysis, many different types of noise metrics may be used depending on the purpose of use. These may include the following:

- **Maximum Sound Level (L_{Amax})**—L_{Amax} (sometimes shown as L_{max}) is the A-weighted maximum sound level measured over a short duration.
- **Equivalent Sound Level (L_{Aeq})**—L_{Aeq} (sometimes shown as L_{eq}) is an energy averaged A-weighted sound level in dB(A) over a defined period of time such as 1 hour.

- **Day-Night Level (DNL)—**The DNL (often shown as L_{dn}) is similar to L_{Aeq}, but is always over a 24-hour period. Additionally, a 10-dB(A) penalty is added to nighttime levels to emphasize the need for quiet during the period from 10 p.m. to 7 a.m. Thus, it is a composite metric that considers the maximum noise levels, the duration of the events, the number of events that occur, and the time of day during which they occur. While DNL provides a measure of the overall acoustical environment, it does not directly represent the sound level at any given time.

As previously stated, people respond differently to sources of noise. Annoyance is a subjective response that is often triggered by interference with activities by noise. Although the reaction of an individual to noise depends on a wide variety of factors, surveys have found a correlation between the time-averaged noise levels, such as those measured in DNL, and the percentage of the affected population that is highly annoyed. It is widely accepted that 65 dB(A) DNL is the noise level at which a substantial percentage of the population can be expected to be annoyed by noise.

Federal Noise Regulations

The Noise Control Act of 1972 directs federal agencies to comply with applicable federal, state, and local noise control regulations. The Noise Control Act specifically exempts both aircraft operations and military training activities from state and local noise ordinances, but construction activities are not automatically exempt.

State Noise Regulations

Noise regulations for Washington State are provided in Title 173 of the Washington Administrative Code (WAC), Chapter 60: *Maximum Environmental Noise Levels*. This code includes limits for several types of environments. However, sound originating from temporary construction sites as a result of construction activity, sound created by blasting, sound created by activities on White Bluff, and sound created by repair of essential utility services are all exempt between the hours of 7:00 a.m. and 10:00 p.m.

Local Noise Regulations

The Spokane County Code of Ordinances states that it is unlawful for any person to make a sound that creates a noise disturbance (Spokane County 2019b). However, per Section 612.20, *Exemptions*, sounds originating from temporary construction sites as a result of construction activity are exempt between the hours of 7:00 a.m. and 10:00 p.m. or when conducted more than 1,000 feet from any residence where humans reside.

3.3.2 Existing Conditions

Existing sources of noise on and adjacent to White Bluff include light vehicular movement on roadways, power generators, maintenance equipment, seasonal farming activities, bird or animal vocalizations, and occasional overhead aircraft utilizing Fairchild AFB and Spokane International Airport. Commercial aircraft flight patterns generally do not pass over the facility. White Bluff has an unpaved helicopter landing pad for emergencies and special circumstances, which is not used as part of regular operations on the GSU. Based on information from JPRA staff, the landing pad has been used only once in the last 20 years.

For this general type of area, which is primarily rural with a few scattered residences, background noise levels for both L_{Aeq} and DNL are generally low, as specified by the American National Standards Institute (ANSI 2013). The estimated background noise levels using this reference, without occasional overhead aircraft, are less than 40 dB(A) in the daytime and 34 dB(A) at night, with the 24-hour DNL being 42 dB(A) (ANSI 2013). DNL is greater than the L_{Aeq} because of the noise penalty of 10 dB(A) applied for each hour between 10 p.m. and 7 a.m.

Noise-sensitive receptors in the vicinity of White Bluff include the Deep Creek Natural Area (0.25 mile from the GSU boundary) and scattered residences, which occur in low density. The distance to the closest residence from the GSU boundary is approximately 100 feet.

3.4 AIR QUALITY

The ROI for air quality generally includes the entire air basin in which White Bluff is located (the Air Quality Control Region [AQCR]).

3.4.1 Definition of the Resource

The concentration of various pollutants in the local atmosphere determines the air quality at a given location. An increase in emissions may result in increases in local concentrations of pollutants. However, a region's air quality is influenced by many other factors, including the size and topography of the air basin and the prevailing meteorological conditions.

White Bluff is within the Eastern Washington-Northern Idaho Interstate AQCR 62. The United States Environmental Protection Agency (USEPA) Region 10 and Washington State Department of Ecology (Ecology) regulate air quality in the State of Washington. The Spokane Regional Clean Air Agency (SRCAA) regulates air quality in Spokane County. White Bluff is regulated by these agencies, as well as USAF requirements. The CAA Amendments (42 USC Sections 7401–7671q) assign USEPA the responsibility to establish primary and secondary National Ambient Air Quality Standards (NAAQS) (40 CFR Section 50) that specify acceptable concentration levels of six criteria pollutants: particulate matter (measured as both particulate matter less than 10 micrometers in aerodynamic diameter [PM_{10}] and particulate matter less than 2.5 micrometers in aerodynamic diameter [$PM_{2.5}$]), sulfur dioxide (SO_2), carbon monoxide (CO), nitrogen dioxide (NO_2), ozone (O_3), and lead (Pb). Short-term NAAQS (1-, 8-, and 24-hour periods) have been established for these criteria pollutants contributing to acute health effects, and long-term NAAQS (annual averages) have been established for the criteria pollutants contributing to chronic health effects. While each state has the authority to adopt standards stricter than those established under the federal program, the State of Washington has accepted the federal standards, which are shown in Table 3.4-1.

Table 3.4-1: National Ambient Air Quality Standards

Pollutant	Primary/Secondary	Averaging Time	Level	Form
Carbon Monoxide (CO)	Primary	8 hours	9 ppm	Not to be exceeded more than once per year
		1 hour	35 ppm	
Lead (Pb)	Primary and secondary	Rolling 3-month average	0.15 μg/m^3	Not to be exceeded
Nitrogen Dioxide (NO_2)	Primary	1 hour	100 ppb	98th percentile of 1-hour daily maximum concentrations, averaged over 3 years
	Primary and secondary	1 year	53 ppb	Annual mean
Ozone (O_3)	Primary and secondary	8 hours	0.070 ppm	Annual fourth-highest daily maximum 8-hour concentration, averaged over 3 years

Table 3.4-1: National Ambient Air Quality Standards

Pollutant	Primary/Secondary		Averaging Time	Level	Form
Particle Pollution (PM)	$PM_{2.5}$	Primary	1 year	12.0 μg/m^3	Annual mean, averaged over 3 years
		Secondary	1 year	15.0 μg/m^3	Annual mean, averaged over 3 years
		Primary and Secondary	24 hours	35 μg/m^3	98th percentile, averaged over 3 year
	PM_{10}	Primary and Secondary	24 hours	150 μg/m^3	Not to be exceeded more than once per year on average over 3 years
Sulfur Dioxide (SO_2)	Primary		1 hour	75 ppb	99th percentile of 1-hour daily maximum concentrations, averaged over 3 years
	Secondary		3 hours	0.5 ppm	Not to be exceeded more than once per year

Source: USEPA 2019a
μg/m^3 = microgram(s) per cubic meter; ppm = part(s) per million

Federal regulations designate areas in violation of the NAAQS as nonattainment areas. Areas with levels below the NAAQS are said to be in attainment. Maintenance areas are those areas that have previously been designated as nonattainment and have been redesignated to attainment for a probationary period through implementation of maintenance plans and have shown compliance with the standards. The USAF Installation Attainment Status record, updated 31 May 2019, identifies Fairchild AFB (including the GSU White Bluff, where the proposed action would occur) as in attainment for all NAAQS. Therefore, the general conformity rules do not apply to the proposed action.

3.4.2 Existing Conditions

Climate

Based on weather data for Spokane, the average high temperature is 83 degrees Fahrenheit (°F), with the hottest months being July and August. The coldest months are January and December, with an average low temperature of 22°F. Average annual precipitation is 16.7 inches per year. December is the wettest month, with an average rainfall of 2.3 inches (Idcide 2019).

Air Quality

Although air quality concerns are present in the nearby Spokane area, air quality within the project vicinity is considered good and is in attainment of all applicable air quality criteria. Spokane County utilizes the following six monitoring stations (SRCAA 2019b):

- Augusta Avenue and Fiske Street—Measures fine particles ($PM_{2.5}$) and coarse particles (PM_{10})
- Broadway Avenue near University—Measures $PM_{2.5}$
- Colbert—Measures $PM_{2.5}$
- Greenbluff (Ecology-operated site)-Measures O3 during "ozone season" (May to September)
- Spokane-Monroe Station (Ecology-operated site)-Measures PM2.5
- Turnbull National Wildlife Refuge—Measures O_3 (May to September) and particulate matter

Affected Environment

The closest monitoring station to the project area is at the Spokane-Monroe Station (4601 Monroe St. N), where the monitored pollutant is $PM_{2.5}$. A review of 2017, 2018, and 2019 (January to March) data shows that air quality standards were not violated during this period, and in general, the Air Quality Index is reported as good (SRCAA 2019a). Exceptions occurred in August and September 2017 and August 2018 when particulate matter from wildfires resulted in increased particulate matter concentrations. However, since particulate matter is reported on a 3-year average, violations of the NAAQS did not occur. Table 3.4-2 shows the USEPA-reported pollutant levels for Spokane County in the NAAQS format.

Table 3.4-2: Reported Criteria Pollutant Concentrations for Spokane County, Washington

Pollutant	Concentration
Carbon monoxide	Not reported
Lead	Not reported
Nitrogen dioxide	Not reported
Ozone	0.068 ppm (4th Max 8-hour)
$PM_{2.5}$	10.9 $\mu g/m^3$ (Annual Mean)
PM_{10}	224 $\mu g/m^3$ (Second Max); 22 $\mu g/m^3$ (Annual Mean)
Sulfur dioxide	Not reported

Source: USEPA 2018a
$\mu g/m^3$ = microgram(s) per cubic meter; ppm = parts per million

Stationary sources at White Bluff include generators. White Bluff is part of the SRCAA registration program and is required to report on generator use. As part of this program, White Bluff has provided regular reports and is in compliance with SRCAA guidelines. Regular inspections are also conducted by SRCAA for operations that may produce air quality concerns. White Bluff has been in compliance and passed all SRCAA inspections conducted.

Greenhouse Gases

Greenhouse gases (GHGs) are gases that trap heat in the atmosphere; the accumulation of these gases in the atmosphere has been attributed to the regulation of the Earth's temperature. Human influence on the climate system is clear, and recent anthropogenic emissions of GHGs are the highest in history. Recent climate changes have had widespread impacts on human and natural systems (IPCC 2014).

The six primary GHGs, defined in Section 202(a) of the CAA and EO 13834, *Efficient Federal Operations*, are carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride. The CEQ's *Federal Greenhouse Gas Reporting and Guidance* (CEQ 2016) also includes nitrogen trifluoride. Each GHG has an estimated global warming potential, which is a function of its atmospheric lifetime and its ability to absorb and radiate infrared energy emitted from the Earth's surface. The global warming potential allows GHGs to be compared with each other by converting the GHG quantity into the common unit "carbon dioxide equivalent" designated as CO_2e.

This EA considers both the potential effects of the proposed projects on climate change, as indicated by their estimated GHG emissions, and the implications of climate change for the environmental effects of the proposed projects.

3.5 WATER RESOURCES

For groundwater resources, the ROI includes White Bluff as well as the geographic extent of regional aquifers to which surface water on the GSU contribute and from which JPRA extracts potable water. For surface water resources, the ROI includes White Bluff as well as the short distance beyond the GSU boundary to which surface waters flow before infiltrating to the ground.

3.5.1 Definition of the Resource

Water resources are natural and human-made sources of water that are available for use by and for the benefit of humans and the environment. Water resources relevant to White Bluff include groundwater and surface water. No wetlands or floodplains occur on White Bluff. Evaluation of water resources examines the quantity and quality of the resource and its demand for various purposes.

Groundwater

Groundwater is water that collects or flows beneath the Earth's surface, filling the porous spaces in soil, sediment, and rocks. A deposit of subsurface water that is large enough to tap via a well is referred to as an aquifer. Groundwater originates from precipitation, percolates through the ground surface, and is often used for potable water consumption, agricultural irrigation, and industrial applications. Groundwater can typically be described in terms of its depth from the surface, aquifer or well capacity, water quality, surrounding geologic composition, and recharge rate.

Groundwater quality and quantity are regulated under several different programs. The Federal Underground Injection Control regulations, authorized under the Safe Drinking Water Act, require a permit for the discharge or disposal of fluids into a well. The Federal Sole Source Aquifer regulations, also authorized under the Safe Water Drinking Act, protect aquifers that are critical to water supply. The Sole Source Aquifer program enables the USEPA to designate an aquifer as a sole source of drinking water and establish a review area for proposed projects to ensure that projects will not contaminate the aquifer (USEPA 2018b). Although direct federal actions on military bases and other federal facilities are excluded from review under this program, they still comply with all pertinent SSA requirements.

Surface Water

Surface water includes natural, modified, and constructed water confinement and conveyance features above groundwater that may or may not have a defined channel and discernable water flows. These features are generally classified as streams, springs, wetlands, natural and artificial impoundments (e.g., ponds and lakes), and constructed drainage canals and ditches.

Stormwater is surface water generated by precipitation events that may percolate into permeable surficial sediments or flow across the top of impervious or saturated surficial areas, a condition known as runoff. Stormwater 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. Stormwater flows, which can be exacerbated by high proportions of impervious surfaces associated with buildings, roads, and parking lots, are important to the management of surface water. Stormwater systems reduce sediments and other contaminants that would otherwise flow directly into surface waters.

The CWA (33 USC Section 1251 *et seq.*, as amended) establishes federal limits, through the National Pollutant Discharge Elimination System, on the amounts of specific pollutants that are discharged to surface waters to restore and maintain the chemical, physical, and biological integrity of the water. White Bluff is not subject to federal stormwater permitting requirements because there is no pathway from the GSU to Waters of the United States, and there are no industrial processes or bulk fuel storage on the GSU. However, White Bluff does implement best management practices (BMPs) to ensure that soil disturbed during construction does not pollute nearby water bodies.

Affected Environment

Section 438 of the Energy Independence and Security Act (EISA) (42 USC Section 17094) establishes stormwater design requirements for federal construction projects that disturb a footprint greater than 5,000 ft^2. Additional guidance is provided in the *Technical Guidance on Implementing the Stormwater Runoff Requirements for Federal Projects under Section 438 of the EISA* (USEPA 2009). UFC 3-210-10, *Low Impact Development*, also provides technical criteria, technical requirements, and references for the planning and design of applicable DoD projects to comply with stormwater requirements under EISA Section 438. Per these requirements, any increase in surface water runoff as a result of the proposed construction would be attenuated through the use of temporary and/or permanent drainage management features. The integration of low impact development design concepts incorporates site design and stormwater management to maintain the site's predevelopment runoff rates and volumes to minimize further potential adverse impacts associated with increases in impervious surface area.

Water Quality Standards

Water quality standards are regulated by USEPA, under the Safe Drinking Water Act (42 USC Sections 201, 300 *et seq.*) and the CWA. Section 303(d) of the CWA requires states to identify and develop a list of impaired water bodies where technology-based and other required controls have not provided attainment of water quality standards. Section 305(b) of the CWA requires states to assess and report the quality of their water bodies. Water quality standards for surface waters are specified in Chapter 173-201A of the WAC. In addition, sediment management standards for the state are established in Chapter 173-204 of the WAC.

3.5.2 Existing Conditions

Groundwater

White Bluff is located approximately 2 miles southwest of the Spokane Valley-Rathdrum Prairie Aquifer, a designated Sole Source Aquifer that is the sole source of water for most people living in Spokane County, Washington, and Kootenai County, Idaho (Spokane County 2015). White Bluff draws water from this aquifer. Ongoing monitoring of wells drawing water from this aquifer shows that nitrates are the primary concern. Other contaminants found have included traces of phosphorous, petroleum products, heavy metals, and industrial chemicals. Overall, however, the water quality of the aquifer is good.

Spokane County has designated an Aquifer Protection Area, as defined in Revised Code of Washington (RCW) 36.36, in the Spokane Valley. The Spokane County Aquifer Protection Area was created to protect the Spokane Valley-Rathdrum Prairie Aquifer. White Bluff is not located within the designated boundary of this Aquifer Protection Area (Spokane County 2019c).

At White Bluff, shallow groundwater or nuisance water can rest near the surface as a result of loess or ash deposits that coat regional basalts. Deeper groundwater on-site rests within the fissures and cracks in the basalt substrate, and within paleo-lacustrine depositional sediments resting between layers of basalt.

The well associated with White Bluff's potable water system (see Section 3.12.2) is routinely tested for water quality and adequate flow. Water samples are collected by base Bioenvironmental staff and delivered to a third-party lab for analysis, as required by the Washington State Department of Health Water Quality Monitoring Schedule (Washington State Department of Health 2019). Based on the results of regular monitoring, there are no known water quality/quantity concerns associated with the drinking water well.

Surface Water

White Bluff lies within the Lower Spokane River watershed planning unit (Water Resource Inventory Area 54), within the Deep Creek hydrologic unit code 12 watershed (USEPA 2019b). There are no defined, natural stream courses on White Bluff. Deep Creek, located approximately 1,200 feet to the west of White Bluff, is the closest permanent surface water feature. Surface water is limited to stormwater that is temporarily held in catchments and conveyances (see Section 3.12.2). Stormwater occurs as runoff caused by precipitation events (rain) or melting (snow), from impermeable or semi-permeable natural and human-made surfaces such as buildings, outcrops, roadways, and even soil during rain-on-snow events or when saturation has occurred.

Stormwater runoff leaving White Bluff has the potential to reach Deep Creek, although much of it percolates into the soil before reaching this stream. Deep Creek is a tributary of the Spokane River to the northwest. According to the USEPA, segments of the Spokane River listed as impaired under Section 303(d) of the CWA are found approximately 3 miles east of White Bluff (the Spokane River) (USEPA 2019b). While surface water in Deep Creek has the potential to flow into the Spokane River, it frequently infiltrates into the groundwater before reaching the river (Geoengineers et al. 2011). Therefore, it is unlikely that there is a surface water connection between White Bluff and the Spokane River.

Low Impact Development (LID) BMPs for stormwater management are employed at White Bluff to protect facilities from extreme storm events. In addition to constructed features such as roadside swales, ditches, and bio-infiltration swales that retain water for evaporation or percolation, several swales include drywell devices with elevated intakes, which help remove sediments and possible contaminants, and provide additional storage during significant rain events. Section 3.12.2 discusses the stormwater system on White Bluff.

3.6 SAFETY AND OCCUPATIONAL HEALTH

3.6.1 Definition of the Resource

A safe environment is one in which there is no, or an optimally reduced, potential for serious bodily injury or illness, death, or property damage. Safety addresses the well-being, safety, and health of members of the public, contractors, and USAF personnel during the demolition activities and facilities construction, and during subsequent operations of those facilities, in accordance with Air Force Occupational Safety and Health (AFOSH) and federal Occupational Safety and Health Association (OSHA) standards.

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. Hazardous activities can include construction, demolition, and many military activities. This EA addresses the safety implications from construction and other activities associated with the Proposed Action and alternatives, including the No Action Alternative.

Construction and Demolition Safety

All contractors performing construction activities on USAF and other DoD installations are responsible for following federal OSHA regulations and are required to conduct these activities in a manner that does not increase risk to workers or the public. OSHA regulations address the health and safety of people at work and cover potential exposure to a wide range of chemical, physical, and biological hazards, as well as ergonomic stressors. Examples of activities that can be hazardous include transportation, maintenance and repair activities, and the creation of extremely noisy environments. The regulations are designed to control these hazards by eliminating exposure to the hazards via administrative or engineering controls, substitution, use of personal protective equipment (PPE), and availability of Safety Data Sheets.

Occupational health and safety are the responsibility of each employer, as applicable. Employer responsibilities are to review potentially hazardous workplace conditions; monitor exposure to workplace chemicals (e.g., asbestos, lead, hazardous substances), physical (e.g., noise propagation, falls), and biological (e.g., infectious waste, wildlife, poisonous plants) agents, and ergonomic stressors; and recommend and evaluate controls (e.g., prevention, administrative, engineering, PPE) to ensure exposure to personnel is eliminated or adequately controlled.

Additionally, employers are responsible for ensuring a medical surveillance program is in place to perform occupational health physicals for those workers subject to the use of respiratory protection, or engaged in work that involves hazardous wastes, asbestos, or lead, or other work requiring medical monitoring.

Mission Safety

Mission safety on USAF installations is maintained through adherence to DoD and USAF safety policies and plans. The USAF safety program ensures the safety of personnel and the public on the installation by regulating mission activities. AFI 91-202, *The USAF Mishap Prevention Program*, implements Air Force Policy Directive 91-2, *Safety Programs*, and provides guidance for implementing the safety program for all activities that occur on USAF installations.

White Bluff is a secure GSU of Fairchild AFB, with access limited to military personnel, civilian employees, and approved visitors. Operations and maintenance activities conducted on White Bluff are performed in accordance with applicable USAF safety regulations, published USAF Technical Orders, and standards prescribed by USAF occupational safety and health requirements. Adherence to industrial-type safety procedures and directives ensures safe working conditions.

3.6.2 Existing Conditions

Construction Safety

White Bluff personnel and construction contractors follow OSHA and AFOSH standards identified in AFI 91-202 and Air Force Manual 91-203, *Air Force Occupational Safety, Fire, and Health Standards*. 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. The AFOSH Program establishes mishap prevention program requirements, assigns responsibilities for program elements, and contains program management information.

All contractors performing construction and demolition activities are responsible for following ground safety regulations and workers compensation programs; and are required to conduct activities in a manner that does not pose an unacceptable risk to workers or personnel. Contractors are required to review potentially hazardous workplace operations, monitor exposure to workplace chemicals, physical hazards, and biological agents, and to recommend and evaluate controls to ensure a medical surveillance program is in place to identify health-related concerns.

Mission Safety

Personnel at White Bluff follow operations safety guidelines and are regularly briefed on hazards and safety concerns in their particular workplaces. There are potential health and safety hazards associated with construction, operations, and maintenance of facilities. Day-to-day risks include exposure to noise, chemicals (e.g., petroleum products), airborne particles (e.g., dust), and machinery (e.g., vehicles or workshop tools).

At White Bluff, industrial hygiene programs address exposure to and protection from applicable hazardous materials or airborne particles through use of PPE and availability of Safety Data Sheets. Safe use of machinery is part of the required training for any personnel using such machinery at White Bluff. Vehicle safety parameters for operation and maintenance are strictly enforced on-site.

Emergency medical response at White Bluff is provided through Spokane County's 911 system. Police services are a joint effort between the Spokane County Sheriff and base Security Forces. The primary responder for fire incidents is Spokane Fire District 10, with secondary response provided by base Fire and Emergency Services.

3.7 HAZARDOUS MATERIALS/WASTE

3.7.1 Definition of the Resource

Hazardous Materials, Hazardous Wastes, and Petroleum Products

Hazardous materials are defined by 49 CFR Section 171.8 as hazardous substances, hazardous wastes, marine pollutants, elevated temperature materials, materials designated as hazardous in the Hazardous Materials Table (49 CFR Section 172.101), and materials that meet the defining criteria for hazard classes and divisions in 49 CFR Part 173. Transportation of hazardous materials is regulated by the United States Department of Transportation regulations within 49 CFR Parts 105–180. USAF installations manage hazardous materials through AFI 32-7086, *Hazardous Materials Management Program.*

Hazardous waste is defined by the RCRA at 42 USC Section 6903(5), as amended by the Hazardous and Solid Waste Amendments, as “a solid waste, or combination of solid wastes, which because of its quantity, concentration, or physical, chemical, or infectious characteristics may (A) cause, or significantly contribute to an increase in mortality or an increase in serious irreversible, or incapacitating reversible, illness; or (B) pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported, or disposed of, or otherwise managed.” White Bluff has a Hazardous Waste Management Plan, which complies with 40 CFR Parts 260–272. The plan prescribes the roles and responsibilities of all personnel at White Bluff with respect to the waste stream inventory, waste analysis plan, hazardous waste management procedures, training, emergency response, and pollution prevention. In addition, the plan establishes procedures to comply with applicable federal, state, and local standards for solid waste and hazardous waste management.

Petroleum products include crude oil or any derivative thereof, such as gasoline, diesel, or propane. They are considered hazardous materials because they present health hazards to users in the event of incidental releases or extended exposure to their vapors. Evaluation of hazardous materials and wastes focuses on the storage, transportation, handling, and use of hazardous materials, as well as the generation, storage, transportation, handling, and disposal of hazardous wastes. In addition to being a threat to humans, the improper release or storage of hazardous materials, hazardous wastes, and petroleum products can threaten the health and well-being of wildlife species, habitats, soil systems, and water resources.

Special Hazards

Special hazards are substances that might pose a risk to human health and are addressed separately from hazardous materials and hazardous wastes. Special hazards include asbestos-containing materials (ACMs), lead-based paint (LBP), and polychlorinated biphenyls (PCBs), all of which are typically found in older buildings and utility infrastructure. The USEPA is given authority to regulate these special hazard substances by the Toxic Substances Control Act (TSCA) Title 15 USC Chapter 53. Subchapter I identifies PCBs, Subchapter II handles ACMs, and Subchapter IV discusses LBP. The USEPA has established regulations regarding asbestos abatement and worker safety under 40 CFR Part 763, with additional regulation concerning emissions (40 CFR Part 61). Whether from lead abatement or other activities, depending on the quantity or concentration, the disposal of the LBP waste is potentially regulated by the RCRA at 40 CFR Part 260. The disposal of PCBs is addressed in 40 CFR Parts 750 and 761.

The USEPA has established that any material containing more than 1 percent asbestos by weight is considered an ACM. ACMs are generally found in building materials such as floor tiles, mastic, roofing materials, pipe wrap, and wall plaster. ACMs might be present in buildings and other structures on White Bluff, and LBP may be found in surface coatings. PCBs are human-made chemicals that persist in the environment and were widely used in building materials (e.g., caulk and joint compound) and electrical products prior to 1979. Structures built prior to 1979 potentially include PCB-containing building materials.

Environmental Contamination

The Defense Environmental Restoration Program (DERP) was formally established by Congress in 1986 to provide for the cleanup of DoD property at active installations, base realignment and closure installations, and formerly used defense sites throughout the United States and its territories. There are two restoration programs under the DERP: the ERP and the Military Munitions Response Program. The ERP addresses contaminated sites, while the Military Munitions Response Program addresses nonoperational military ranges and other sites suspected or known to contain unexploded ordnance, discarded military munitions, or munitions constituents. Each site is investigated, and appropriate remedial actions are taken under the supervision of applicable federal and state regulatory programs. When no further remedial action is necessary for a given site, the site is closed, and it no longer represents a threat to human health.

Description of 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 restricted until remediation of a groundwater contaminant plume has been completed).

Radon

Radon is a naturally occurring odorless and colorless radioactive gas found in soils and rocks that can lead to the development of lung cancer. Radon tends to accumulate in enclosed spaces, usually those that are below ground and poorly ventilated (e.g., basements). USEPA has established a guidance radon level of 4 picocuries per liter (pCi/L) in indoor air for residences; radon levels above this amount are considered a health risk to occupants.

3.7.2 Existing Conditions

Hazardous Materials, Petroleum Products, and Hazardous Wastes

Petroleum products used at White Bluff include diesel fuel, heating oils, hydraulic fluids, and lubricating oils for generators and air compressors (Fairchild AFB 2012). Minor amounts of hazardous materials may be used at the woodshop, but are present as commercially available small quantity containers. Paint, biocides, a limited amount of gasoline for lawn mowing and similar activities, and oil are occasionally used. These materials are stored within fire lockers on-site and are listed with the local fire department. Other types of hazardous materials used at White Bluff include vehicle maintenance and facility maintenance products and chlorine used for water treatment (Fairchild AFB 2012). Fairchild AFB maintains a detailed spreadsheet of hazardous materials stored and used at White Bluff (Fairchild AFB 2019a).

According to a 2018 Tier II Emergency and Hazardous Chemical Inventory, White Bluff documented threshold exceedances for four products (diesel fuel, propane, heating oil, and lead acid batteries) (Fairchild AFB 2019b).

Day-to-day operation of White Bluff results in the generation, storage, and disposal of used petroleum products and universal waste.

Storage Tanks

Air Force Manual 32-7002, *Environmental Compliance and Pollution Prevention*, implements Air Force Policy Directive 32-70 and identifies compliance requirements for underground storage tanks (USTs), aboveground storage tanks (ASTs), and piping associated with USTs and ASTs that store petroleum products and hazardous substances. USTs are subject to regulation under RCRA, 42 USC Section 6901, and 40 CFR Section 280.

Standby generator systems on White Bluff provide backup power and utilize fuels (USACE 2019). At the south end, a 250-kilowatt (kW) emergency/standby generator/fuel tank system serves Buildings 2, 3, 8, 11, 16, and 19, as well as the gate. At the north end, a 750-kW generator and two 30,000-gallon fuel tanks provide emergency/backup power to Building 15. These two tanks are the only USTs on White Bluff. While these USTs are currently being used, they are not being refilled. Once they are empty, an AST will be installed to provide fuel for the generator. A 400-kW generator serves Building 12, and a 30-kW generator serves Building 1. A 750-kW generator set serves Buildings 20 and 24, and 60-kW and 150-kW generators serve Buildings 100 and 101. Several of these generator sets include belly tanks, which are considered ASTs. These tanks include one 1,100-gallon diesel tank, one 2,400-gallon diesel tank, and an 80-gallon diesel tank that are connected to their respective generators. A singular 1,100-gallon AST on-site includes heating oil. The AST supplies an oil-fired boiler that heats Buildings 1, 2, 3, and 8 (USACE 2019).

All of the ASTs and USTs on-site are monitored regularly and have no history of leakage. Furthermore, base rules require that only low sulfur fuel be added to ASTs and USTs, and that ASTs and USTs on-site only be filled to 90 percent of their engineered capacities (Fairchild AFB 2012).

Special Hazards

Special hazards that are assumed to be present on-site within buildings on White Bluff include LBP, ACMs, PCB light ballasts, and mercury within older fluorescent light fixtures. The underlayment and insulation in buildings with flat gravel-style roofs reportedly include asbestos, and the pipe wrap near the 250-kW generator also reportedly contains asbestos (Fairchild AFB 2012). It is assumed that there is asbestos in Buildings 1, 2, 3, 7, and 8. However, until sampling can be completed to prove otherwise, it is generally considered that all building materials other than wood, steel, or glass are ACMs. Similarly, there are many structures on-site that were reportedly constructed in the 1950s and that likely have been painted with LBP. While latex paint is the only variety of paint currently used and stored on-site, it is prevailing practice to consider any building constructed prior to 1979 as likely to contain at least a substrate of lead-based or lead-containing paint.

Environmental Contamination

There are currently no active ERP sites or Military Munitions Response Program sites on White Bluff. Additionally, a search of Ecology's contamination cleanup website identified no contaminated sites on or in the immediate vicinity of White Bluff (Ecology 2019).

Radon

The USEPA rates Spokane County, Washington, as radon Zone 1. Counties in Zone 1 have a predicted average indoor radon screening level greater than 4 pCi/L (USEPA 2019c).

AFI 48-148, *Ionizing Radiation Protection,* specifies the following requirements for protection of personnel and the public from avertable doses of radon exposure:

- Newly constructed facilities should not be tested for 1 year after completion of construction to allow for foundation settling.
- Monitoring should be performed using a long-term monitor deployed in the lowest occupied location of the facility.
- Structures that exceed 4 pCi/L should be mitigated by Civil Engineering to levels As Low as Reasonably Achievable.

- Remediated structures should be reassessed by the Installation Radiation Safety Officer for ambient radon concentrations no earlier than 2 weeks and no later than 6 months post remediation to validate the efficacy of the remedial action.
- For new, permanent operating locations, a sampling of the facilities should be assessed for radon.
- Civil Engineering should design and construct new facilities on medium- and high-risk installations with radon-resistant features.

3.8 BIOLOGICAL RESOURCES

3.8.1 Definition of the Resource

Biological resources include native or naturalized plants and animals and the habitats in which they exist, such as grasslands, forests, and wetlands. Protected and sensitive biological resources include ESA-listed species (threatened or endangered) and those proposed for ESA listing as designated by the USFWS (terrestrial and freshwater organisms), and migratory birds. Migratory birds are also protected under the MBTA. Sensitive habitats include designated critical habitat protected by the ESA and sensitive ecological areas designated by state or other federal rulings. Bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (BGEPA). Sensitive habitats also include wetlands, plant communities that are unusual or limited in distribution, and important seasonal use areas for wildlife (e.g., migration routes, breeding areas, crucial summer and winter habitats).

The ESA (16 USC Section 1531 *et seq.*) establishes a federal program to protect and recover imperiled species and the ecosystems upon which they depend. The ESA requires federal agencies, in consultation with the USFWS, to ensure that actions they authorize, fund, or carry out are not likely to jeopardize the continued existence of any listed species or result in the destruction or adverse modification of designated critical habitat of such species. Jeopardy occurs when an action is reasonably expected, directly or indirectly, to diminish numbers or reproduction, or to cause destruction of a species so that the likelihood of survival and recovery in the wild is appreciably reduced. An endangered species is defined by the ESA as any species in danger of extinction throughout all or a significant portion of its range. A threatened species is any species likely to become an endangered species in the foreseeable future. The ESA also prohibits any action that causes a "take" of any listed animal. To take means to "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect or attempt to engage in any such conduct." Listed plants are not protected from take, although it is illegal to collect or maliciously harm them on federal land.

Critical habitat is habitat that is essential to the conservation of a threatened or endangered species. Federal agencies must ensure that their activities do not adversely modify designated critical habitat to the point that it will no longer aid in the species' recovery.

In Washington State, the Washington Department of Fish and Wildlife (WDFW) oversees the listing and recovery of special-status fish and wildlife species, under the provisions of WAC Rule 220-610-110 (*Endangered, Threatened, and Sensitive Wildlife Species Classification*). The Washington Natural Heritage Program tracks rare plant species in the state.

The MBTA of 1918 (16 USC Sections 703–712), as amended, and EO 13186, *Responsibilities of Federal Agencies to Protect Migratory Birds*, require federal agencies to minimize or avoid impacts on migratory birds. Unless otherwise permitted by regulations, the MBTA makes it unlawful to (or attempt to) pursue, hunt, take, capture, or kill any migratory bird, nest, or egg. For actions that could have measurable negative impacts on migratory birds, federal agencies are directed by EO 13186 to develop and implement a Memorandum of Understanding with USFWS to promote the conservation of migratory bird populations.

Bald and golden eagles are protected under the BGEPA, which prohibits the "take" of bald or golden eagles in the United States without a 50 CFR Section 22.26 permit. BGEPA defines "take" as "pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest, or disturb." To "disturb" means "to agitate or bother a bald or golden eagle to a degree that causes, or is likely to cause: (1) injury to an eagle; (2) a decrease in its productivity by substantially interfering with normal breeding, feeding, or sheltering behavior; or (3) nest abandonment, by substantially interfering with normal breeding, feeding, or sheltering behavior." In addition to immediate impacts, this definition also covers impacts that result from human-induced alterations initiated around a previously used nest site during a time when eagles are not present, if, upon the eagle's return, such alterations agitate or bother an eagle to a degree that interferes with or interrupts normal breeding, feeding, or sheltering habits, and causes injury, death, or nest abandonment.

3.8.2 Existing Conditions

Vegetation

The vegetation on White Bluff has not been described in detail to date. The 2012 EA (Fairchild AFB 2012) describes vegetation on White Bluff in terms of Ecological Systems, which are recurring groups of plant communities that are found in similar climatic and physical environments and are influenced by similar dynamic ecological processes (Washington Natural Heritage Program 2015). Mapping associated with this classification system provides a general overview of what vegetation communities are expected to be in a given location, but may not necessarily reflect on-the-ground conditions. The dominant ecological systems that have been mapped at White Bluff include:

- Columbia Basin Foothill and Canyon Dry Grassland
- Columbia Plateau Scabland Shrubland
- Introduced Upland Vegetation—Annual Grassland
- Northern Rocky Mountain Ponderosa Pine Woodland and Savanna

The following descriptions provide a general indication of the habitat types and species that may be present within each ecological system (Washington Natural Heritage Program 2015).

Columbia Basin Foothill and Canyon Dry Grassland. This ecological system is characterized by perennial bunchgrasses and forbs, with bare ground, gravel, and rock commonly found between bunches. Bluebunch wheatgrass (*Pseudoroegneria spicata*) and Fendler threeawn (*Aristida purpurea* var. *longiseta*) are common in dry occurrences, and Idaho fescue (*Festuca idahoensis*) and prairie junegrass *(Koeleria macrantha)* are common on more moist sites, often with heavy litter cover. Remnants of this native ecological system may be found in undeveloped areas on White Bluff, but are unlikely given the high level of disturbance from previous agricultural practices and ongoing foot traffic and equipment associated with training operations and fire control practices.

Columbia Plateau Scabland Shrubland. This ecological system consists of extensive low, xeric shrublands. Total vegetation cover is typically less than 50 percent. And often much less than that. Vegetation is characterized by an open dwarf-shrub canopy dominated by scabland sagebrush (*Artemisia rigida*) along with other shrub and dwarf-shrub species. Low cover of perennial bunchgrasses and scattered forbs characterize these sites. Individual sites can be dominated by grasses and semi-woody forbs. Annuals may be seasonally abundant, and cover of moss and lichen is often high in undisturbed areas. Remnants of this native ecological system may be found in undeveloped areas on White Bluff, but are unlikely given the high level of disturbance from previous agricultural practices and ongoing foot traffic and equipment associated with training operations and fire control practices.

Introduced Upland Vegetation—Annual Grassland. These vegetation communities have been introduced due to farming or agricultural practices. In some locations, disturbance has led to ruderal conditions, where dominant species are weedy or non-native. This ecological system is prevalent on White Bluff.

Northern Rocky Mountain Ponderosa Pine Woodland and Savanna. This ecological system consists of historically fire-maintained woodlands and savannas, typically with 10 to 60 percent canopy coverage. Ponderosa pine (*Pinus ponderosa* var. *ponderosa*) is the predominant conifer species. Douglas-fir (*Pseudotsuga menziesii*) may be present in the tree canopy but is usually absent. The understory can be shrubby; common vegetation includes big sagebrush (*Artemisia 3-17asserine3-17*), kinnikinnick (*Arctostaphylos uva-ursi*), curl-leaf mountain mahogany (*Cercocarpus ledifolius*), mallow ninebark (*Physocarpus malvaceus*), antelope bitterbrush (*Purshia 3-17asserine3-17*), common snowberry (*Symphoricarpos albus*), chokecherry (*Prunus virginiana*), Saskatoon serviceberry (*Amelanchier alnifolia*), and rose (*Rosa* spp.). Open stands support grasses such as bluebunch wheatgrass, needle and thread (*Hesperostipa* spp.), needlegrass (*Achnatherum* spp.), Idaho fescue, or rough fescue (*Festuca campestris*). Historically, the vegetation on White Bluff would have primarily matched the description of this ecological system, which can still be found on the western half of the GSU (Fairchild AFB 2012).

During a site visit in 2012, biologists confirmed that vegetation on White Bluff resembles that found in the ecological systems described above. However, development and modification have reduced, fragmented, and diminished the quality and quantity of native vegetation communities (Fairchild AFB 2012). As shown on aerial imagery (Figure 3.8-1), the northeastern portion of White Bluff and other areas in the eastern half of the site have been cleared of native vegetation and are regularly mowed. Other areas on the site support immature ponderosa pine, which increases in density to the west, where there is less development. White Bluff supports expansive areas dominated by non-native grasses, as well as areas of bare ground, planted turf, and ruderal vegetation (Fairchild AFB 2012).

Table 3.8-1 summarizes the existing conditions at each available development site identified in the Master Plan update, based on aerial imagery of these areas.

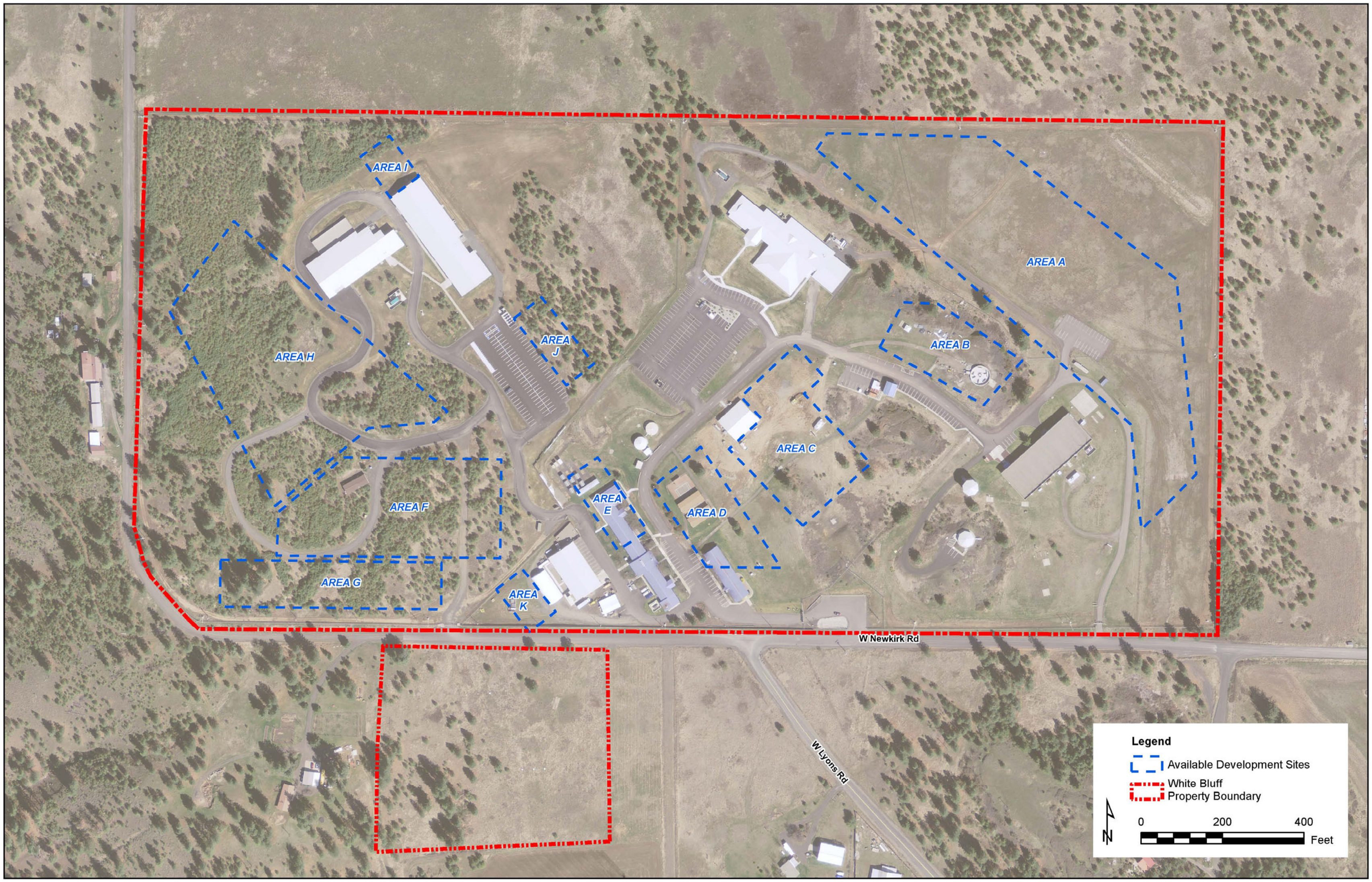

Figure 3.8-1: Aerial Imagery Showing Vegetation at White Bluff

Table 3.8-1: Existing Conditions at Available Development Sites on White Bluff

Development Area	Size	Possible Projects/ Alternatives	Existing Conditions
Area A	320,630 ft^2 (7.4 acres)	C01 C01-1	Mowed grass, parking lot
Area B	46,416 ft^2 (1.1 acres)	C03 C04	Bare ground/exposed rock, mowed grass, shrubs (on slope), road, old foundation
Area C	75,289 ft^2 (1.7 acres)	C02 C05	Bisected by road, mowed grass, scattered shrubs and small trees, bare ground
Area D	45,221 ft^2 (1.0 acre)	EC01-1 EC03 EC03-1 EC05 EC05-2	Part of Building 1, old tennis court, two storage trailers, roads, mowed grass, landscaped grass, ornamental trees, scattered shrubs/trees
Area E	18,957 ft^2 (0.4 acre)	EC01 EC03-2 EC05-1 SO09	Building 3, sidewalks, mowed grass, landscaped grass, ornamental trees
Area F	122,710 ft^2 (2.8 acres)	SO03 SO04 SO04-1 SO05-2 SO06-2 SO07-2	Ponderosa pine woodland, grassland, Building 100, trailer
Area G	62,455 ft^2 (1.4 acres)	SO08	Ponderosa pine woodland
Area H	215,555 ft^2 (4.9 acres)	SO04-2 SO05 SO05-1 SO06 SO06-1 SO07 SO07-1 C01-1	Ponderosa pine woodland, roads
Area I	10,887 ft^2 (0.2 acre)	SO01	Mowed grass, ponderosa pine woodland, scattered shrubs, bare ground, equipment storage
Area J	18,064 ft^2 (0.4 acre)	SO02, SO02-1	Ponderosa pine woodland, grassland, bare ground
Area K	10,793 ft^2 (0.2 acre)	EC04	Cleared of vegetation; equipment storage

ft^2 = square foot/feet

Affected Environment

While native grasses and sagebrush are present on White Bluff, non-native weedy species are dominant in all areas except for the ponderosa pine stands. Noxious weed species found on White Bluff include musk thistle *(Carduus nutans),* Canada thistle *(Cirsium arvense),* diffuse knapweed *(Centaurea diffusa),* spotted knapweed *(Centaurea stoebe),* leafy spurge (*Euphorbia esula*)*,* common bugloss (*Anchusa officinalis*) and Dalmatian toadflax *(Linaria dalmatica).*

The Fairchild AFB *Integrated Natural Resources Management Plan,* which includes White Bluff as a land holding of the main installation, lists invasive species as a management concern (Fairchild AFB 2018a). There is no formal noxious weed control program on White Bluff. However, JPRA regularly mows accessible areas. Additionally, Spokane County periodically looks for noxious weeds on White Bluff from adjacent roadways. If noxious weeds are noted, the County sends a letter to JPRA, and a contractor treats the identified populations using chemical methods.

Wildlife

The chain link perimeter fence surrounding White Bluff impedes movement of some wildlife onto the GSU. Large mammal species in particular are unlikely to be found on White Bluff. However, birds, small mammals, herpetofauna, and invertebrates can cross the perimeter fence. Wildlife found on White Bluff may include species that use developed/suburban, grassland, and pine forest habitats, such as wild turkeys, American badgers, coyotes, pocket gophers, and various species of mice and voles (Fairchild AFB 2012).

In 2013, a total of 49 bird species were detected during avian surveys on White Bluff (Sperry 2014). Only upland species were encountered. Species with widespread detections included American robin (*Turdus migratorius*), cedar waxwing (*Bombycilla cedrorum*), chipping sparrow (*Spizella 3-20asserine*), Say's phoebe (*Sayornis saya*), and mountain chickadee (*Poecile gambeli*). Herpetofauna surveys on White Bluff during 2013 determined that White Bluff appears to have a high diversity of herpetofauna, with five species detected: racer (*Coluber constrictor*), western terrestrial garter snake (*Thamnophis elegans*), gopher snake (*Pituophis catenifer*), western skink (*Eumeces skiltonianus*), and western toad (*Anaxyrus boreas*) (Sperry 2014). Many of the detections were associated with rock outcroppings or refuse piles.

There are no water features on-site; therefore, no fish or aquatic macroinvertebrates are present (Fairchild AFB 2012).

Species of Concern

No species federally listed under the ESA are known to occur on White Bluff (see Table 3.8-2), and based on a review of a USFWS species list generated for the project (USFWS 2019a), suitable habitat is not present for federally listed species on White Bluff. The current range of Spalding's catchfly (*Silene spaldingii*) includes White Bluff. This species occurs in bunchgrass grasslands and sagebrush-steppe, and occasionally in open-canopy pine stands (USFWS 2019b). According to data from the Washington Natural Heritage Program (2019), there are no records of this species on or in the vicinity of White Bluff, and it is not believed that there is any suitable habitat for the species on the GSU.

With the exception of ferruginous hawk, no state-listed species are known to occur on White Bluff. Sensitive bird species, including those listed in Table 3.8-2 and numerous other migratory bird species, are able to cross the perimeter fence and may use habitats on White Bluff (Fairchild AFB 2012). Some nesting or roosting habitat may occur in the stands of ponderosa pines located on the western half of the GSU, and there may be some suitable habitat for ground-nesting birds in the north-central part of the GSU, west of Building 12 (Fairchild AFB 2012). Burrowing owls may occupy gopher and ground squirrel holes in the approximately 7 acres of grassland habitat present in the north-central part of the site (Fairchild AFB 2012). However, their presence is unlikely given the routine ground disturbance that occurs in this area to support training, perimeter security, and fire control measures.

Affected Environment

During the 2013 survey, the western toad, a state Candidate species, was observed at White Bluff, although the extent of its occurrence on the GSU is unknown. The individual that was detected was found under a piece of plywood associated with a large refuse pile consisting of metal sheeting, plywood, and hay bales (Sperry 2014). Therefore, certain human-created environments on White Bluff may provide habitat for this species.

No bird species of conservation concern (apart from migratory birds) were detected at White Bluff during the 2013 surveys (Sperry 2014).

According to the WDFW, the project area includes priority winter habitat for the Lincoln-Spokane Herd of the Rocky Mountain mule deer (*Odocoileus hemionus hemionus*) (WDFW 2019a). However, given the presence of the perimeter fence around the GSU, this species is unlikely to be found on White Bluff.

Potential habitat for Idaho gooseberry, a state sensitive species, may occur in the ponderosa pine stands. However, no surveys for this species have been conducted to date. According to data from the Washington Natural Heritage Program (2019), there are no records of this species on White Bluff; the closest known population is approximately 5.5 miles away.

Table 3.8-2: Federally and State-Listed Threatened, Endangered, and Candidate Species Occurring on or Near White Bluff

Common Name	Scientific Name	Federal Status	State Status
Birds			
Bald eagle	*Haliaeetus leucocephalus*	Delisted, M	--
Golden eagle	*Aquila chrysaetos*	--	C
Ferruginous hawk	*Buteo regalis*	--	T
Northern goshawk	*Accipiter gentilis*	--	C
Burrowing owl	*Athene cunicularia*	--	C
Loggerhead shrike	*Lanius ludovicianus*	--	C
White-headed woodpecker	*Picoides albolarvatus*	--	C
Mammals			
Townsend’s big-eared bat	*Corynorhinus townsendii*	--	C
Herpetofauna			
Western toad	*Anaxyrus boreas*	--	C
Vascular Plants			
Idaho gooseberry	*Ribes oxyacanthoides ssp. Irriguum*	--	S

Sources: Fairchild AFB 2012, Fairchild AFB 2018a, WDFW 2019b
T = Federally or state-listed threatened species; S = State-listed sensitive species; C = Federal or state candidate for listing; M = Monitor; -- = no status

3.9 CULTURAL RESOURCES

3.9.1 Definition of the Resource

Cultural resources are prehistoric and historic archaeological sites, structures, buildings, artifacts, districts, and any other physical evidence of human activity considered important to a culture or community for scientific, traditional, religious, or other reasons. This definition includes Native American sacred sites and Traditional Cultural Properties (TCPs) as well as archaeological and architectural resources. Under Section 106 of the NHPA, as amended (54 USC Section 300101 *et seq.*), federal agencies must consider effects to "historic properties" from an action or undertaking. Historic properties are defined (54 USC Section 300308) as cultural resources that are listed, or are eligible for listing, on the NRHP. Under NHPA Section 106, Fairchild AFB is required to consider the effects of its actions on historic properties.

The NHPA Section 106 regulatory compliance process consists of four primary stages. These include: (1) initiation of the Section 106 process (36 CFR Section 800.3); (2) identification of historic properties (36 CFR Section 800.4), which includes identifying historic properties potentially affected by undertakings; (3) assessment of adverse effects (36 CFR Section 800.5), which determines whether the undertaking will affect historic properties and if effects to those properties might be adverse; and (4) resolution of adverse effects (36 CFR Section 800.6) as agreed upon between consulting parties.

Fairchild AFB coordinates NEPA compliance with their NHPA responsibilities for White Bluff to ensure that historic properties and cultural resources are given adequate consideration during the preparation of environmental documents such as this EA. Per AFI 32-7065, *Cultural Resources Management,* Sections 3.3.1 and 3.3.2, and 36 CFR Section 800.8, Fairchild AFB incorporates NHPA Section 106 review into the NEPA process or substitutes the NEPA process for a separate NHPA Section 106 review of alternatives.

3.9.2 Existing Conditions

As defined under 36 CFR Section 800.16(d), "the Area of Potential Effect" (APE) is the geographic area or areas within which an undertaking may directly or indirectly cause changes in the character or use of historic properties, if such properties exist. The APE is influenced by the scale and nature of the undertaking and may be different for different kinds of effects caused by the undertaking. For the purposes of this analysis, the term APE is synonymous with ROI for cultural resources.

The USAF has defined the APE for direct effects to historic properties as the specific footprint areas that would be impacted by the 21 distinct projects proposed at White Bluff, which are described in Chapter 2 (as shown on Figure 2.2-1).

The APE for indirect effects is defined as a 1,000-foot buffer around the individual project areas. Given the auditory and visual environment of an active site such as White Bluff, this buffer should capture all locations from which individual project construction or demolition activity may be visible or audible.

As discussed below, there are no NRHP-eligible historic buildings or structures, and no NHRP-eligible archaeological or sacred sites or locations of traditional cultural importance within the Proposed Action's APE.

All of White Bluff has been systematically surveyed for archaeological resources (Fairchild AFB 2018b; Smith 2018). One rock alignment feature on a low hillside was erroneously recorded as a prehistoric archaeological site in 1985. This site, listed at the Washington SHPO as site 45SP90, consists of five, circular and semi-circular, basalt rock features at three separate loci. Originally, the feature was thought to have been a prehistoric observation post for hunting or defense. Further evaluation concluded the alignments were constructed by military police for defensive purposes and as part of military exercises on-site (Smith 2018). As a result, the site was recommended as not eligible for the NRHP in September 2018. No other archaeological resources are known to be present at White Bluff. Given that nearly the entire GSU has been developed or otherwise disturbed, it has been found to generally have low to no probability for intact archaeological sites (Smith 2018).

All of White Bluff's buildings and structures have been individually evaluated for NRHP eligibility. The entire GSU has also been evaluated as a potential historic district. (Fairchild AFB 2018b; Heritage

Consulting Group 2008). Of the 16 complete or partial structures at White Bluff, 10 were built in the 1980s or later, five were constructed in 1957, and one—of which only a foundation remains—was constructed in 1963. Of the historic-aged buildings, all have been remodeled and lack historic integrity. None meets the criteria for NRHP eligibility found at 36 CFR Section 60.4, either individually or in terms of a potential historic district (Heritage Consulting Group 2008). The SHPO concurred with these findings in a letter dated December 2008 (Department of Archaeology and Historic Preservation; Appendix A).

A total of 21 federally recognized tribes consult with Fairchild AFB and associated training areas. Given the various regions and lands Fairchild AFB operates in, consulting tribes are organized by their geographically separate units and nearby training areas under the management of Fairchild AFB (Fairchild AFB 2018c). Fairchild AFB consults with four federally recognized tribes as part of the NEPA and Section 106 processes at White Bluff: (1) the Coeur d'Alene Tribe; (2) the Confederated Tribes of the Colville Reservation; (3) the Kalispel Tribe of Indians; and (4) Spokane Tribe of Indians. Fairchild AFB is consulting with these Tribes on the proposed projects. The Native American tribal governments that are being coordinated with regarding the Proposed Action and alternatives are listed in Appendix A, along with Fairchild AFB correspondence and any responses received.

No tribal sacred sites or properties of traditional religious or cultural importance have been identified on White Bluff. Based on the location of proposed project sites, the previous archaeological surveys, Fairchild AFB has determined that the proposed individual project APEs contain no identified archaeological sites eligible for listing on the NRHP, historic districts, cemeteries, sacred sites, TCPs, or other tribal resources.

3.10 EARTH RESOURCES

3.10.1 Definition of the Resource

Earth resources consist of the Earth's surface and subsurface materials. Within a given physiographic province, these resources typically are described in terms of topography, physiography, geology, soils, and, where applicable, geologic hazards.

Topography and physiography pertain 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. Such information derives from field analysis based on observations of the surface and borings to identify subsurface composition.

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. In appropriate cases, soil properties must be examined for their compatibility with construction activities or types of land use.

Prime farmland is protected under the Farmland Protection Policy Act (FPPA) of 1981, and is defined as land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops, and is available for these uses. The intent of the FPPA is to minimize the extent that federal programs contribute to the unnecessary conversion of farmland to nonagricultural uses. The implementing procedures of the FPPA and the United States Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) require federal agencies to evaluate the adverse impacts (direct and indirect) of their activities on prime and unique farmland and farmland of statewide and local importance, and to consider alternative actions that could avoid adverse impacts. Unique farmland is land other than prime farmland that is used for the production of specific high-value food and fiber crops. Farmlands of statewide and local importance are lands that do not meet the criteria for prime or unique farmland but are considered to be important for the production of food, feed, fiber, forage, and oilseed crops by state or local agencies (USDA NRCS 2019).

USDA NRCS soil surveys provide general information about the suitability of mapped soil types for construction uses, such as those associated with the proposed projects. Although on-site evaluation of site conditions is necessary, this general information can be helpful in determining whether there are limitations associated with a particular soil map unit. For each specified use, a soil map unit is identified as not limited, somewhat limited, or very limited for a particular use (e.g., construction of small buildings, roads, streets, and utilities) (USDA NRCS 2018). A site may be limited by factors such as slope, depth to hard bedrock, flooding, ponding, subsidence, and depth to saturated zone.

Geologic hazards are defined as a natural geologic event that can endanger human lives and threaten property. Examples of geologic hazards include earthquakes, landslides, rock falls, ground subsidence, and avalanches.

3.10.2 Existing Conditions

Topography and Physiography

White Bluff is located at the northern edge of the Columbia Plateau, an area of gently undulating hills or flat lands located in eastern Washington, western Idaho, and northeast Oregon (Tolan et al.1989 cited in Fairchild AFB 2012). The elevation of the facility varies from approximately 2,280 feet mean sea level (MSL) to about 2,340 feet MSL. The topography of the site descends generally to the southwest. A northwest-southeast oriented ridge of land is located on the eastern half of the site. A basalt outcrop south of the ridge is the highest point on-site. This southern outcrop once included communication equipment, the foundations of which still remain. The northeast corner of the site, which is the lowest elevation area on-site, consists of flatland with slight depressions and functions as the facility's primary on-site septic drain field. The topography on the eastern portion of the site descends to the northeast (Fairchild AFB 2012).

Regional Geology

Columbia Plateau geology consists of basalt layers from intermittent Miocene-era fissure volcano eruptions. These events occurred over thousands of years and thousands of square miles throughout eastern Washington, pushing the Spokane River north to its present location. Generally, the plateau is level, although folding occurred in northern sections near Spokane.

The landscape of the area was further affected by repeated glacial flooding resulting from catastrophic breakage of an ice dam at Lake Missoula (Eliot et al. 1986 cited in Fairchild AFB 2012). The floods scoured the landscape of soil, leaving bare basalt in many areas. Mazama ash and windblown silt (loess), have since settled on the landscape, and helped to define the Channeled Scablands of eastern Washington, which describes the general physiognomy of the area.

The primary geology on-site includes basalt of the Columbia River Basalt Group. Shallow basalt, known as the Priest Rapids member, forms prominent rim rock and steep cliffs, commonly with well-developed columnar jointing. This geology is somewhat exposed southwest of White Bluff along the ridgeline overlooking Deep Creek. Some basalt outcrops occur on White Bluff, but are mostly overlain by flood deposits and gravel, and capped by overlain loess and ash (Fairchild AFB 2012). The basalts in the region are underlain by massive granitic rock (Fairchild AFB 2012).

Soils

Three soil units have been mapped by the USDA NRCS at White Bluff (USDA NRCS 2018): Cheney ashy silt loam, 0 to 8 percent slopes; Northstar-Rock outcrop-Rockly complex, 0 to 15 percent slopes; and Stutler-Springdale complex, 3 to 15 percent slopes (Figure 3.10-1).

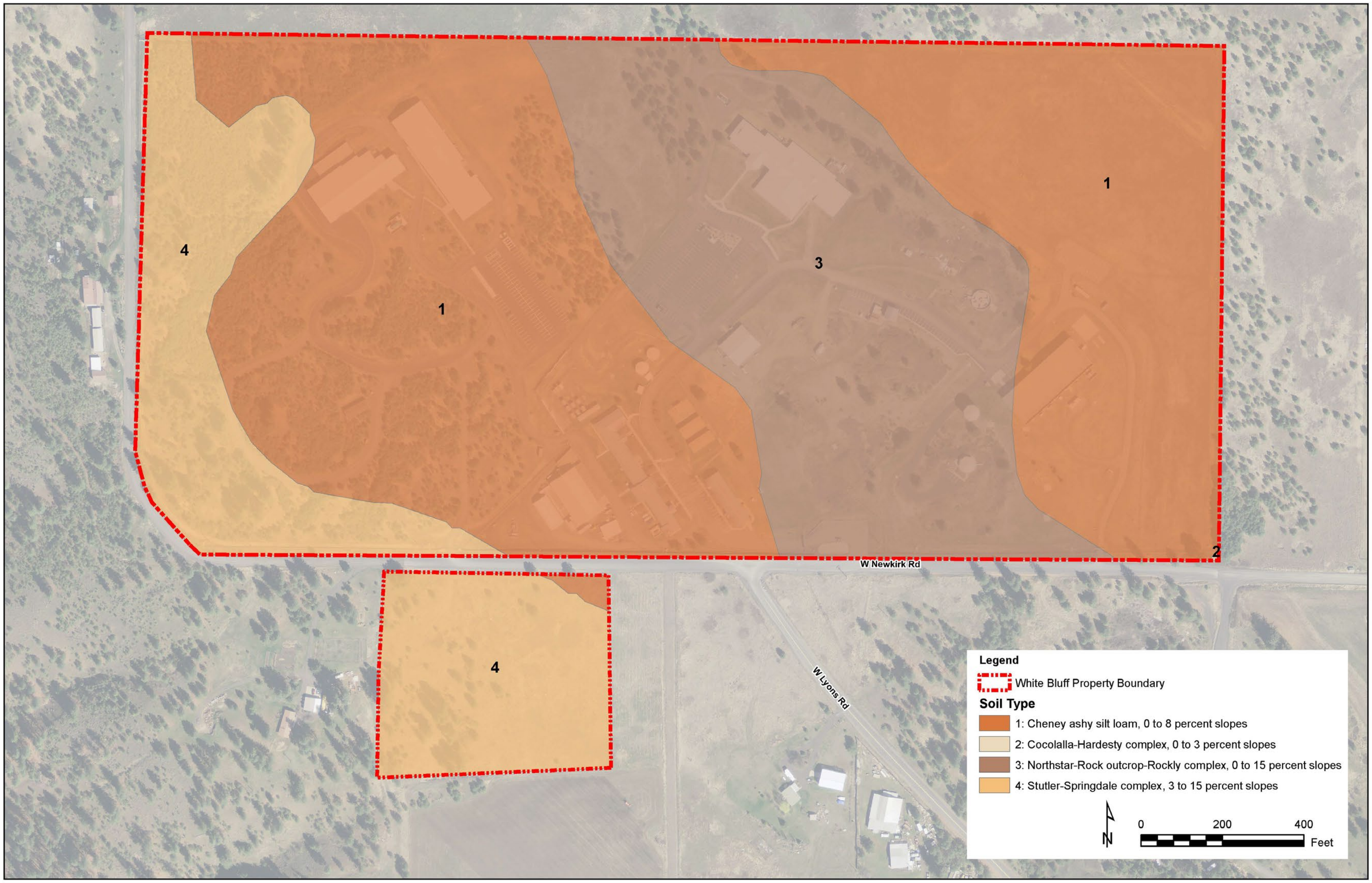

Figure 3.10-1: Mapped Soil Types on White Bluff

- **Cheney ashy silt loams** are deep, well-drained soils with a low frequency of ponding and flooding. They occur on outwash plains and are generally associated with grassland vegetation. They do not have limitations for construction of small commercial buildings (USDA NCRS 2018).
- **Northstar and Rockly soils** occur on plateaus, and are well-drained cobbly and gravelly loams with a shallow depth to bedrock and no ponding or flooding. These soils are somewhat or very limited for construction of small commercial buildings because of depth to hard bedrock and presence of large stones (USDA NCRS 2018).
- **Stutler and Springdale soils** are gravelly ashy silt loams and coarse sandy loams that occur on outwash plains. They are well-drained to somewhat excessively drained with no ponding or flooding. They are somewhat limited for construction of small commercial buildings because of the presence of large stones (USDA NCRS 2018).

Cheney Ashy silt loams are classified as prime farmland. Stutler-Springdale soils are classified as prime farmland if irrigated. Northstar-Rock outcrop-Rockly complex soils are not considered prime farmland (USDA NRCS 2018). While White Bluff has soil types that are considered prime farmland, all land within the GSU is used for military mission purposes, is committed for future development on the GSU, and is not currently available for agricultural use. Therefore, soils within the proposed project locations are not considered “farmland” and are not subject to the FPPA.

Geologic Hazards

According to the Spokane County Geologic Hazards and Constraints map (Spokane County 2019d, there are no geologic hazards mapped on White Bluff. The site is at moderate risk from geologic hazards such as volcanism and earthquakes. United States Geological Survey (USGS) seismic hazard maps are based on current information regarding the frequency and intensity of earthquakes. The maps show the levels of horizontal shaking that have a 2 in 100 chance of being exceeded in a 50-year period. Shaking is expressed as a percentage of the force of gravity (percent g) and is proportional to the hazard faced by a particular type of building. In general, little or no damage is expected at values less than 10 percent g, moderate damage could occur at 10 to 20 percent g, and major damage could occur at values greater than 20 percent g. The 2014 National Seismic Hazard map produced by the USGS shows that White Bluff has a seismic hazard rating of approximately 12 percent g (USGS 2014).

3.11 SOCIOECONOMIC RESOURCES

3.11.1 Definition of the Resource

Socioeconomics encompasses economies and social elements such as population levels and economic activity. Factors that describe the socioeconomic environment represent a composite of several interrelated and non-related attributes. Indicators of economic conditions for a geographic area include demographics, median household income, unemployment rates, employment, and housing data. Data on employment identify employment by industry or trade and unemployment trends. Data on personal income in a region are used to compare the before and after effects of any jobs created or lost as a result of a proposed action. Data on industrial, commercial, and other sectors of the economy provide baseline information about the economic health of a region.

3.11.2 Existing Conditions

Using census data (United States Census Bureau 2000, 2010, 2017a), this analysis describes socioeconomic characteristics at three scales: at and adjacent to White Bluff, within Spokane County, and within the State of Washington. Because the area around the facility is largely rural, the census tract the facility lies within (10402) covers a large area (175 square miles) that does not accurately represent the developments near the facility. Three other adjacent census tracts were added to the ROI to better represent the areas surrounding the project site: Tracts 10601, 13700, and 10401 (Figure 3.11-1). By including these tracts (collectively the Local Impact Area [LIA]), Airway Heights and the Highway 2 and I-90 corridors near the project site are represented in the assessment to give a better overall representation of the regional conditions. The ROI illustrates socioeconomic characteristics for the area nearest to White Bluff and the geographic area where most impacts from the selected projects would be expected to occur.

Demographics

Table 3.11-1 summarizes the population in the vicinity of White Bluff in 2017. In the LIA, the population was estimated at 21,008, which is approximately 4.3 percent of the total population of Spokane County. The Airway Heights area, which occupies most of Census Tract 10401, accounts for about 35 percent of the population in the LIA. Census Tract 10402, the largest tract, accounts for about 34 percent of the total, but with the population dispersed over a much larger area. Census Tracts 10601 and 13700 account for 18 percent and 15 percent of the population, respectively.

The LIA has experienced a 32 percent population growth since the 2000 Census. This growth outpaced the overall growth of Spokane County over the same period, which increased by roughly 17 percent.

In 2009, Spokane County published the *10-Year Urban Growth Area Update* (Spokane County 2009), which projected growth in the county population of approximately 150,000 by 2031, with two-thirds of this growth expected to occur with the Urban Growth Area (UGA). While the LIA is not within the UGA, it is adjacent to both the city of Spokane and Airway Heights, both of which are in the UGA. As Spokane County continues to grow in the future, population growth in the LIA is likely to outpace other rural areas of the county as development continues in and adjacent to the UGA.

Population

Based on data from the United States Census Bureau (2000, 2010, 2017a), the total population for the LIA was 21,008, which is a 32.0 percent increase since 2000. Population increases in individual census tracts in the LIA varied widely, ranging from 7.2 percent in Tract 10601 to 63.3 percent in Tract 13700. The population of Spokane County in 2017 was 490,764, which represents a 17.4 percent increase since 2000 (Table 3.11-1). The population of the Spokane-Spokane Valley Metropolitan Statistical Area increased at a slightly lower percentage (16.6 percent) than Spokane County from 2000 to 2017, while Washington had a greater increase (21.6 percent).

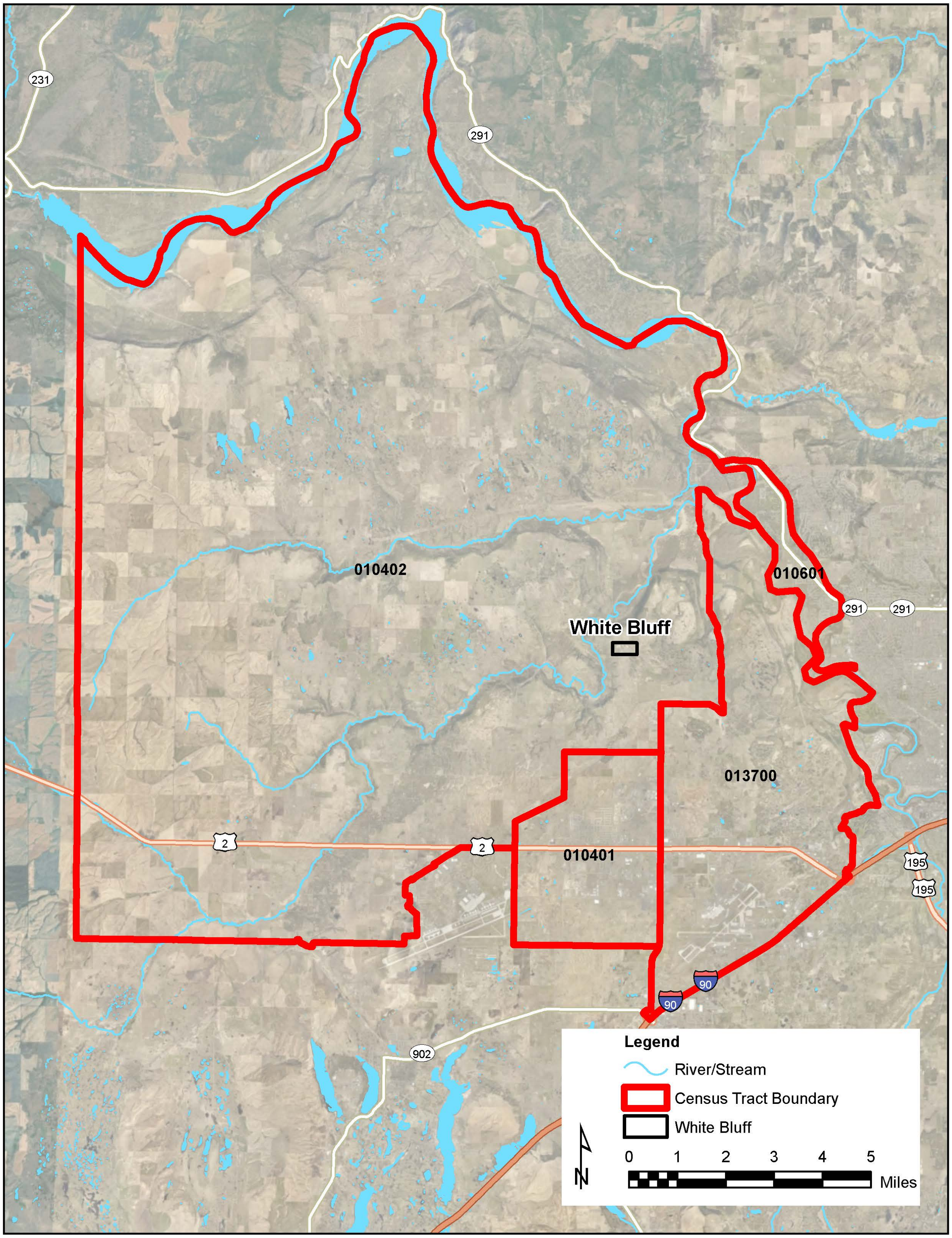

Figure 3.11-1: Census Tracts Included in the Demographic Analysis

Table 3.11-1: Total Population in the Vicinity of White Bluff

Geographic Area	2000	2010	2017[a]	Percentage Change 2000-2017
Spokane County	417,939	471,221	490,764	17.4
Spokane-Spokane Valley Metropolitan Statistical Area	469,737[b]	527,753[b]	547,688	16.6
Washington	5,894,121	6,724,540	7,169,967	21.6
Census Tract 10401	4,642	6,246	6,843	47.4
Census Tract 10402	5,820	6,937	7,163	23.1
Census Tract 10601	3,548	3,490	3,802	7.2
Census Tract 13700	1,959	3,076	3200	63.3
All Census Tracts Combined (LIA)	15,969	19,749	21,008	32.0

Sources: United States Census Bureau 2000, 2010, 2017a
Notes:
a. The 2017 total population data are estimates from the 2017 ACS 5-Year Population Estimate.
b. The Spokane-Spokane Valley, Washington Metropolitan Statistical Area (MSA) consists of Pend Oreille, Spokane, and Stevens Counties in Washington. This MSA did not exist during the 2000 and 2010 Censuses; therefore, the total population for the MSA in 2000 and 2010 was calculated by adding the individual 2000 and 2010 populations of the three counties.

Employment and Income

The workforce population of White Bluff is approximately 90 personnel, of which 80 percent are civil service, 10 percent are military, and 10 percent are contractors. The main economic contribution of these employees within the LIA is based on purchase of goods and services at local business, as well as additional contribution by those employees that live within the LIA and Spokane County. While the presence of nearby Fairchild AFB, with roughly 5,000 employees, has a much stronger impact on the regional economy than White Bluff, the facility does contribute positively to the businesses in the LIA and within the larger regional economy of Spokane County.

In 2017, median household income in the LIA ranged between $45,239 and $64,656 (see the Environmental Justice subsection). The median household income for Tracts 10401 ($45,239) and 13700 ($51,709) was lower than that of Spokane County ($52,159), while the median income in Tracts 10601 ($64,656) and 137 ($51,709) was higher. The per capita income for all census tracts was higher than that of Spokane County ($28,325), save for Tract 10401 ($14,151) which was significantly lower.

Table 3.11-2 summarizes employment in the vicinity of White Bluff. The total number of employed people in the civilian labor force in Spokane County in 2017 was 236,389. The industry employing the highest percentage of the civilian labor force in Spokane County, Spokane-Spokane Valley MSA, Washington State, and the LIA was the educational services and health care and social assistance industry. This industry employed more than 25 percent of the labor force in Spokane County, the Spokane-Spokane Valley MSA, and Census Tracts 10402, 10601, and 13700, but a slightly smaller proportion of the labor force in Census Tract 10401 and Washington State (United States Census Bureau 2017b). The top private employers in the greater Spokane area are Providence Healthcare, Multi-Care Inland Northwest Region, and Kalispel Tribal Economic Authority/Northern Quest Resort and Casino. The top public employers are Fairchild AFB, State of Washington, and Spokane Public Schools (Greater Spokane Incorporated 2019).

In 2017, persons in the armed forces accounted for 0.6 percent of the total Spokane County labor force (age 16 and older). Persons in the armed forces made up similar percentages of the labor forces of the Spokane-Spokane Valley MSA and Washington. The percentage of persons in the armed forces in the LIA was higher, ranging from 1.2 to 5.3 percent by census tract (United States Census Bureau 2017b). The total economic impact of White Bluff in the region is unknown.

As of December 2018, the annual average unemployment rate (not seasonally adjusted) in Spokane County (preliminary), Spokane-Spokane Valley MSA (preliminary), and Washington was 5.2 percent, 5.4 percent, and 4.5 percent, respectively (Bureau of Labor Statistics 2019).

Table 3.11-2: Employment by Industry in the Vicinity of White Bluff

Category	Spokane County	Spokane-Spokane Valley MSA	Washington	LIA
Population 16 years and over in the labor force	238,896	261,446	3,685,819	8,684
Percent of labor force in the Armed Forces	0.6	0.6	0.9	4.1
Population of employed persons in the civilian labor force	236,389	258,908	3,636,944	8,331
Percent Employed Persons in Civilian Labor Force (by Industry)				
Agriculture, forestry, fishing and hunting, and mining	1.2	1.6	2.6	1.1
Construction	5.7	6.0	6.3	5.0
Manufacturing	8.3	8.5	10.3	7.1
Wholesale Trade	3.4	3.3	2.9	2.6
Retail Trade	12.6	12.6	11.8	11.6
Transportation and warehousing, and utilities	4.9	4.9	5.2	5.4
Information	1.6	1.5	2.3	1.6
Finance and insurance, and real estate and rental and leasing	7.0	6.8	5.4	4.6
Professional, scientific, and management, and administrative and waste management services	9.2	9.1	12.6	6.1
Educational services, and health care and social assistance	26.5	26.1	21.6	28.3
Arts, entertainment, and recreation, and accommodation and food services	9.8	9.6	9.2	12.3
Other services, except public administration	5.0	4.9	4.6	4.8
Public administration	5.1	5.2	5.1	9.7

Source: United States Census Bureau 2017b
Note: The data presented in this table are estimates from the 2013–2017 American Community Survey.

3.12 INFRASTRUCTURE

3.12.1 Definition of the Resource

Infrastructure consists of the human-made systems and physical structures that convey services to a building or structure. 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 infrastructure components discussed in this section include utilities, solid waste management, and the transportation system. Utilities include electrical supply, central heating and cooling systems, liquid fuel supply, water supply, sanitary sewer and wastewater treatment, stormwater drainage system, and communications systems. Solid waste management primarily relates to the availability of landfills to support a population's solid waste needs. The transportation system addresses the capacity of roads, parking areas, and access gates to support vehicular movements.

3.12.2 Existing Conditions

Figures showing utilities on White Bluff can be found in the draft Master Site Plan update.

Electrical Supply

Avista Utilities of Spokane, Washington, provides primary electrical power to the site via a 13.2-kilovolt (kV) overhead transmission line that runs along Lyons/Newkirk Roads and terminates at the power pole next to the main entry gate. Power is distributed throughout White Bluff via an underground 13.2-kV primary power distribution system owned by the government (Fairchild AFB 2012). The only on-site overhead power distribution is lighting provided by Avista utilities, which generally surrounds Building 15 and much of the White Bluff perimeter.

Peak demand for electricity has not changed substantially since 2015. Monthly usage ranges from approximately 170,000 kilowatt-hours (kWh) to 250,000 kWh, with an average of 215,000 kWh. The peak demand usage is currently less than 500 kW with a capacity of 1,000 kW.

Heating and Cooling

Heating on White Bluff is a mix of mechanical systems that use propane, fuel oil, and electricity. Buildings 1, 2, 3, and 8 are heated by fuel oil, and Buildings 15 and 10 are heated by electricity. Buildings 11, 12, 20, and 24 are heated using propane. Over the long term, JPRA plans to use natural gas for heating and air-cooled chillers for cooling, with individual boilers and chillers at each building. New building systems are designed for conversion to natural gas when it becomes more economically available.

New construction at White Bluff must comply with the EISA, which includes goals for energy usage and GHG reductions, and requires water efficiency and metering for all new construction at White Bluff.

Fuels

Liquid fuels are used in association with emergency/standby power systems on White Bluff. These systems include the following (USACE 2019):

- A 250-kW generator and fuel system that serves Buildings 2, 3, 8, 11, 16, 19, and the gate
- A 400-kW generator that serves Building 12, located northwest of the building
- A 30-kW generator that serves Building 1
- A 750-kW system that serves Buildings 20 and 24
- A 750-kW generator and two 30,000-gallon fuel tanks that serve Building 15
- A 60-kW and 150-kW generator that serve Buildings 100 and 101

Water Supply

The USAF holds a water right for up to 50 gallons per minute or 80 acre-feet per year, for community supply, cooling supply, and standby fire protection at White Bluff. Water rights were granted on 21 April 1993, and an additional water rights application was submitted to Ecology in June 2004, although the water right has not been awarded to date.

White Bluff receives potable water from a 730-foot-deep well, centrally located near Building 12. The pumped delivery rate is 46 gallons per minute, with a total daily flow of 56,000 gallons. The system utilizes 10-horsepower pumps that deliver from 65 to 100 pounds per square inch of pressure. Water production on White Bluff averages 3 million gallons annually. The average water demand is 5,000 gallons per day, and peak water demand is 14,000 gallons per day during periods of irrigation. All buildings are served by potable water except Buildings 9 and 10.

The primary water storage is provided by two aboveground tanks, with capacities of 65,000 and 39,260 gallons (total combined water storage capacity of 104,260 gallons). Daily tank levels indicate that the pump activates when the tanks are drawn down 1.4 feet. It takes approximately 4.5 hours to replenish the tanks. Two additional tanks (30,000 and 40,000 gallons) located adjacent to Building 15 provide backup fire and domestic capacity for the building. Three water lines deliver the water supply throughout White Bluff. Water Line A is a 6-inch line that serves Buildings 1, 2, 3, 8, 11, and 15. Water Line B is an 8-inch line running from south of Building 17 to Buildings 20 and 24. A branch from this water line serves Buildings 100 and 101. Water Line C is an 8-inch line that serves Building 12 and connects to Water Line A at a hydrant between Buildings 12 and 10.

A booster fire pump at Building 82 is outdated and sometimes requires fabrication of parts to complete needed repairs. The system should deliver 500 gallons per minute of water to nine fire hydrants throughout White Bluff.

Because there is a single well source for water on White Bluff, the GSU is at risk for curtailed operations in the event of the single well becoming non-functional.

Sanitary Sewer and Wastewater Treatment

White Bluff is serviced by three septic tanks/drain fields. The largest is located south of Newkirk Road on 11 acres of property owned by USAF, which serves Buildings 2, 3, 11, 20, 24, 100, and 101. This system has available capacity for additional sewage flow. A second traditional septic tank and drain field located just east of Building 15 only receives sewage effluent from Building 15, and has a daily capacity of 1,750 gallons. The third on-site septic system, associated with Building 12, is a pressure-mounded system with a pre-sand filter, located in the gently sloping open area at the northeast corner of the GSU.

The sanitary sewer system consists of four sewer lines. Sanitary Sewer Line A runs from the drain field south of Newkirk Road, roughly along the extension of Lyons Road, toward Buildings 20 and 24, and serves Buildings 2, 3, 11, 20, 24, 100, and 101. Waste from Buildings 20 and 24 is collected in two holding tanks southwest of Building 24. Liquid and solid waste are separated into the tanks, allowing liquid waste to be pumped for gravity flow into Line A and for solid waste disposal by truck as needed. Building 100 liquid and solid wastes are separated into a three-compartment tank that allows the liquid waste to be pumped to a manhole, allowing gravity flow to Line A. Sewage from Building 100 flows directly into Line A.

Sanitary Sewer Line B runs from a Line A manhole to the southwest corner of Building 8 to Building 27, and serves Buildings 1 and 27. Sanitary Sewer Line C, which serves Building 15, connects to a tank and drain field to the rear of the building. Sanitary Sewer Line D. which serves Building 12, connects to the pressure-mounded septic system with a pre-sand filter, with separated solids and liquids flowing to the drain field in the northeast corner of the site.

Stormwater Drainage System

The stormwater drainage system at White Bluff consists of retention features including stormwater detention ponds, roadside swales, ditches, and bio-infiltration swales. Much of the stormwater runoff from the sites of Buildings 20 and 24 infiltrates into the adjacent landscape. Runoff from the roofs and paved areas associated with Buildings 1, 2, 3, and 8 flows toward a drainage ditch on the north side of Newkirk Road, which infiltrates along the ditch line. Swales along the west and east sides of Buildings 8 and 2 include elevated drywells designed to remove sediments and possible contaminants and to provide additional storage during significant rain events. Roadways at the site primarily use vegetated swales to convey stormwater, with limited use of curb and gutter. Stormwater is conveyed off-site via pipe culverts at roadways.

The White Bluff site is generally well drained, with no locations where ponded water is observed at any time during the year, indicating that the existing stormwater drainage system is adequate for the GSU's needs.

Communications System

CenturyLink provides a connection for voice communications via two T1 digital carrier circuits, one of which connects to Building 1255 on Fairchild AFB and the phone switch in Building 3 on White Bluff, and the other of which connects to the Fairchild AFB phone switch. CenturyLink also provides two DS3 circuits: one for Non-classified Internet Protocol Router Network (NIPRNET) and Secret Internet Protocol Router Network (SIPRNET) data between Building 3 and the Fairchild AFB NIPRNET and SIPRNET, and one for Joint Worldwide Intelligence Communications System (JWICS) data between Building 3 and Air Force JWICS in San Antonio, Texas.

The Building 3 telecommunications room is the POP for the site and the termination point for on-site fiber optic cable serving the site Local Area Networks (LANs). The LANs are either secure (classified) or non-secure (unclassified). The unclassified LAN (NIPRNET) is routed on fiber and copper cabling through a switch and router in Building 3 for connection to Fairchild AFB.

Outside plant voice distribution utilizes multi-pair copper in underground conduit running from Building 3 to Buildings 1, 20/24, 12, 10, 15, and 100, as well as entry control points. Buildings 2, 3, and 8 utilize inter-/intra-building conduit.

Solid Waste Management

Municipal solid waste is managed in accordance with guidelines specified in Air Force Manual 32-7002, *Environmental Compliance and Pollution Prevention,* which require a solid waste management program that incorporates a Solid Waste Management Plan; procedures for handling, storage, collection, and disposal of solid waste; recordkeeping and reporting; and pollution prevention.

Municipal solid waste on White Bluff is collected using waste receptacles and dumpsters. Waste is transferred to either the Spokane Regional Waste to Energy Facility or Graham Road Landfill. Construction and demolition waste is the responsibility of the associated contractor. Contractors are required to comply with federal, state, local, and USAF regulations for collection and disposal of municipal solid waste from White Bluff. Waste contaminated with hazardous waste, ACM, LBP, or other potentially harmful materials is managed in accordance with Air Force Manual 32-7002.

Transportation System

Travel to White Bluff may occur via Highway 2, North Hayford Road, West Euclid Road, North Lyons Road, and Newkirk Road. The GSU is accessed via Newkirk Road, to the west of its junction with North Lyons Road. There are no other public roads into the area.

Affected Environment

Transportation within the facility includes paved and unpaved roadways, parking areas, and pedestrian networks. The primary paved roads and parking areas are constructed of asphaltic concrete pavement over a crushed rock base. Newer roads are a combination of one-lane and two-lane roadways with shoulders. The roads are generally in good condition and provide access to all existing facilities. Parking is provided at or near each of White Bluff's buildings. Sidewalks are only present immediately in front of buildings to connect them to parking areas.

Paved roads service the entry gate, all buildings, and the east auxiliary gate. Unpaved, graded roads service the perimeter of White Bluff and the west side of the GSU. Paved and unpaved trails allow pedestrians and motorized carts to traverse the GSU.

The asphalt is in serviceable condition throughout most of the site, although heaving due to severe weather conditions is apparent in a few locations. Some resurfacing of roads was done a few years ago, and existing asphalt surfaces are currently adequate. Accessible parking is required at all new building sites.

Vehicle access to White Bluff is provided via the main gate located off Newkirk Road, near the intersection with Lyons Road. The gate is available to White Bluff personnel 24 hours a day. It is available to the public between 7 a.m. and 4:30 p.m., although public access is limited. The main gate is also accessible during special training events, as necessary. It is estimate that the gate opens 250 or more times a day, with over 300 vehicles entering and exiting.

3.13 VISUAL RESOURCES

3.13.1 Definition of the Resource

Visual resources include scenic areas, vistas, or thoroughfares and locations that provide natural-appearing or aesthetically pleasing places or views. They include natural views as well as human-made views such as unique buildings, landscaping, and other types of cultural features. Typically, visual resource descriptions focus on those that are recognized as highly valued. For instance, they may be specific places, vistas, and scenic overlooks identified by a visitor's association. However, visual resources are also recognized as views and vistas that people are accustomed to seeing and often take for granted as a general part of the landscape.

The White Bluff Master Plan includes an overall architectural theme and landscape theme for the GSU. In addition to promoting a unified architectural image for White Bluff, the architectural theme specifies one- to two-story buildings made of building materials typical of commercial structures common to the region, with earth tones and colors of the neutral range preferable. The overall landscape theme calls for a natural perimeter landscape buffer of native species planted in natural patterns to screen the activities and buildings on White Bluff from adjacent properties to the north and east.

3.13.2 Existing Conditions

The visual character of White Bluff is determined by construction regulations and design standards, which determine the elevations, architecture, security needs, and colors used for buildings, as well as by the vegetation and geology of the area. Development has altered the site from its native conditions, although some mowed grasslands and forest stands remain. On the west side of the property, stands of immature ponderosa pine dominate the area, and on the east side, an expansive disturbed grassy area prevails (Fairchild AFB 2012).

The administrative and operations buildings are designed to be low profile and blend into the existing landscape, with low elevations and neutral color schemes. Paved and gravel roads connect buildings. Topography does not fluctuate dramatically, although some relief is created by basalt outcrops in the southeast corner of the facility, which are the highest elevation on-site. In contrast, the grassy expanse on the east side of White Bluff, offers the lowest site elevation. Security cyclone fencing separates White Bluff from its surroundings.

Rolling hills of open grassland and ponderosa pine vegetation communities extend in all directions from the facility, broken occasionally by a private home or utility infrastructure. No communities or commercial developments are visible from the site. Grasslands in the surrounding valley transition into forested riparian habitat along nearby Deep Creek. Mount Spokane and the Selkirk Mountain Range are visible to the northeast.

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4.0 ENVIRONMENTAL CONSEQUENCES

4.1 INTRODUCTION

This section describes the potential environmental consequences that are likely to occur as a result of implementation of all alternatives that are being considered and analyzed. Impacts described in this section are evaluated in terms of type (positive/beneficial or adverse), context (setting or location), intensity (none, negligible, minor, moderate, severe), and duration (short-term/temporary or long-term/permanent). The type, context, and intensity of impacts are explained under each resource area. Unless otherwise noted, short-term impacts are those that would result from the activities associated with a project's construction and/or demolition phase, and that would end upon the completion of those phases. Long-term impacts are generally those resulting from the operation of a proposed project.

4.2 LAND USE

Impacts to land use would be considered significant if the proposed projects:

- Are inconsistent with or fail to comply with applicable land use plans or policies
- Preclude the viability of one or more existing land uses
- Preclude the continued use or occupation of an area
- Lead to a violation of any federal regulations or substantially increase areas of incompatible land use within or outside the White Bluff boundary.

4.2.1 Proposed Action/Alternatives

The proposed projects would occur entirely on White Bluff property. The proposed projects would result in a reduction in land that is currently open space, but they would be compatible with White Bluff land use. None of the proposed projects would be incompatible with adjacent land uses outside the White Bluff boundary. All proposed projects would adhere to applicable AT/FP setback guidance (for occupied buildings).

The planning districts proposed in the Master Plan update would more clearly delineate land use patterns on White Bluff than the 2012 Master Plan, which would improve future land use planning on the GSU. The identified locations of the proposed projects would consider these planning districts and identified available development sites, which would help align future development with long-range planning, prevent future land use incompatibilities, and result in efficient use of White Bluff land. Implementing the Master Plan update would have a moderate beneficial impact on land use.

It is expected that the proposed projects would have a moderate beneficial impact on land use as a result of more efficient use of White Bluff land, reuse of demolished building sites and other unused previously developed sites, and optimization of facilities space.

Because none of the proposed projects and alternatives would have a substantive change in land use, preclude use of the property or adjacent properties, fail to comply with applicable land use plans or policies, or threaten public health and safety, no significant impacts to land use would occur.

4.2.2 No Action Alternative

Under the No Action Alternative, the Master Plan update would not be implemented, and none of the proposed facility and infrastructure construction projects or renovation/repair projects would occur. Therefore, there would be no associated impacts to land use designations or compatibility at White Bluff. Under this alternative, the beneficial impacts of long-range development planning and associated facilities space optimization would not occur.

4.3 NOISE

This section analyzes the effects of noise from the proposed projects. Noise impacts would be considered significant if they were to lead to a violation of any federal, state, or local noise ordinance, or substantially increase areas of incompatible land use outside White Bluff.

During the projects, noise would be generated from the outdoor activities of motor vehicle use, construction, demolition, and trenching. These impacts would be short-term, lasting only for the duration of the construction period. In order to evaluate the overall noise impacts, projects scheduled to occur at the same time were evaluated together to determine a combined impact, using information on L_{Amax} sound levels for the types of construction equipment that could be used during project activities, as obtained from the *Federal Highway Administration Highway Construction Noise Handbook* (Federal Highway Administration 2006).

It was assumed that up to three pieces of the loudest equipment could be used concurrently, and that projects occurring in the same year could create concurrent noise emissions. For each planned activity, the three loudest pieces of equipment were considered to operate continuously for an hour, and planned activities that could occur during the same time period were evaluated together. Sound pressure levels were combined logarithmically based on the nature of dB. For example, a single grader at 50 feet is 85 dB(A), but three operating at the same location would be 90 dB(A) at 50 feet. Sound levels were then adjusted for the decrease due to distance for the location of concern.

4.3.1 Proposed Action/Alternatives

Year 2020

- Project EC02 (Replacement Fire Pump House and Pump)
- Project SO01 (Training Support Storage Addition)

Year 2021

- Project EC04 (Maintenance Equipment Shed Replacement)
- Project SO03 (Training Planning Trailer Replacement)
- Project SO04 (Special Project Training Facility Construction)
- Project SO09 (Building 101 Expansion)
- Project SM01 (Non-Secure Visitor and Training Facility Construction)
- Project SM02 (Office, Administration, Research, Development, Testing, and Lab Facility Construction)

Year 2022

- Project EC03 (Simulated Training Facility Demolition and Construction)
- Project EC05 (Administration Processing Facility Construction)
- Project SO02 (Building 24 Training Expansion)
- Project SO06 (Secure Holding Facility Construction)

Year 2023

- None

Environmental Consequences

Year 2024

- Project SO05 (Urban Training Building Construction)
- Project SO07 (Two-Story Office and Storage Building Construction)
- Project SO08 (Septic Field Expansion)
- Project C04 (Upgrade Potable Water System)

Year 2025

- Project EC01 (Training Aid Development Shop Construction)
- Project C01 (Indoor Firing Range Construction)
- Project C02 (Addition to Fitness Center)
- Project C03 (Heritage Observation Center Construction)
- Project C05 (Helicopter Landing Pad Construction)

Noise impacts to the surrounding area would only occur due to outdoor activities, since indoor noise would be abated by the structure. For Project C01 (Indoor Firing Range), the structure would be constructed of materials and with engineering controls to reduce noise levels and dampen reverberation, as specified in *Engineering Technical Letter (ETL) 11-18: Small Arms Range Design and Construction* (USAF 2011). Adherence to appropriate building design standards would attenuate possible outdoor noise propagation so that it would not result in impacts to nearby residences. For personnel within the firing range, engineering controls to reduce noise would be implemented (USAF 2011) and appropriate hearing protection would be worn. For project C05 (Helicopter Landing Pad), the new landing pad would replace an existing unpaved landing pad and would not be associated with increased aircraft operations, and would not change the noise environment on White Bluff. Therefore, there would be no long-term significant noise impacts associated with operation of the proposed projects.

For each project associated with outdoor construction/demolition/excavation activity, it was assumed that three pieces of heavy equipment could be operating at the same time. Using a conservative estimate of 85 dB(A) for each piece of equipment results in a sound level of 90 dB(A) at 50 feet.

The surrounding area is sparsely populated; scattered residences are the closest sensitive receptors. Measured from the nearest potential development site, the closest is a residence approximately 240 feet to the west. To the south, the closest residence is approximately 375 feet from the nearest potential development site, to the east the closest residence is approximately 570 feet from the nearest potential development site, and to the north-northwest, the closest residence is approximately 930 feet from the nearest potential development site. For each project, the closest possible distance of a residence to a potential project location was measured using aerial imagery. The reduction that happens to noise as it travels farther from the source was calculated based on accepted geometric spreading theory. All projects in the same year were summed to determine a possible overall, cumulative noise level impact by year. A background noise level of 38 dB(A) for daytime operations was also logarithmically summed. Based on these calculations the nearest residences could experience noise levels up to 74 dB(A), depending on which projects are being constructed at a given time.

Nearby residents would experience intermittent, short-term increases in noise levels during outdoor construction events. The short-term impacts from noise generated by heavy equipment during facility construction, demolition, and renovation would be noticeable and substantially higher than background noise levels, but would have no long-term impacts on the overall noise environment. Construction workers, who would be exposed to construction noise at closer range, would wear hearing protection, as required by applicable laws and regulations.

The most common impact associated with exposure to elevated noise levels is public annoyance. Noise annoyance levels have been determined in past studies (Schultz 1978; Finegold et al. 1994). Based on the results of these studies, the Federal Highway Administration uses a value of 67 dB(A) L_{Aeq} as the noise impact threshold for construction or highway operations. The maximum estimated noise levels for the proposed projects are expected to exceed this threshold during periods of construction, and could lead to short-term annoyance impacts. Limiting use of heavy equipment to Monday through Friday from 7 a.m. to 4:30 p.m. would reduce these impacts. Additionally, contractors at White Bluff are required to ensure that equipment is in good operating condition with exhaust mufflers. No violation of state or local noise ordinances is listed in Section 3.3.2 because of the exemption for construction events.

Because there would be no violation of noise ordinances, and there would be no noise-related increase in areas of incompatible land use outside White Bluff, no significant impacts to noise resources would occur.

4.3.2 No Action Alternative

The No Action Alternative would result in no change to the local noise levels, with background levels remaining low and only occasional vehicle noise on the roadway.

4.4 AIR QUALITY

This section evaluates the potential impacts to air quality from the proposed projects. Impacts would be considered significant if the proposed projects were to interfere with the state's ability to maintain the NAAQS, or if they were expected to result in a violation of any federal, state, or local air regulation.

4.4.1 No Action Alternative

The No Action Alternative would result in no new impacts on air quality because the proposed projects would not occur and no facility construction, demolition, or renovation would be undertaken. Air quality conditions would remain unchanged when compared to existing conditions at White Bluff.

4.4.2 Proposed Action/Alternatives

The proposed projects would have short-term and long-term, minor impacts on local air quality. Short-term impacts would occur as a result of construction activities and would be confined to the construction phase (calendar years 2020 to 2025). Long-term impacts would include ongoing emissions resulting from the operation of newly constructed and installed sources such as facility heating equipment, emergency generators, and potentially the discharge of ammunition at the proposed indoor firing range (Project C01).

In accordance with the AFI 32-7040 and the EIAP the construction phase and operational emissions resulting from the Proposed Action were calculated using the USAF's Air Conformity Applicability Model (ACAM). These emissions are "netted" on an annual basis. The impact analysis must consider the greatest annual emissions associated with the proposed projects. Since emissions from the proposed projects can vary from year-to-year depending on activity, the greatest annual net change in emissions for each pollutant forms the basis of the analysis. The individual pollutant worst-case emission value may occur in a different project year. The total annual emissions during the construction phase of the proposed projects are presented in Table 4.4-1 through Table 4.4-6 for each year until the action reaches "steady state" (i.e., once the action is fully implemented and operational with no further net change in emissions). See Appendix C for the Record of Air Analysis and ACAM detailed emissions reports generated for this analysis.

Because all of the proposed projects would occur within an area that is in full attainment for the NAAQS, the general conformity rules do not apply. ACAM was further used to analyze the potential air quality impacts associated with the Proposed Action. Unlike nonattainment or maintenance criteria pollutants, General Conformity de minimis levels have not been established for attainment criteria pollutant emissions. However, as outlined in the EIAP Guide, the General Conformity de minimis thresholds are used as NEPA significance indicators for air quality in attainment areas. General Conformity de minimis threshold values, designated as Air Quality Indicators in ACAM, are the maximum net change an action can acceptably emit in nonattainment and maintenance areas. These threshold values would also be a conservative indicator that an action's emissions within an attainment area would also be acceptable. In other words, if the threshold is acceptable in nonattainment areas, it will also be acceptable in attainment areas.

Construction Phase Emissions

Short-term impacts would be predominantly from fugitive dust and equipment exhaust generated by heavy equipment and worker transport during construction, demolition, and excavation. The release of pollutants during certain construction activities, such as painting, would also result in short-term impacts. Emissions estimates generated using ACAM (as described above) and the air quality indicator for each analyzed pollutant are presented in Table 4.4-1 through Table 4.4-6. Note that CO_2e does not have an established air quality indicator. Construction-related emissions of non-GHG pollutants are expected to peak in calendar year 2021. As demonstrated in Table 4.4-2, estimated emissions for each pollutant during the peak emissions year would be well below their Air Quality Indicators, indicating that the potential construction-related emission impacts to air quality would be insignificant.

Table 4.4-1: 2020 Construction Phase Emissions

Pollutant	Action Emissions (ton/yr)	Air Quality Indicator	
		Threshold (ton/yr)	Exceedance (Yes or No)
Not in a Regulatory Area			
VOC	0.065	100	No
NOx	0.288	100	No
CO	0.320	100	No
SOx	0.001	100	No
PM_{10}	0.020	100	No
$PM_{2.5}$	0.012	100	No
Pb	0.000	25	No
NH_3	0.000	100	No
CO_2e	75.7	--	--

Source: ACAM, run on 6 December 2019

Table 4.4-2: 2021 Construction Phase Emissions

Pollutant	Action Emissions (ton/yr)	Air Quality Indicator	
		Threshold (ton/yr)	Exceedance (Yes or No)
Not in a Regulatory Area			
VOC	0.599	100	No
NOx	1.789	100	No
CO	2.118	100	No
SOx	0.015	100	No
PM_{10}	0.163	100	No
$PM_{2.5}$	0.083	100	No
Pb	0.000	25	No
NH_3	0.002	100	No
CO_2e	529.9	--	--

Source: ACAM, run on 6 December 2019

Table 4.4-3: 2022 Construction Phase Emissions

Pollutant	Action Emissions (ton/yr)	Air Quality Indicator	
		Threshold (ton/yr)	Exceedance (Yes or No)
Not in a Regulatory Area			
VOC	0.392	100	No
NOx	1.263	100	No
CO	1.548	100	No
SOx	0.028	100	No
PM_{10}	0.111	100	No
$PM_{2.5}$	0.074	100	No
Pb	0.000	25	No
NH_3	0.001	100	No
CO_2e	462.4	--	--

Source: ACAM, run on 6 December 2019

Table 4.4-4: 2023 Construction Phase Emissions

Pollutant	Action Emissions (ton/yr)	Air Quality Indicator	
		Threshold (ton/yr)	Exceedance (Yes or No)
Not in a Regulatory Area			
VOC	0.042	100	No
NOx	0.280	100	No
CO	0.211	100	No
SOx	0.029	100	No
PM_{10}	0.041	100	No
$PM_{2.5}$	0.041	100	No
Pb	0.000	25	No
NH_3	0.000	100	No
CO_2e	185.5	--	--

Source: ACAM, run on 6 December 2019

Table 4.4-5: 2024 Construction Phase Emissions

Pollutant	Action Emissions (ton/yr)	Air Quality Indicator	
		Threshold (ton/yr)	Exceedance (Yes or No)
Not in a Regulatory Area			
VOC	0.446	100	No
NOx	1.188	100	No
CO	1.574	100	No
SOx	0.038	100	No
PM_{10}	0.151	100	No
$PM_{2.5}$	0.078	100	No
Pb	0.000	25	No
NH_3	0.001	100	No
CO_2e	543.1	--	--

Source: ACAM, run on 6 December 2019

Table 4.4-6: 2025 Construction Phase Emissions

Pollutant	Action Emissions (ton/yr)	Air Quality Indicator	
		Threshold (ton/yr)	Exceedance (Yes or No)
Not in a Regulatory Area			
VOC	0.433	100	No
NOx	1.266	100	No
CO	1.711	100	No
SOx	0.048	100	No
PM_{10}	0.138	100	No
$PM_{2.5}$	0.091	100	No
Pb	0.000	25	No
NH_3	0.001	100	No
CO_2e	636.3	--	--

Source: ACAM, run on 6 December 2019

Operational Phase Emissions

The proposed projects would require installation of 10 new emergency generators, ranging from 30 to 120 kW. In accordance with USAF general requirements, these emergency generators would be run only for very short durations to test and/or perform maintenance, except in emergency situations. It is expected that testing and maintenance of each generator would produce small amounts of air pollutants for short periods (approximately 30 minutes on a monthly basis, plus up to 2 hours twice a year for load testing the four large generators). Should air permitting requirements for the new generators be required, White Bluff would fully comply with these requirements. Potential operational (steady state) emissions related to the proposed projects were estimated and analyzed for significance using ACAM as described above. Estimated emissions resulting from operation of newly installed and constructed equipment and facilities are depicted in Table 4.4-7.

Table 4.4-7: 2026 (Steady State) Emissions

Pollutant	Action Emissions (ton/yr)	Air Quality Indicator	
		Threshold (ton/yr)	Exceedance (Yes or No)
Not in a Regulatory Area			
VOC	0.072	100	No
NOx	0.509	100	No
CO	0.387	100	No
SOx	0.049	100	No
PM_{10}	0.072	100	No
$PM_{2.5}$	0.072	100	No
Pb	0.000	25	No
NH_3	0.000	100	No
CO_2e	359.0	--	--

Source: ACAM, run on 6 December 2019

Other SRCAA Regulation I non-permitting requirements, such as controlling fugitive dust and open burning, would continue to be carefully monitored and controlled. All persons responsible for any operation, process, handling, transportation, or storage facility that could result in fugitive dust are required to take reasonable precautions to prevent such dust from becoming airborne. Reasonable precautions include using water to control dust from road grading or land clearing and control of open burning. The proposed projects would proceed in full compliance with current SRCAA Regulation I requirements, with compliant practices and products. Examples of such requirements include the following:

- Outdoor burning (SRCAA Regulation I, Article VI, 6.01)
- Particulate matter; preventing particulate matter from becoming airborne (SRCAA Regulation I, Article VI, 6.05)
- Standards for controlling particulate matter on paved surfaces (SRCAA Regulation I, Article VI, 6.14)
- Standards for controlling particulate matter on unpaved surfaces (SRCAA Regulation I, Article VI, 6.15)

Project C05 (Helicopter Landing Pad) would result in a paved helicopter landing pad. Because the current unpaved landing pad would no longer be used, this project would have a minor beneficial impact on air quality by reducing fugitive dust associated with rotor wash during takeoff and landing.

Project C01 would construct an indoor firing range. As of the writing of this EA, the range is still under design and may be designed either as a simulated range with visual and audio components, or as a live fire range. Both capabilities are being addressed in this EA. Should the range be constructed and used for live fire there would be potential for emissions of particulate matter, metals (e.g., copper), and CO from firing of frangible rounds. Building construction would be as specified in ETL 11-18 (USAF 2011) and would include proper ventilation design to remove airborne contaminants within the firing range. Filtration systems, specifically employing a high-efficiency particulate air (HEPA) system would be installed to capture particulate and metal emissions and ensure that exhaust air discharged from the range and bullet traps would meet all local, state, and federal air quality requirements pertaining to all applicable pollutants. Because the indoor firing range would be a new point source, registration and possibly permitting would be required, in accordance with Article IV of the SRCAA. JPRA would follow all requirements pertaining to registration and permitting of the new facility.

Potential air pollutant emissions resulting from operation of Project C01 were not calculated, pursuant to consultation with the USAF air quality subject matter expert. USAF guidance on Air Force installation stationary sources demonstrates that munitions discharge at active firing ranges typically results in pounds of total annual emissions, which would be negligible compared to emissions from other project-related sources. Operational emissions from all other sources associated with the proposed projects would be less than one percent of applicable significance thresholds. Therefore, the total potential operational emissions, including emissions from operation of newly installed equipment and from the use of live munitions at the indoor firing range would be well below applicable thresholds, and would not have a significant impact on air quality.

Greenhouse Gas Emissions and Climate Considerations

The proposed projects would result in a temporary GHG emissions increase during the construction phase. Temporary GHG emissions would peak in 2025, at approximately 636 metric tons of carbon dioxide equivalent (CO_2e) per year. Steady state (or operational) emissions associated with the proposed projects are expected to total approximately 359 metric tons of CO_2e per year. The change in climate conditions caused by GHGs resulting from the burning of fossil fuels from activities associated with the proposed projects is a global effect. Therefore, the disclosure of localized incremental emissions has no weight to impact climate change. Consequently, given the minimal increase predicted for temporary construction and steady state activities, the project would result in an insignificant impact on overall global or U.S. cumulative GHG emissions and global climate change.

Issues of temperature and precipitation trends were considered to determine if the proposed projects would be affected by climate change. Determination of actual incremental impacts due to the release of GHGs attributable to individual proposed projects is not practical and was not attempted due to a lack of consensus on how to measure or predict such impacts from small individual releases.

Washington is located in the northwestern climate region of the United States, which is beginning to experience changes in the timing of streamflow, changing snowmelt, and reduced supply of water. The sensitivity of agriculture in the northwest to climate change stems from its dependence on irrigation water; a specific range of temperatures, precipitation, and growing seasons; and the sensitivity of crops to temperature extremes. Average annual temperatures during the last century across the northwest have increased by almost 1.3°F, in addition to general increases in precipitation (National Climate Assessment 2014).

Table 4.4-8 provides an evaluation of potential climate stressors due to the proposed projects. The operational activities at White Bluff in and of themselves are only indirectly dependent on any of the elements associated with future climate scenarios (e.g., meteorological changes). At this time, no future climate scenario or potential climate stressor would have appreciable impacts due to any element of the Proposed Action.

Table 4.4-8: Impacts of Potential Climate Stressors on the Proposed Action

Potential Climate Stressor	Impacts on the Proposed Projects
Changing stream flow and snow melt	Negligible
Longer fire seasons and more severe wildfires	Negligible
Changes in precipitation patterns	Negligible
Increases in temperature	Negligible
Harm to water resources, agriculture, wildlife, ecosystems	Negligible

Source: National Climate Assessment 2014

Because projected air emissions are expected to be well below *de minimis* levels; there would be no violation of the NAAQS or any federal, state, or local air quality regulations; and potential climate stressors would have negligible effects on the proposed projects, no significant impacts to air quality would occur.

4.5 WATER RESOURCES

The evaluation of impacts to water resources considers water availability, water quality, loss of a particular resource and/or its functions, and adherence to applicable regulations. Impacts are measured by the potential for the proposed projects to reduce water availability or supply to existing users, endanger public health or safety by causing decreased surface water or groundwater quality, or violate laws or regulations adopted to protect or manage water resources. Impacts are also measured by evaluating whether there would be a temporary or permanent loss of water resources, or a loss or reduction in their ability to perform their unique functions.

Impacts to water resources would be significant if any of the following were to occur:

- Reduction in water availability or supply to existing users
- Degradation of water quality or endangerment of public health by contributing pollutants to surface water or groundwater
- Alteration of unique hydrologic characteristics
- Violation of established laws or regulations that have been adopted to protect or manage water resources of the area

4.5.1 Proposed Action/Alternatives

Groundwater

During demolition and construction activities associated with the proposed projects, accidental spills or leaks of substances such as fuels, oils, and other lubricants could result in contamination of groundwater if these substances were to enter the groundwater system. Contractors would follow required procedures to reduce risks for such spills, which include maintaining all equipment according to manufacturer's specifications, and appropriately containing and storing all fuels and other potentially hazardous materials. Other required procedures would also minimize the risk for spills and leaks, including use of secondary containment for temporary storage of any hazardous materials, and other project-specific BMPs.

The estimated increase in impervious surface associated with all proposed projects combined would be as much as 2.3 acres, depending on which project alternatives are selected (Table 4.5-1). This area represents approximately 2.5 percent of the total land area on White Bluff. The increase in impervious surface would cause localized reductions in water infiltration to soil and bedrock in the project areas, and localized increases in water quantities at collection/infiltration areas. However, given the well-drained soils and fractured nature of the basalt bedrock on White Bluff, it is expected that runoff from these new impervious areas would quickly infiltrate within the GSU boundary, and that there would be no overall reduction in groundwater recharge as a result of the proposed projects. All stormwater originating from the new impervious areas would be treated and infiltrated on-site using LID methods such as bioretention, direct infiltration, and pervious pavements. These design features would help promote groundwater infiltration and prevent impacts to groundwater quality.

The preferred alternative under Project C04 (Upgrade Potable Water System) would entail installation of a new drinking water well. Production well construction is regulated by Ecology to ensure safe drinking water and protection of water resources, and to provide minimum standards for the well drilling industry. The installation of the new production well would be done in accordance with the following regulations:

- Chapter 18.104 RCW—Washington Well Construction Act
- Chapter 90.44 RCW—Regulation of Public Groundwaters
- Chapter 173-160 WAC—Minimum Standards for Construction and Maintenance of Wells
- Chapter 173-162 WAC—Regulation and Licensing of Well Contractors and Operators

The Safe Drinking Water Act requires every state to develop a wellhead protection program. The Washington State Department of Health administers the wellhead protection program in Washington under WAC 246-290. Wellhead protection requirements are designed to prevent contamination of groundwater used for drinking. These requirements apply to all “Group A” public water systems that rely on groundwater wells or springs for a water supply, except those that procure their water through interties. “Group A” water systems are those that serve 25 or more people or 15 or more connections. Based on the expected service requirements at White Bluff, JPRA would develop a Wellhead Protection Plan for the new drinking water production well.

While the proposed projects would not increase the number of permanent staff at White Bluff, construction of the new facilities would allow for additional training opportunities at the site, which would increase the number of people using the site temporarily, and would result in increased water usage over the long term. Increased use of potable water would result in extraction of more water from the regional aquifer, but given the small size of White Bluff and the maximum projected occupancy of the site at any one time (140 people), these impacts are not expected to be significant.

Project EC04 (Maintenance Equipment Shed) could result in a minor reduction in the risk of groundwater contamination by eliminating the need to park equipment outside in uncontained areas.

Table 4.5-1: Amount of New Impervious Surface for the Proposed Projects

Proposed Project	Amount of New Impervious Surface (ft^2)
EC01—Training Aid Development Shop	2,500
EC02—Replacement Fire Pump House and Pump	0
EC03—Simulated Training Facility	EC03: 0 EC03-1: 5,300
EC04—Maintenance Equipment Shed	1,000
EC05—Administration Processing Facility	2,000
SO01—Training Support Storage	1,500
SO02—Building 24 Training Expansion	8,400
SO03—Training Planning	2,500
SO04—Special Project Training Facility	S04: 2,000 S04-1: 2,300
SO05—Urban Training Building	SO05: 12,500 SO05-1: 15,000
SO06—Secure Holding Facility	1,500
SO07—Two-Story Office and Storage Building	SO07: 4,500 SO07-1: 9,000 SO07-2: 9,000
SO08—Septic Field Expansion	0
SO09—Building 101 Expansion	1,500
C01—Indoor Firing Range	15,000
C02—Addition to Fitness Center	2,500
C03—Heritage Observation Center	700
C04—Upgrade Potable Water System	C04: 1,200 C04-1: 0
C05—Helicopter Landing Pad	9,000
SM01—Non-Secure Visitor and Training Facility	SM01: 2,500 SM01-1: 3,000
SM02—Office, Administration, Research, Development, Testing, and Lab Facility	SM02: 13,000 SM02-1: 15,000
Total (maximum)	98,900

Project C04 (Upgrade Potable Water System) would include a larger holding tank than the one at present, and a new pump to extract groundwater. This project would facilitate faster drawing of groundwater from the aquifer, but would not affect the overall amount of usage.

Because there would be measures in place to minimize risks for groundwater contamination from construction sites, no regional reduction in groundwater infiltration, and no anticipated reduction in groundwater availability or supply to existing users, no significant impacts to groundwater resources would occur.

Surface Water

As discussed in Section 3.5.2, White Bluff has no natural stream courses, but does have stormwater features that temporarily retain surface water. Stormwater occurs as runoff caused by precipitation events (rain) or melting (snow) from impermeable or semi-permeable natural and human-made surfaces such as buildings, outcrops, and parking lots. However, given the natural permeability of the White Bluff site, most surface water infiltrates quickly, even in stormwater retention features.

Soil disturbance during trenching, excavation, and other activities associated with the proposed projects would have the potential to result in sedimentation into local surface water conveyances. This could have a localized, short-term impact on surface water quality on White Bluff, but would be unlikely to extend beyond the GSU boundary. To reduce the risk of sedimentation, construction contractors are required to employ standard construction practices to limit wind and water erosion, such as soil stockpiling, watering, and covering soil stockpiles when necessary. All ground-disturbing activities would be conducted using BMPs to control erosion and prevent sediment, debris, or other pollutants from entering the stormwater system. Given these BMPs for erosion and sediment control and the lack of natural surface water features on White Bluff, impacts to natural stream channels outside the GSU are not anticipated.

The increase in impervious surface by up to 2.3 acres would increase the potential for rapid surface runoff from the project areas following construction, particularly during and after heavy rainfall. Project design for new impervious developments would include stormwater features, as needed, to incorporate runoff from the new areas into White Bluff's stormwater system. In accordance with the requirements of Section 438 of the EISA, White Bluff would be required to incorporate design elements that maintain or restore predevelopment site hydrology to the maximum extent practical, with regard to rate, volume, and duration of discharge from the site (USEPA 2009). All stormwater originating at new impervious sites would be treated and infiltrated on-site using LID methods such as bioretention, direct infiltration, and pervious pavements. Based on White Bluff's distance from free-flowing surface waters, it is unlikely that stormwater discharges from the GSU would reach impaired water bodies.

Because there would be measures in place to minimize the risk of sedimentation into surface waters and runoff from the new construction sites would be routed into existing stormwater systems, no significant impacts to surface water resources would occur.

4.5.2 No Action Alternative

Under the No Action Alternative, none of the proposed projects would occur, and there would be no associated interaction with groundwater or surface water. No new impacts to water resources would occur.

4.6 SAFETY AND OCCUPATIONAL HEALTH

Any increase in safety risks would be considered an adverse impact on safety. Impacts associated with health and safety would be considered significant if the proposed projects were to:

- Substantially increase risks associated with the safety of construction personnel, contractors, JPRA personnel, or the local community
- Hinder the ability to respond to an emergency
- Introduce a new health or safety risk for which JPRA is not prepared or does not have adequate management and response plans in place

4.6.1 Proposed Action/Alternatives

Construction and Demolition Safety

Short-term, minor, adverse impacts on contractor health and safety could occur from implementation of the proposed projects. During the periods of active project demolition and construction, there would be short-term risks associated with work performed by construction contractors during the normal workday. However, all contractors would be required to follow and implement OSHA safety standards to establish and maintain safety procedures. Given the potential for encountering hazardous materials and conditions at work sites, project-specific health and safety plans would be prepared in accordance with DoD, USEPA, and OSHA requirements prior to work initiation.

New construction would not utilize materials that contain ACMs, LBP, or PCBs. However, during demolition and renovation activities, workers may encounter these hazardous materials in structures that were built before 1978. These materials require appropriate characterization, removal, handling, and disposal during demolition activities by qualified personnel. Contractors on White Bluff are required to adhere to all federal, state, and local regulations, which would reduce the associated risk level to negligible. While no other hazardous materials of concern or environmental restoration sites have been identified on White Bluff (see Section 3.7.2), there is a chance that workers could encounter such materials during implementation of the proposed projects. Should contamination be found during demolition or construction work, handling, storage, transportation, and disposal activities would be conducted in accordance with federal, state, and local regulations to minimize safety hazards.

Mission Safety

New buildings would be constructed in accordance with the applicable facilities criteria, which include specifications that are designed to protect the safety of inhabitants (e.g., fire protection and life safety standards). Adherence to these criteria would allow for safe operation of the new facilities. Nearly all of the proposed projects would result in structures that support uses that are similar to those presently occurring at White Bluff, and therefore would not pose new or unacceptable safety risks to White Bluff personnel or activities at the GSU. One exception would be Project C01 (indoor firing range), which would be a new mission use at White Bluff with associated new safety hazards to personnel that use the facility. Safety risks associated with live fire training would be minimized by adhering to established safety standards for operation of such facilities. These standards would include (but not be limited to) appropriate ventilation, noise exposure mitigation, and design features that prevent injury caused by misdirected or accidental firing and ricochets. For all proposed projects, adherence to established design criteria, AT/FP setbacks (where applicable), and operational safety standards would enable White Bluff to conduct or meet mission requirements in a safe operating environment. No long-term impacts on safety would be expected.

Several of the proposed projects would improve mission safety on White Bluff. Project EC02 (Replacement Fire Pump House and Pump) would reduce fire safety risks associated with having an outdated system and would bring White Bluff in compliance with NFPA regulations. Project C05 (Helicopter Landing Pad) would improve the safety of helicopter pilots (and passengers) that land at White Bluff by creating a safer, paved landing area. Other projects that upgrade utilities, provide facilities with more appropriate space for various activities, and upgrade older structures that are currently without basic utilities would have a minor beneficial impact by creating work environments that are better for worker health.

Because there would be measures in place to protect worker safety during construction and none of the proposed projects would hinder the ability to respond to an emergency or introduce a new health or safety risk to Fairchild AFB, no significant impacts to safety or occupational health would occur.

4.6.2 No Action Alternative

Under the No Action Alternative, the proposed projects would not occur and there would be no associated impact to human health or safety. However, without implementation of Projects EC02 and C05, the beneficial impacts to human health and safety discussed in the preceding section would not occur. Failure to comply with NFPA regulations would be a long-term moderate impact.

4.7 HAZARDOUS MATERIALS AND WASTE

The evaluation of impacts associated with hazardous materials and waste focuses on how and to what degree the proposed projects and alternatives would affect hazardous materials usage and hazardous/solid waste generation and management. As discussed in Section 3.7.2, there are no active ERP sites on White Bluff; therefore, the proposed projects would have no effect on the DERP Program.

A significant impact would occur if:

- Implementation of the proposed projects resulted in the use of hazardous materials that are highly toxic or have a potential to cause severe environmental damage (e.g., extremely hazardous substances as listed in the Superfund Amendments and Reauthorization Act Title III)
- Proposed activities generated hazardous/solid waste types or quantities that could not be accommodated by the current management system
- Proposed activities failed to comply with applicable federal, state, and local regulations

4.7.1 Proposed Action/Alternatives

Hazardous Materials, Petroleum Products, and Hazardous Wastes

Short-term, minor, adverse impacts associated with the use of hazardous materials and petroleum products would be expected. During construction, any hazardous materials or petroleum products present would be excessed or transferred to the new facilities prior to commencement of project activities. The proposed projects would require the use of hazardous materials such as paints, welding gases, solvents, preservatives, sealants, and fuel. However, it is anticipated that the quantity of hazardous materials used would be minimal and their use would be of short duration. Contractors on White Bluff are responsible for the management of hazardous materials and petroleum products, in accordance with federal, state, local, and DoD regulations, and are required to implement BMPs to prevent releases of hazardous materials and associated contamination. All hazardous materials would be secured or removed from White Bluff at the end of each work day.

Short-term, minor, adverse impacts associated with the generation of hazardous and petroleum wastes would be expected. Construction of the proposed projects would generate a small quantity of hazardous and petroleum wastes, which would not be expected to exceed the capacities of existing hazardous waste and petroleum waste facilities. Contractors on White Bluff are responsible for the disposal of hazardous and petroleum wastes that they generate, in accordance with federal, state, and local regulations.

Over the long term, construction of new facilities would increase the overall amount of hazardous materials and petroleum products stored and used, which would generally be similar in type to those currently used and stored at White Bluff. New facilities would have modern hazardous material and petroleum product storage areas. Quantities of these materials would be tracked by White Bluff and would be stored and handled in accordance with applicable regulations.

Because frangible rounds would be used at the proposed indoor firing range (Project C01), it is expected that range dust and used filters from ventilation equipment would not characterize as hazardous waste (similar to wastes generated at the Fairchild AFB Combat Arms Training and Maintenance range). However, Fairchild AFB would conduct characterization sampling after the new range is in operation.

Environmental Consequences

Should wastes generated at the range characterize as hazardous waste, they would be properly disposed of. White Bluff would follow all applicable regulatory requirements associated with registration, reporting, and hazardous waste management. Provided all applicable plans and federal, state, and local regulations pertaining to hazardous wastes are followed, no significant impacts related to hazardous waste would occur.

Storage Tanks

The proposed projects would not affect existing storage tanks at White Bluff. No existing ASTs or USTs would be removed as a part of the Proposed Action, and proposed projects would be designed to avoid disturbing existing tanks. The proposed projects would result in an increase in the number of ASTs on White Bluff, as there would be a new fuel storage tank built into each of the 10 new generators. These tanks would meet all applicable regulatory requirements and the requirements of the Air Force Storage Tank Compliance Program, as detailed in Air Force Manual 32-7002, *Environmental Compliance and Pollution Prevention.*

Special Hazards

There would be a very low risk of encountering ACMs, LBPs, or PCBs during project demolition and construction, as most projects would be new construction that would not contain these materials. The only structures that would be demolished would be the tennis court, the fire pump house, the storage tent, and remnants of Building 5. Buildings proposed for demolition would be surveyed for ACMs and LBP by certified inspectors, regardless of building age, as many buildings have been constructed using stockpiled materials that may contain asbestos. Project plans would include appropriate measures to reduce potential exposure to and release of asbestos and LBP. If ACMs are discovered, they would be removed prior to demolition and disposed of at a USEPA-approved landfill. Facilities containing LBP could be demolished without removing the LBP, provided the total waste stream does not exceed toxicity characteristic leaching procedure (TCLP) levels. However, all LBP-contaminated construction debris would be disposed of at a USEPA-approved landfill. Contractors at White Bluff are required to adhere to all federal, state, and local regulations for disposal of these materials. Any potential PCB-containing equipment not labeled PCB-free or missing date-of-manufacture labels discovered within the facilities proposed for demolition would be removed and handled in accordance with federal and state regulations. PCB-containing materials would be transported off White Bluff and disposed of at a hazardous waste disposal facility. By following these procedures for identifying and disposing of ACMs, LBP, and PCBs, associated impacts would be minor.

Should any ACMs, LBP, or PCB-containing materials be encountered and removed, minor long-term, beneficial impacts would be expected due to removal of the materials.

Radon

Short-term, negligible, adverse impacts from radon could occur due to implementation of the proposed projects. Construction workers could be exposed to radon during subsurface construction activities; however, they would generally be in open air, which would greatly reduce the dosage to which they would be exposed. Long-term, negligible, adverse impacts from radon would be expected due to the proposed projects. Based on the high potential for elevated indoor radon levels in Spokane County, some of the new structures might require radon mitigation systems. Radon testing at the selected project areas would be used to determine the presence of radon and the need for a radon mitigation system.

4.7.2 No Action Alternative

Under the No Action Alternative, none of the proposed projects would be implemented. Baseline conditions for hazardous materials, hazardous wastes, asbestos and LBP, and solid wastes, as described in Section 3.7, Hazardous Materials and Waste, would remain unchanged. Therefore, no significant impacts would occur under the No Action Alternative.

4.8 BIOLOGICAL RESOURCES

This section discusses impacts to biological resources from various aspects of the proposed projects, including direct physical impacts, habitat alteration and loss, and short-term disturbance during construction activities, and long-term disturbance during operations. The analysis considers potential impacts to vegetation communities and wildlife, including sensitive species, based on habitat types affected and likely occurrence on White Bluff. Impacts on biological resources would be considered significant if they result in an overall decrease in species diversity, population abundance, or fitness within the region; or result in the permanent loss of irreplaceable high-quality plant communities or wildlife habitat.

4.8.1 Proposed Action/Alternatives

Vegetation

The proposed projects would result in short- and long-term minor adverse impacts to vegetation. Short-term impacts would be associated with trampling, use of heavy equipment, and vegetation removal in unpaved areas that could be restored following the project activities (such as following the installation of utility lines). Long-term impacts would include the permanent removal of vegetation through conversion of currently undeveloped areas into developed sites. Impacts to vegetation would be greatest in areas where native vegetation communities are present, predominantly the ponderosa pine woodlands in available development sites (Areas F, G, H, I, and J) (Table 3.8-1). In other areas, impacts would affect predominantly non-native herbaceous species, although native grasses and shrubs may also be impacted. Long-term impacts would be associated with construction and paving, which would occur in association with all projects except EC02 (Replacement Fire Pump House and Pump) and SO08 (Septic Field Expansion). Based on the estimated new impervious surface for each project, the total area over which vegetation would be permanently lost would be approximately 2.3 acres, which is approximately 2.5 percent of the total land area on White Bluff. While the exact amount and type of vegetation removed for each project would depend on which alternative/development site is selected, based on available information about the vegetation on White Bluff, it is expected that only common species that are prevalent in the region would be removed. Additionally, many project sites are located in areas that have been disturbed previously. Therefore, it is expected that impacts would be minor.

Ground disturbance and use of construction vehicles and other equipment can lead to the spread of noxious weeds and other invasive species in and around construction sites. As discussed in Section 3.8.2, several noxious weed species are found on White Bluff. Therefore, the proposed projects would have the potential to adversely affect native vegetation communities by increasing the presence/cover of invasive species. To prevent the spread of noxious weeds, construction equipment would be cleaned, and all noxious weed material and seeds would be removed both prior to its use on-site and prior to transporting the equipment off-site. Following construction, disturbed areas would be revegetated with weed-free materials to prevent colonization by noxious weeds.

Because it is not expected that the proposed projects would result in the irreplaceable loss of high-quality plant communities, or result in an appreciable reduction in population abundance, fitness, or distribution in the region, no significant impacts to vegetation would occur under the Proposed Actions or alternatives.

Wildlife

The proposed projects would result in direct and indirect adverse impacts on wildlife on and in the vicinity of demolition and construction work areas.

Within work areas, use of vehicles and construction equipment could result in injury or direct mortality of wildlife. Mobile species such as adult birds could flee the area and would be less susceptible to direct impacts than smaller, less-mobile species or life stages. Given the location and extent of the proposed projects, the number of individuals affected would likely be small in the context of local and regional populations, and it is not expected that there would be population-level effects to any common species. Potential impacts to sensitive species are discussed in more detail in the following subsection.

Long-term impacts to wildlife habitat would occur in areas where new buildings and pavement would be constructed in unpaved areas that are currently being used by wildlife, or where habitat would be altered or fragmented during construction. Ponderosa pine trees cut in support of proposed projects in available development sites (Areas F, G, H, I, and J) would be removed for the long term, and would no longer be available for use by woodland and forest-dwelling species. The total area over which wildlife habitat could be permanently lost would be approximately 2.3 acres (2.5 percent of the total land area on White Bluff). However, it is not expected that these areas currently provide high-quality wildlife habitat, especially when considered in the context of other available habitat in the region and ongoing disturbances by personnel and equipment. Therefore, impacts would be minor.

At all project locations, noise associated with construction, demolition, and/or use of heavy equipment could disturb wildlife, including migratory birds. Given existing levels of development and human presence on White Bluff, wildlife may be adapted to some level of human disturbance, particularly at available development sites (Areas C, D, E, and K). During the loudest work periods, more mobile wildlife would likely avoid the project areas until construction is completed. Potential impacts would be greatest for proposed projects in the western half of White Bluff, where open space is more prevalent and there are likely to be higher densities and diversity of wildlife. While some individuals might avoid the project sites over the long term, the affected areas would be small when compared with other, similar habitat nearby. Therefore, impacts would be minor.

During operation of Project C01 (Indoor Firing Range), noise from firing activities would be greatly attenuated by the building materials and construction, as discussed in Section 4.3.1. However, some noise would be audible to wildlife on White Bluff, as well as wildlife in adjacent areas (depending on the final location of the facility). Impulse noise has the potential to cause a startle effect in wildlife, and could affect wildlife behaviors and reduce foraging or breeding success. In common wildlife these effects would be minor, as the area affected by the noise would be small compared to available habitat in the area, and given the baseline presence of human disturbance. Because it is not expected that the proposed projects would result in an overall decrease in species diversity, population abundance, or fitness, or result in a permanent loss of irreplaceable high-quality wildlife habitat, no significant impacts to wildlife would occur.

Protected and Sensitive Species

Since no species federally listed under the ESA are known to occur on White Bluff and habitats are highly altered from native conditions, it is expected that the proposed projects would have no effect on federally listed species. Other protected and sensitive species may occur in available development sites (see Section 3.8.2) and could be affected by proposed projects; however, this is highly unlikely given the past uses and ongoing disturbances in all sites. The potential for impacts would depend on species presence and the work season. If any protected or sensitive species are present, they could be temporarily disturbed by construction noise and worker presence. Impacts would be greatest if individuals are breeding or nesting near work sites. During operation of the indoor firing range, periodic impulse noise that is audible outside the structure could affect any protected or sensitive species in the vicinity. The potential for adverse effects would depend on presence of these species in the vicinity of the new firing range, with greatest impacts to nesting species, if present. Future buildout of the proposed projects at White Bluff and periodic noise from the firing range would likely discourage future use of this area for nesting in favor of nearby areas with less human disturbance.

Environmental Consequences

Suitable nesting habitat for birds and mammals may occur in ponderosa pine and grassland areas. Given that White Bluff has no permanent bodies of water, it is likely only used by western boreal toads as a non-breeding area (Sperry 2014).

Over the long term, permanent loss of ponderosa pine and grassland habitats would reduce the amount of potential habitat for protected and sensitive species that use these habitats. Given that the habitats on White Bluff are common and considering the small amount of habitat that would be lost relative to other available habitat in the region, these impacts would be minor. While western toads (a state Candidate species) may occur in grasslands and forests, the only known sighting on White Bluff was in a refuse pile. Therefore, this species may be found in human-created habitats, which would have the potential to be created or removed during construction of the proposed projects.

Most of the proposed projects would be sited on or adjacent to existing facilities/structures. The undeveloped areas of the White Bluff site do not have existing facilities but are routinely disturbed by foot traffic and equipment to support training and minimize fire hazards, and have been altered by historical agricultural uses prior to Air Force ownership. Therefore the risk of impacts to protected and sensitive species is low.

The proposed projects would be conducted in a manner to avoid adverse effects on migratory birds to the extent practicable. Given the low potential for impacts, the proposed projects would not result in an overall decrease in species diversity, population abundance, or fitness of any protected or sensitive species within the region. The proposed projects would also not result in the permanent loss of irreplaceable high-quality plant communities or wildlife habitat. Therefore, no significant impacts to protected or sensitive species would occur.

4.8.2 No Action Alternative

Under the No Action Alternative, there would be no interaction with biological resources and, therefore, no adverse impacts on vegetation or wildlife, including protected and sensitive species. Habitats and species distributions on White Bluff would remain similar to their baseline conditions.

4.9 CULTURAL RESOURCES

This section addresses potential impacts and effects to cultural resources within or adjacent to the 21 individual proposed project areas.

Impacts to cultural resources can occur by physically altering, damaging, or destroying a resource or by altering characteristics of the surrounding environment that contribute to the resource’s significance. To evaluate impacts, historic properties are subject to the criteria of adverse effect found in 6 CFR Section 800.5.

Direct impacts or effects are typically caused by physical changes to a historic property. Indirect effects usually occur through increased use or visual or noise effects. A significant impact or adverse effect to historic properties occurs when an undertaking or action alters, directly or indirectly, any of the characteristics of a historic property that qualify that property for inclusion in the NRHP.

Adverse effects or significant impacts to historic properties include, but are not limited to: (1) physical destruction of or damage to all or part of the property; (2) alteration of a property, including restoration, rehabilitation, repair, maintenance, and stabilization; (3) removal of the property from its historic location; (4) change of the character of the property’s use or of physical features within the property’s setting that contribute to its historic significance; and (5) introduction of visual, atmospheric, or audible elements that diminish the integrity of the property’s significant historic features.

If an undertaking directly or indirectly affects a property in a manner that does not permanently alter its integrity or NRHP eligibility, this effect is considered not adverse (i.e., not a significant impact).

4.9.1 Proposed Action/Alternatives

The proposed projects would not result in effects to cultural resources. All of White Bluff has been subject to archaeological survey and historic building evaluation. White Bluff does not contain any archaeological sites, historic structures, historic districts, cemeteries, sacred sites, TCPs, or other resources identified as eligible for listing on the NRHP (Fairchild AFB 2018a; Smith 2018).

No archaeological resources are known from White Bluff. The entire base has been developed, or otherwise disturbed, and has been found to generally have low to no probability for intact archaeological sites (Fairchild AFB 2018b, Smith 2018). None of the proposed ground-disturbing construction or demolition projects (e.g., EC01, EC02, EC03, and EC04 at the ECRLS District; all eight projects at the Special Operations Training District; C01, C02, and C05 at the Command Mission Support District; and SM01 and SMO2 at the SMRDT District) would impact archaeological sites.

No structures at White Bluff are NRHP-eligible historic properties. Of the historic-aged buildings at the facility, all have been remodeled and lack historic integrity. None meet the criteria for NRHP eligibility found in 36 CFR Section 60.4, either individually or in terms of a potential historic district (Heritage Consulting Group 2008). The SHPO concurred with these findings in a letter dated December 2009 (Department of Archaeology and Historic Preservation; Appendix A). Thus, none of the 21 individual projects associated with the Proposed Action would cause direct or indirect impact to NRHP-eligible historic buildings or districts.

Fairchild AFB will initiate government-to-government consultation regarding the Proposed Actions with the following Native American tribes: the Coeur d'Alene Tribe, the Confederated Tribes of the Colville Reservation, the Kalispel Tribe of Indians, and the Spokane Tribe of Indians. These four tribes will be invited to comment on potential impacts to cultural resources from the proposed projects. All correspondence associated with tribal consultation is provided in Appendix A.

Standard operating procedures described in Fairchild AFB's *Integrated Cultural Resources Management Plan* (Fairchild AFB 2018b), which includes White Bluff, are in place to protect archaeological resources or human remains in the event of inadvertent discovery. These standard operating procedures describe the practices project managers, construction staff, security personnel, and the cultural resources manager are to follow in case of an inadvertent discovery. Work on-site would cease, and the discovery would be reported to the Fairchild AFB cultural resources manager, who would notify SHPO within 24 hours and initiate the Section 106 process. Initially, the archaeological discovery would be treated as potentially eligible for listing on the NRHP, and the cultural resource manager would evaluate the site for NRHP eligibility. If found eligible, treatment would be determined in consultation with the SHPO and other consulting parties. If further evaluation reveals that the site is not eligible for NRHP listing with Washington SHPO concurrence, then project activity could resume.

4.9.2 No Action Alternative

Under the No Action Alternative, the proposed projects would not be implemented and, as a result, impacts to cultural resources would not be anticipated.

4.10 EARTH RESOURCES

This section discusses potential impacts to earth resources located within the proposed project areas. The analysis considers exposure to potential geologic hazards and potential for soil erosion and soil limitations. Generally, impacts can be avoided or minimized if proper construction techniques, erosion control measures, and structural engineering designs are incorporated into project development. The analysis also considers the suitability of mapped soil types for the proposed projects.

Environmental Consequences

Impacts to soils can result from disturbances, such as grading during construction activities, that expose soil to wind or water erosion. Construction of new buildings and associated paving results in a long-term loss of soil function in the building footprint.

Impacts resulting from geologic hazards can occur where the potential for harm to persons, property, or the environment is high due to existing hazards.

Impacts would be considered significant if any of the following were to occur:

- Disruption of unique geologic resources
- Substantial increases in soil erosion rates or loss of topsoil
- Construction of one or more structures in an area that has unsuitable soil characteristics for the proposed use and would expose people or structures to an elevated risk of loss, injury, or death
- Increased vulnerability to a geologic hazard and the probability that such an event could result in an injury

4.10.1 Proposed Action/Alternatives

Topography and Physiography

There would be long-term, negligible, adverse impacts on topography from demolition, site preparation (i.e., grading, excavating, and recontouring), and construction activities associated with the proposed projects. Excavated soils would be reused for a suitable use on-site or hauled off-site for appropriate reuse or disposal, rather than mounded on White Bluff.

Geology

The preferred alternative of Project C04 (Upgrade Potable Water System) would disturb geological resources through the drilling of a new well into bedrock. Impacts would be localized to the work area and would be long-term but minor. For the remaining projects, excavation would be minimal and would not alter bedrock or affect geological resources.

Soils

Short- and long-term minor adverse impacts on soils would be expected from the proposed projects. The primary impacts would include long-term loss of soil function and productivity in areas with new impervious surface, as well as soil compaction, disturbance, and erosion associated with construction activities. The projected increase in impervious surface (considering the project alternative with the greatest amount of impact for each proposed project) would be approximately 98,900 ft^2 (2.3 acres) (Table 4.5-1). These impacts would be minor when considered in the context of the total land area of White Bluff (2.5 percent of the total) and the currently disturbed character and reduced productivity of many of the project sites.

There would be no long-term effect on soils in paved areas (e.g., the proposed location of Project C03 [Heritage Observation Center]), as the function and productivity of soils underneath these areas have already been lost.

Implementation of environmental protection measures and BMPs, including erosion and sediment control measures, would minimize adverse impacts to soil. Measures could include installing silt fencing and sediment traps, applying water to disturbed soil, decompacting soils, and revegetating disturbed areas as soon as possible after the disturbance. These measures would reduce soil compaction and loss of soil productivity, and would minimize the risk of erosion and sedimentation. Implementation of environmental protection measures would also minimize the potential for and extent of contamination associated with any spills from construction equipment.

Environmental Consequences

Based on information about construction suitability provided by USDA NRCS (2018), the proposed building construction and paving projects would generally occur in soils that are rated “not limited” or “somewhat limited” for small building construction and paved roads. Building projects that would occur in areas mapped as Northstar and Rockly soils, which may be very limited for construction of small commercial buildings, include Project C03 (Heritage Observation Center), which would be located on a previous development site, and Project C02 (Addition to Fitness Center), which is an addition to an existing structure. Based on past uses of these sites, soil conditions are not likely to be an impediment to development. In these areas, as in all proposed construction sites, site-specific geotechnical investigation would be conducted prior to commencement of proposed projects to determine whether limitations exist and identify appropriate environmental protection measures to be implemented to minimize adverse impacts. The preferred alternative for Project SO08 (Septic Field Expansion) would be located in an area where the soils have already been assessed and determined to be suitable for location of a septic system.

As discussed in Section 3.10.2, soils in the project areas are not considered prime farmland; therefore, no impacts to prime farmland would occur.

Because soil loss and disturbance would occur in previously disturbed locations, and given the implementation of BMPs and environmental protection measures to reduce the risk of erosion, no significant impacts to soil resources would occur.

Geological Hazards

No significant impacts related to geological hazards would be expected as a result of the proposed projects. All new construction associated would be designed consistent with requirements established in UFC 3-310-03, *Seismic Design for Buildings*, and EO 12699, *Seismic Safety*, which would reduce the potential for adverse impacts associated with structural failure during or following a seismic event.

4.10.2 No Action Alternative

Under the No Action Alternative, the proposed actions would not be implemented and, as a result, would not result in any impacts to earth resources within most of the individual project areas.

4.11 SOCIOECONOMIC RESOURCES

Socioeconomic impacts are assessed in terms of direct impacts on the local economy and other socioeconomic resources. The magnitude of potential impacts can vary greatly, depending on the location of a proposed project. A proposed project could have a significant impact with respect to the socioeconomic conditions if it were to result in at least one of the following:

- Substantial change in the local or regional economy, employment, or business volume
- Substantial change in the local or regional population

4.11.1 Proposed Action/Alternatives

Short-term, minor, beneficial impacts on the local economy would occur from the proposed projects at White Bluff. These activities would stimulate the local economy through the employment of construction workers and the purchase of construction-related materials and other goods and services, as well as secondary purchases of goods and services. Due to the temporary nature of construction, the economic benefits would be short-term.

The proposed construction and associated expenditures could generate additional jobs, most likely in the construction industry, but also in other industries, such as retail, that would generate additional indirect and induced income in Spokane County. These effects would be minor and short-term.

In 2017, Spokane County had a civilian labor force of 236,389 people of which 13,474 (5.7 percent) were employed in the construction industry (United States Census Bureau 2017b). It is expected that the local labor force would be sufficient to meet the demand for new jobs in the construction and other industries without a migration of workers into the area. Because it is expected that all construction workers would be from the local or regional area, it is unlikely that impacts on population would occur as a result of the proposed projects.

There would be no anticipated change to the number of personnel employed at White Bluff as a result of the proposed projects; therefore, no significant short- or long-term impacts on demographics would be expected.

4.11.2 No Action Alternative

The No Action Alternative would not result in any socioeconomic or environmental justice impacts. The proposed projects would not occur, and there would be no associated expenditures that would provide short-term construction employment or generate additional indirect and induced income beyond the scope of normal conditions and influences within Spokane County.

4.12 INFRASTRUCTURE

The analysis to determine whether impacts on infrastructure are significant primarily considers whether a proposed project would exceed capacity or place unreasonable demand on a specific utility. Impacts might arise from energy needs created by either direct or indirect workforce and population changes related to activities on White Bluff. It is assumed that, consistent with current practice, construction contractors would be informed of utility locations prior to any ground-disturbing activities that would result in unintended utility disruptions or human safety hazards. All construction would be conducted in accordance with federal and state safety guidelines. Any permits required for excavation and trenching would be obtained prior to the commencement of construction activities.

Impacts on transportation systems would be considered significant if they degrade the existing transportation infrastructure by creating unacceptable traffic or delays on existing roadways, excessive delays at the entry gate, or shortfalls in parking.

4.12.1 Proposed Action/Alternatives

Electrical Supply

Short-term, negligible, adverse impacts on the electrical distribution system would occur during construction of many of the proposed projects. Electrical service interruptions could occur should aboveground or underground electrical lines need to be rerouted, and when new or renovated facilities are connected to White Bluff's electrical distribution system. Over the long-term, construction of the new buildings would result in increased consumption of electricity. All new facilities would have energy-efficient electrical systems to minimize consumption to the degree possible. White Bluff is currently supplied with adequate electrical power and a distribution system with sufficient additional capacity to meet the needs of the proposed projects during construction and operation. Therefore, no significant impacts on the electrical supply system would occur.

Heating and Cooling

Short-term, negligible, impacts on the heating and cooling system could occur in localized areas during construction of many of the proposed projects. Temporary disruptions in service could occur as the new buildings are connected to existing systems. All of the new buildings would be designed for eventual conversion to natural gas for heating and cooling in the future. Over the long term, the building square footage requiring heating and cooling would increase by 72,150 ft^2 and there would be an associated increased energy demand. Building development would include utility connections or new utilities as needed, and there would be sufficient capacity to heat and cool the additional square footage. No significant impacts to heating and cooling would occur.

Fuels

A total of 10 new generators would be added to provide emergency/standby power systems at the new buildings. These new generators would result in an increase in the amount of diesel fuel used on White Bluff. However, these impacts would not be significant.

Water Supply

Short-term, negligible, adverse impacts on the water supply system would occur during the proposed construction as existing water lines are connected to new buildings or capped as appropriate. Project C04 (Upgrade Potable Water System) would have a long-term beneficial impact by providing a second reliable source of potable water to White Bluff, and would reduce the risks to operations associated with having a single well source for water. The project would also include a major upgrade to the water supply system. Project EC02 (Replacement Fire Pump House and Pump) would have a long-term beneficial impact by modernizing the fire-suppression system to make it more reliable as far as delivering the requisite amount of water to the nine fire hydrants on White Bluff. The proposed projects would likely result in an increase in water usage on White Bluff, as more people would use the GSU for training purposes. As discussed in Section 3.12.2, irrigation during the summer accounts for the greatest use of water on White Bluff. There would be some increase in water use associated with irrigating landscaped areas associated with new buildings, but the extent of these areas would be small, as White Bluff would primarily landscape with drought-tolerant species. The estimated increase in water usage would be 10 percent. Both the current and the new water systems would have sufficient capacity to meet the increased demand. Based on this estimate, usage would fall well within the existing USAF water right for White Bluff. Therefore, no significant short- or long-term adverse impacts on the water supply system would occur.

Sanitary Sewer and Wastewater Treatment

Short-term, negligible to minor, adverse, and long-term, beneficial impacts on the sanitary sewer and wastewater system would be expected from construction and implementation of the proposed projects. Short-term interruptions in sanitary sewer could be experienced when facilities are disconnected from or connected to the sanitary sewer systems on White Bluff. However, interruptions would be temporary and coordinated with affected users. Wastewater treatment is unlikely to be affected by the proposed projects. Long-term, beneficial impacts on the sanitary sewer and wastewater system would be expected from construction of new updated facilities.

While construction of the new facilities and associated long-term training increases at White Bluff could stress the capacity of the existing septic systems, Project SO08 (Septic Field Expansion) would increase the capacity to support the planned future development. Therefore, no significant impacts on the sanitary sewer system would occur.

Stormwater Drainage System

Short-term, adverse impacts could occur from construction of the proposed projects due to vegetation removal and compaction of soils by construction equipment, which could result in increased soil erosion and transport of sediment in stormwater runoff. All contractors are required to comply with applicable statutes, standards, regulations, and procedures regarding stormwater management, which would minimize impacts. A variety of stormwater controls and BMPs would be incorporated into construction plans, which would include planting native vegetation in disturbed areas as soon as possible following construction activities; constructing retention facilities; and implementing structural controls such as interceptor dikes, swales (excavated depressions), silt fences, and straw bales.

Long-term adverse impacts to the stormwater system could occur if the capacity of the existing system is not sufficient to handle runoff from the approximately 2.3 acres of new impervious surface that would result from development of the proposed projects. Prior to construction of projects that would add new impervious surface, a detailed drainage analysis would be conducted to identify any needed improvements to the stormwater system. If the analysis determines that improvements or increased capacity are needed, those improvements would be completed as part of the proposed project. All stormwater originating from the new impervious areas would be treated and infiltrated on-site using LID methods such as bioretention, direct infiltration, and pervious pavements. Therefore, no significant short- or long-term adverse impacts to the stormwater drainage system would occur.

Communications System

Short-term, negligible to minor, adverse, and long-term, beneficial impacts would be expected from construction and implementation of the proposed projects. Short-term interruptions of communications systems (e.g., copper and fiber cable used for voice, data, and video communications) could be experienced when facilities are disconnected from or connected to the communications system on White Bluff. However, the discontinuation of communications would be temporary and coordinated with area users. Demolition and construction activities would be planned to maintain the site telecommunication system, with no interruption of service that could impact mission-essential activities. No significant short- or long-term adverse impacts to the communications system at White Bluff would occur.

Solid Waste Management

Short-term, minor, adverse impacts would be expected from generation of solid waste during construction and demolition activities. Waste would include building materials such as solid pieces of concrete, metals (e.g., conduit, piping, and wiring), and lumber. Contractors at White Bluff are required to recycle construction and demolition debris to the maximum extent practicable, and to dispose of non-recyclable construction and demolition debris at an off-site permitted landfill facility. The proposed projects could result in a minor long-term increase in the amount of day-to-day solid waste generated at White Bluff. No significant adverse solid waste management impacts would occur.

Transportation System

Short-term, minor, adverse impacts on the transportation network would be expected from implementation of the proposed projects. Potential impacts would be associated with increased traffic and parking requirements from construction vehicles and equipment. Construction and demolition activities would require the delivery of materials to, and removal of debris from, project areas; however, construction traffic would account for a small percentage of the total existing traffic on White Bluff and public roadways. Many of the heavy construction vehicles would be driven to the project areas and kept on-site for the duration of construction and demolition activities, resulting in relatively few additional trips. Given the low traffic flow through the White Bluff gate and the short-term nature of construction, impacts would be minor.

Over the long term, there would be a minor increase in vehicular traffic on White Bluff associated with increased use of the GSU for training. However, since there would be no increase in personnel, overall vehicle use would remain low. Access roads and parking facilities would be constructed where needed. The proposed projects would not result in unacceptable traffic or delays on existing roadways, excessive delays at access gates, or shortfalls in parking. Therefore, no significant impacts to transportation systems would occur.

4.12.2 No Action Alternative

Under the No Action Alternative, minor short-term disruptions to existing utilities and the local road network would not occur. Without the proposed projects, there would continue to be a single well source for potable water on White Bluff, and the associated risks for curtailed operations in the event of the well becoming non-functional would persist. Additionally, the fire pump and Building 82 would continue to be outdated, repairs would continue to be difficult, the system would become increasingly unreliable, and it would not be in compliance with NFPA regulations. The septic system would not be expanded under this alternative, but without the other proposed projects, the existing system would have adequate capacity for White Bluff's needs.

4.13 VISUAL RESOURCES

Impacts to visual resources from the proposed projects would be considered significant if either of the following were to occur:

- Introduction of facilities that are incompatible with established architectural and design guidelines and constraints
- A substantial long-term reduction in the quality of the visual environment at White Bluff for on-site personnel or the surrounding communities

4.13.1 Proposed Action/Alternatives

During demolition and construction, removal of vegetation, earth work, and presence of heavy equipment and materials would reduce the aesthetic appeal of the site. Most impacts would be temporary, lasting only for the duration of the construction period and for a short time afterward while vegetation is reestablished in temporarily impacted or landscaped areas. However, removal of trees and other vegetation and construction of new buildings and other structures would result in lasting changes to the visual environment at White Bluff. These impacts would be greatest on the western half of the property, where trees would be cleared from development sites and there would be a reduction in the naturalness of these areas. Because all the proposed projects (with the exception of the septic field expansion) would occur within the perimeter fence of White Bluff, the Proposed Action would predominantly affect the visual environment for on-site personnel. While a few nearby residents and motorists traveling on Newkirk and Lyons roads could also be affected, actions within the perimeter fence would not substantially reduce the quality of the visual environment to these viewers. Following guidance in the Master Plan (see Section 3.13.1 and USACE 2019), planting a landscape buffer of native species around the White Bluff perimeter to screen activities and buildings from the general public would help reduce visual impacts to off-site viewers. New structures would be one- or two-story structures that would not be highly visible on the landscape. Therefore, impacts would be minor.

Long-term beneficial impacts to the visual environment would result from the removal of outdated structures (such as trailers and the Mylar tent) and replacing them with newer, more permanent structures. New structures would follow the development guidelines discussed in the Master Plan update, which provide a unified architectural theme (e.g., earth tones and neutral colors) and landscape theme for perimeter plantings and landscaping around buildings. Additionally, Project C03 (Heritage Observation Center) would improve the visual environment by repurposing an old building site and resurfacing the associated access road, and would provide on-site personnel with a recreational facility that provides opportunities to view the landscape from the highest point on White Bluff.

Because the proposed projects would not introduce facilities that are incompatible with established architectural and design guidelines and constraints, because there would be only a minor reduction in the quality of the visual environment to surrounding communities, and because the visual environment for on-site personnel would improve, no significant impacts to visual resources would occur.

4.13.2 No Action Alternative

Under the No Action Alternative, the proposed projects would not be implemented, and there would be no changes to the existing visual environment at White Bluff. No associated impacts to visual resources would occur. Over the long term, there could be a reduction in the visual environment for on-site personnel as the existing buildings continue to degrade and more temporary structures are utilized for JPRA's needs.

4.14 OTHER NEPA CONSIDERATIONS

4.14.1 Unavoidable Adverse Effects

This EA identifies any unavoidable adverse impacts that would be required to implement the Proposed Action and the significance of the potential impacts to resources and issues. Title 40 CFR Section 1508.27 specifies that a determination of significance requires consideration of context and intensity.

Construction of new facilities and infrastructure improvements would impact the local project areas at White Bluff. The severity of potential impacts would be limited by regulatory compliance for the protection of the human and natural environment.

Unavoidable long-term adverse impacts associated with implementing the Proposed Action would include loss of soil function and productivity, loss of vegetation, and loss of wildlife habitat over approximately 2.3 acres of new impervious surface. Unavoidable short-term adverse impacts associated with implementing the Proposed Action would include: temporary erosion and sedimentation from soil disturbance, a temporary increase in fugitive dust and air emissions during construction, intermittent noise, and minor alterations to local traffic. However, these effects are considered minor and would be confined to the immediate area. Use of environmental controls and implementing controls required in permits and approvals obtained would minimize these potential impacts.

For the Proposed Action to be accomplished, these impacts would occur. The action is required to provide facilities and infrastructure improvements necessary to support JPRA's mission on White Bluff.

4.14.2 Relationship of Short-Term Uses and Long-Term Productivity

The relationship between short-term uses and enhancement of long-term productivity from implementation of the Proposed Action is evaluated from the standpoint of short-term effects and long-term effects. Short-term effects would be those associated with demolition and construction activities for buildings and infrastructure. The long-term enhancement of productivity would be those effects associated with new and improved facilities and infrastructure after implementation of the Proposed Action.

The Proposed Action represents an enhancement of long-term productivity for personnel and operations at White Bluff. The negative effects of short-term operational changes during construction activities would be minor compared to the positive benefits from improved facilities and infrastructure. Immediate and long-term benefits would be realized for reliability, energy efficiency, and safety after completion of the Proposed Action.

4.14.3 Irreversible and Irretrievable Commitments of Resources

This EA identifies any irreversible and irretrievable commitments of resources that would be involved in the Proposed Action, if implemented. An irreversible effect results from the use or destruction of resources (e.g., energy) that cannot be replaced within a reasonable time. An irretrievable effect results from loss of resources (e.g., endangered species) that cannot be restored as a result of the Proposed Action. Irreversible and irretrievable commitment of resources from the proposed projects includes habitat removal of up to 2.3 acres for construction and any potential injury or mortality of wildlife (including protected species—although unlikely).

4.15 CUMULATIVE EFFECTS

This EA considers the effects of cumulative impacts as required in 40 CFR Section 1508.7 and concurrent actions as required in 40 CFR Section 1508.25[1]. A cumulative impact, as defined by the CEQ (40 CFR Section 1508.7) is 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 which agency (federal or non-federal) or person undertakes such actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time."

Cumulative impacts may occur when there is a relationship between a proposed action and other actions expected to occur in a similar location (i.e., overlapping geographic location) or during a similar time period (i.e., coincidental or sequential timing of events). The impacts may then be incremental and may result in cumulative impacts. Actions overlapping with or in close proximity to a proposed action can reasonably be expected to have more potential for cumulative impacts on "shared resources" than actions that may be geographically separated. Similarly, actions that coincide in the same time frame tend to offer a higher potential for cumulative impacts.

For most resources, the spatial area for consideration of cumulative effects (i.e., ROI) is White Bluff, although a larger area is considered for some resources, as disclosed in Chapter 3.

Past activities are those actions that occurred within the geographic scope of cumulative effects that have shaped the current environmental conditions of the project area. White Bluff was constructed in 1954 and operated as a Nike Missile Control Site until 1963. It was then converted to a USAF satellite operations center, operated by USAF Space Command. In 1997, the site was transferred to Air Mobility Command, which allowed JPRA to utilize the facility. In 2007, USAF acquired 35 acres of land, which increased the size of White Bluff to 92 acres.

Since its inception in 1954, numerous buildings, roadways, gates, and other facilities and infrastructure have been constructed on White Bluff to meet operational needs. In the surrounding areas within the region, agricultural uses and low-density residential development have occurred. These land use changes have resulted in alteration of soils, native vegetation communities, and wildlife habitats; increased ambient noise levels; introduced hazardous materials and health and safety hazards into the area; affected air quality; increased water demands and introduced water quality risks; and changed the overall visual condition of the area. The affected environment descriptions in Chapter 3 reflect these past changes and are considered in the cumulative effects analysis.

The scope of the proposed, past, ongoing, and future projects relevant to the cumulative impacts analyses include those involving demolition, site preparation, facility/infrastructure construction, maintenance, repair, and noise-generating activities within or near White Bluff. These actions could have an incremental impact on the resources analyzed within this EA. However, based on conversations with White Bluff staff, the proposed projects considered in this EA include all reasonably foreseeable future projects on the GSU. Fairchild AFB has proposed 13 development projects for construction during the same time period as the White Bluff projects, which are being analyzed in a separate EA. Given that White Bluff is located roughly 5 miles from Fairchild AFB, these actions would be outside the ROI for all resources except air quality and socioeconomics.

According to the Spokane County Department of Building and Planning, there are no planned major development projects in the immediate vicinity of White Bluff, as this is a very rural location (Maynard, 2019). As discussed in Section 3.2.2, the area around White Bluff is zoned as Rural Conservation and Rural Traditional. While numerous projects are planned or proposed for the vicinity of Airway Heights and the West Plains area to the south of White Bluff, including a new Amazon fulfillment center (McLean 2019), an electric sports car manufacturing facility (Nellis 2019), and expansion of the Exotic Metals West Plains Facility (Kramer 2019), these projects are generally outside the ROI for the resources considered in this EA. Exceptions would be air quality and socioeconomic resources, as increased development could result in changes to demographics and economic conditions.

Descriptions of the cumulative effects for the resource areas analyzed in this EA are provided in the following subsections.

4.15.1 Land Use

Proposed Action/Alternatives

The proposed projects would be compatible with White Bluff and adjacent land uses. Any actions on adjacent properties would be subject to applicable Spokane County zoning and land use regulations, and would not be incompatible with existing or projected land uses. Some loss of open space would occur on White Bluff as a cumulative effect of all planned projects. However, these changes would be compatible with use of the GSU as a training facility. Long-term, beneficial cumulative impacts would result from implementing the planning districts proposed in the Master Plan update, and from more efficient use of White Bluff land. No significant cumulative land use impacts would occur.

No Action Alternative

The proposed projects would not be constructed and, therefore, would not contribute to cumulative effects to land use.

4.15.2 Noise

Proposed Action/Alternatives

Short-term, minor, adverse, cumulative impacts would occur from noise generated by the combined proposed projects on White Bluff. During periods of demolition and construction, this noise would be additive to other sources of noise on and adjacent to the GSU (e.g., vehicular movements on roadways, power generators, and maintenance equipment). Multiple noise-generating activities occurring at the same time and in the same vicinity could have short-term, minor, adverse cumulative effects on the local noise environment, as considered in the noise analysis presented in Section 4.3.1. Noise generated by construction of the proposed projects at White Bluff would last only for the duration of demolition and construction activities, and would be minimized through measures such as restricting these activities to normal working hours (i.e., between 7:00 a.m. and 4:30 p.m.) and using equipment with exhaust mufflers. Actions outside the GSU boundary with the potential to be additive to these noise impacts are expected to be minimal. Over the long term, noise from the indoor firing range would alter the local noise environment in the immediate vicinity, but would be attenuated through construction materials and engineering controls and would not contribute to a cumulative increase in noise levels at nearby residences or other sensitive receptors. Because there would be no increase in noise levels associated with operation of the new helicopter landing pad, this project would not contribute to cumulative noise impacts over the long term. No significant cumulative noise impacts would occur.

No Action Alternative

The proposed projects would not be constructed and, therefore, would not contribute to cumulative noise effects in the ROI.

4.15.3 Air Quality

Proposed Actions/Alternatives

The State of Washington takes into account the impacts of all past, present, and reasonably foreseeable future emissions during the development of the State Implementation Plan. The state accounts for all significant stationary, area, and mobile emission sources in the development of this plan. Emissions generated by the proposed projects would be completely within an attainment area, and activities of this size and short-term nature would not contribute significantly to adverse cumulative impacts on air quality. Cumulatively, the facility construction, demolition, maintenance, and repair activities associated with the proposed projects, concurrent proposed installation development projects on Fairchild AFB, and other planned development projects within the ROI, in addition to vehicle emissions from all construction-related traffic, would result in short-term, intermittent increases in air pollutant levels during construction.

Given the size of the individual planned projects and the short-term nature of construction, significant effects to air quality are not anticipated, even when considered cumulatively. Within the region, planned development at White Bluff, in addition to other development and growth in the Airway Heights and West Plains areas to the south of White Bluff, would result in cumulative increases in vehicle emissions associated with more vehicle use on roads. However, no significant cumulative air quality impacts would occur.

No Action Alternative

The proposed projects would not be constructed and would not contribute to cumulative air quality impacts within the ROI.

4.15.4 Water Resources

Proposed Action/Alternatives

Groundwater

Future projects on White Bluff could result in accidental spills or leaks of substances such as fuels, oils, and other materials that could contaminate groundwater, should they enter the groundwater system. While any groundwater contamination would be cumulative to contamination from other sources in the region (e.g., agriculture), risks for contamination would be minimized by following equipment maintenance standards, use of secondary containment for temporary storage of hazardous materials, and other project-specific BMPs.

Implementation of the proposed projects would cumulatively increase the total amount of impervious surface within White Bluff by as much as 2.3 acres. New impervious surface would be additive to other impervious areas in the region, which are minimal given its rural nature. On White Bluff, the current area of impervious surface is 6.0 acres (6.5 percent of the total land area). With the proposed projects, the total area of impervious surface would be 8.3 acres (9 percent of the total land area), which is a minor increase. Because of the high rates of infiltration on White Bluff, the associated overall regional reduction in groundwater recharge as a result of future projects would be negligible. Outside of White Bluff, no other future actions in the ROI have been identified that would result in a substantial increase in impervious surface or reduction in groundwater recharge. Any actions occurring in the ROI would be subject to a variety of federal, state, and local regulations pertaining to stormwater, groundwater extraction, and protection of groundwater resources. Therefore, no significant cumulative impacts to groundwater within the ROI would occur.

Surface Water

As discussed in Section 4.5.1, the proposed projects would be unlikely to affect surface water resources beyond the GSU boundary. Therefore, there would only be a potential for cumulative effects to local surface water conveyances on White Bluff. Short- and long-term, minor, adverse, cumulative impacts on local surface water could occur from implementation of all the proposed projects at White Bluff. No additional future actions have been identified at White Bluff that would result in additive soil disturbance and associated erosion and sedimentation. However, routine activities such as vehicle maintenance would continue to have some risk of introducing pollutants into surface water. Risks for cumulative impacts to surface water would be minimized by using appropriate BMPs to control erosion and protect water quality when conducting ground-disturbing and other activities. Project design for new impervious developments would include stormwater features, as needed, to incorporate runoff from the new areas into the stormwater system and to maintain or restore predevelopment site hydrology to the maximum extent practicable. With these measures in place, no cumulative impacts to surface water would occur.

No Action Alternative

Under the No Action Alternative, none of the proposed projects would occur on White Bluff and there would be no associated interaction with groundwater or surface water at the GSU. Therefore, there would be no contribution to cumulative impacts.

4.15.5 Safety and Occupational Health

Proposed Action/Alternatives

Short-term, negligible cumulative impacts on health and safety (e.g., slips, falls, heat exposure, exposure to mechanical, electrical, vision, chemical hazards) could occur from construction, demolition, maintenance, and repair activities associated with the proposed projects at White Bluff. Additionally, long-term negligible cumulative impacts could result from operation of the indoor firing range and other new facilities, as well other ongoing operations at the GSU. No additional future actions have been identified on White Bluff that would have the potential to contribute to cumulative risks to human health and safety. However, ongoing maintenance work, driving, vegetation management, and other regularly occurring activities on White Bluff would have associated health and safety risks. Cumulative risks would be reduced to acceptable levels by following all applicable safety standards for ongoing activities, and by implementing appropriate design criteria and operational safety standards for the proposed projects. There would be long-term, cumulative beneficial impacts from implementation of multiple projects that would improve mission safety, including a replacement fire pump house and pump, a safer helicopter landing pad, and upgrades to older structures. These improvements would offset some health and safety risks associated with past and present actions on White Bluff. Overall, no significant cumulative impacts to safety and occupational health would occur.

No Action Alternative

Under the No Action Alternative, the proposed projects would not occur and there would be no associated contribution to cumulative health and safety risks on White Bluff. However, projects being implemented to improve mission safety would also not occur, and would not help offset cumulative adverse impacts.

4.15.6 Hazardous Materials and Wastes

Proposed Action/Alternatives

Short-term, minor, adverse impacts associated with the use of hazardous materials and the generation of hazardous wastes would be expected during implementation of the proposed projects. Even when all projects are considered cumulatively, it is anticipated that the quantity of hazardous materials used during construction and demolition activities would be minimal and their use would be of short duration. No other future actions have been identified that would result in additional generation of construction-related hazardous materials, although ongoing operations would continue to involve small amounts of petroleum products and other hazardous materials, as described in Section 3.7.2. Ongoing operations at White Bluff generate negligible amounts of hazardous wastes. The proposed projects would result in a minor increase in the total amount of hazardous waste generated. Cumulative effects associated with hazardous materials and wastes would be minor, as contractors and staff would follow all pertinent federal, state, and local regulations, and internal Air Force requirements for handling these materials. With these protocols in place, cumulative risks for release of hazardous materials and wastes and subsequent environmental contamination would be minimized. No significant cumulative impacts to hazardous materials and wastes would occur.

No Action Alternative

Under the No Action Alternative, the proposed projects would not occur and there would be no associated contribution to cumulative effects pertaining to hazardous materials and wastes.

4.15.7 Biological Resources

Proposed Action/Alternatives

Vegetation

Past actions on White Bluff have resulted in loss, fragmentation, and alteration of native vegetation communities, and have led to a prevalence of introduced species. The proposed projects would result in additional loss and disturbance of native vegetation and associated habitats, although most would occur in previously altered habitats. Because the vegetation communities impacted by past, present, and future actions at White Bluff are prevalent in the region, no significant cumulative impacts to vegetation would occur.

Wildlife

Construction of the perimeter fence around White Bluff has created a barrier that has reduced the diversity of wildlife found on the GSU, and past actions on White Bluff have altered habitats, making them less suitable for many wildlife species. Noise associated with construction and demolition would be short-term, and would be cumulative to other noise generated by ongoing operations at White Bluff. Cumulative noise levels would be greatest for simultaneous construction projects occurring in the same general vicinity. Mortality of small, less-mobile species (e.g., reptiles and small mammals) and loss or alteration of habitat would be additive to impacts caused by past development and ongoing operations at White Bluff. When all planned projects are considered cumulatively with baseline conditions, long-term cumulative impacts include loss and alteration of wildlife habitats across most of the GSU. Because the geographic extent of White Bluff is small in relation to the amount of habitat in the region, and no high-quality habitats would be lost, no significant cumulative impacts to wildlife would occur.

Protected and Sensitive Species

The discussion in the previous paragraph of cumulative impacts to wildlife habitats on White Bluff is applicable to protected and sensitive species, as they may use these habitats. Because sensitive and high-quality habitats are not currently present on White Bluff, the proposed projects would not contribute to a further reduction of these resources. Additionally, there is a low likelihood of sensitive and protected species being present on White Bluff. Therefore, no significant cumulative impacts to protected and sensitive species would occur.

No Action Alternative

Under the No Action Alternative, the proposed projects would not occur and there would be no associated contribution to cumulative impacts to biological resources.

4.15.8 Cultural Resources Impacts

Proposed Action/Alternatives

Damage to the nature, integrity, and spatial context of cultural resources can have a cumulative impact if the initial act is compounded by other similar losses or impacts. The alteration or damage to historic properties may incrementally impact cultural resources in the region.

No impacts to cultural resources are anticipated from the proposed projects. Past actions have been conducted in accordance with Section 106 of the NHPA. Any present and/or future actions also require implementation and completion of the Section 106 process. All of White Bluff has been inventoried and contains no NRHP-eligible historic properties. The regulations set forth at 36 CFR 800, procedures in AFI 32-7605, and standard operating procedures in the Fairchild AFB *Integrated Cultural Resources Management Plan* (Fairchild AFB 2018b) will continue be followed for present and future actions. If the Section 106 process is followed during the implementation of individual projects, any effects would be resolved and, as a result, no adverse effects to cultural resources would be anticipated. As there are no identified impacts to cultural resources from the Proposed Action, by adhering to the Section 106 process for other actions, no significant cumulative impacts to cultural resources would occur.

No Action Alternative

Under the No Action Alternative, the proposed projects would not occur and there would be no associated contribution to cumulative impacts to cultural resources.

4.15.9 Earth Resources

Proposed Action/Alternatives

Future planned projects on White Bluff would result in temporarily disturbed ground surfaces at construction sites and associated short- and long-term impacts from soil compaction, disturbance, and erosion caused by earth-moving and other construction activities. These impacts would be minimized through the use of BMPs, erosion and sediment controls, and other measures; and in many cases, they would occur in areas that have been disturbed in the past. New structures and pavements would result in a long-term loss of soil function and productivity over the combined footprint area for all planned projects, which would total 2.3 acres. Considering the extent of soil that has already been impacted by development, the cumulative long-term loss would be 8.3 acres (9 percent of the total land area on White Bluff). These losses would not be considered significant in the context of undisturbed soil resources in the region. Site-specific soil testing would be conducted to determine whether soil limitations exist at proposed building sites, and to identify appropriate environmental protection measures to be implemented to minimize cumulative adverse impacts.

No Action Alternative

Under the No Action Alternative, the proposed projects would not occur and there would be no associated contribution to cumulative impacts to earth resources.

4.15.10 Socioeconomic Resources

Proposed Action/Alternatives

The proposed projects and other future development actions in the ROI would have short-term, minor, beneficial effects through the increased demand for construction workers and the procurement of goods and services. These effects would be additive to other short- and long-term socioeconomic benefits associated with future development beyond the immediate vicinity of White Bluff, but which still influence the regional economy, which would include proposed projects on Fairchild AFB and other projects in Airway Heights, the West Plains and other areas within the ROI. Overall, cumulative impacts are expected to be moderate and beneficial. Because the proposed projects would not result in an increase in the population of White Bluff or the region, they would not contribute to cumulative demographic impacts in the region.

No Action Alternative

Under the No Action Alternative, the proposed projects would not occur and there would be no associated contribution to cumulative socioeconomic impacts.

4.15.11 Infrastructure

Proposed Action/Alternatives

The proposed projects would result in a long-term increase in consumption of energy and water, and a long-term increase in generation of wastewater. The increases associated with the proposed projects would be additive to current levels, although they would be offset to some degree by upgrades that improve efficiency. Planned future upgrades to natural gas heating and cooling would further offset these increases. No additional future actions have been identified at White Bluff that would contribute to cumulative effects to utilities. The proposed projects are part of a master planning effort that considers utility needs. When all projects are considered together, the existing utilities would have sufficient capacity to accommodate the cumulative projected increases in demand for utilities, with the exception of the septic system, the capacity of which would be increased by Project SO08. Therefore, no significant cumulative impacts to utilities would occur.

Short- and long-term, negligible to minor adverse impacts on the transportation system would occur during implementation of the planned projects on White Bluff, with a long-term cumulative effect of increased vehicular traffic on the GSU associated with its increased use for training in the future. These impacts would be offset to some degree by upgrades to roadways and construction of new access roads and parking lots. While the proposed projects would result in increased use of White Bluff in the future, the effect on cumulative traffic volumes in the region is expected to be negligible. Overall, no significant cumulative impacts would occur.

No Action Alternative

Under the No Action Alternative, the proposed projects would not occur and there would be no associated contribution to cumulative construction-related impacts to infrastructure, or to increases in energy efficiency associated with the projects. However, future upgrades to natural gas heating and cooling would still foreseeably occur.

4.15.12 Visual Resources

Proposed Action/Alternatives

The effects on visual resources of the proposed projects would be cumulative to those from past actions on White Bluff that have modified the naturalness of the site through development and loss of native vegetation. No additional reasonably foreseeable future actions have been identified with the potential to affect visual resources at White Bluff. Once all of the proposed projects have been completed, White Bluff would be a more developed GSU, with more buildings and roadways and other infrastructure. These impacts would be offset to some degree by adherence to the overall architectural and landscape themes specified in the Master Plan, which would result in a unified architectural image for the GSU, and would entail a natural perimeter landscape buffer to screen the activities and buildings on White Bluff from adjacent properties. Because long-term visual changes on White Bluff would primarily impact users of the GSU, cumulative impacts would not be significant.

No Action Alternative

Under the No Action Alternative, the proposed projects would not occur and there would be no associated contribution to cumulative impacts to visual resources associated with the projects.

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5.0 LIST OF PREPARERS

This EA has been prepared under the direction of JPRA and the Air Force Civil Engineer Center, USAF, 92 Air Refueling Wing at Fairchild AFB. The individuals that contributed to the preparation of this EA are listed in Table 5-1.

Table 5-1: List of Preparers

Name/Organization	Education	Resource Area	Years of Experience
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Kim Anderson/AECOM	M.S. Environmental and Forest Biology B.S. Biology and English	Water Resources; Biological Resources; Earth Resources; Land Use; Visual Resources; Cumulative Effects	20
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Ned Gaines/Brice	M.S. Anthropology B.S. Anthropology	Cultural Resources	19
Sam Hartsfield	B.S. Biology M.S. Environmental Science and Management	Air Quality	14
Linda Howard/AECOM	B.S. Environmental Science and Conservation Biology	Safety and Occupational Health; Hazardous Materials/Waste	14
Robin Lium/AECOM	M.S. Wildlife Conservation and Habitat Management B.A. Biology	GIS Analysis and Figures	11
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Roger Wayson/AECOM	Ph.D. Civil Engineering M.S. Environmental Engineering B.E.S. Environmental Engineering	Noise; Air Quality	44

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6.0 PERSONS AND AGENCIES CONSULTED/COORDINATED

Table 6-1 lists the persons and agencies that were contacted in the preparation of this EA.

Table 6-1: Persons and Agencies Consulted/Coordinated

Federal Agencies	
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Mr. Glen Nenema Chairman Kalispel Tribe of Indians 1981 LeClerc Road N Cusick, WA 99119	Ms. Carol Evans Chairwoman Spokane Tribe of Indians P.O. Box 100 Wellpinit, WA 99040

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APPENDIX A

Interagency/Intergovernmental Coordination and Public Participation

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Native American Tribal Consultation

The USAF is consulting with the Coeur d'Alene Tribe, Confederated Tribes of the Colville Reservation, Kalispel Tribe of Indians, and Spokane Tribe of Indians regarding the Proposed Action. The list of addresses contacted for the Native American Tribal consultation is provided below, followed by copies of the letters that were sent to these Native American tribes.

Tribal Contacts
Mr. Ernie Stensgar Chairman Coeur d'Alene Tribes P.O. Box 408 Plummer, ID 83851
Mr. Rodney Cawston Chairman Confederated Tribes of the Colville Reservation P.O. Box 150 21 Colville Street Nespelem, WA 99155
Mr. Glen Nenema Chairman Kalispel Tribe of Indians 1981 LeClerc Road N Cusick, WA 99119
Ms. Carol Evans Chairwoman Spokane Tribe of Indians P.O. Box 100 Wellpinit, WA 99040

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DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 92D AIR REFUELING WING (AMC)
FAIRCHILD AIR FORCE BASE WASHINGTON

Ronald R. Daniels
Deputy Base Civil Engineer
100 W. Ent Street
Fairchild AFB WA 99011

Mr. Ernie Stensgar
Chairman
Coeur d'Alene Tribe
P.O. Box 408
Plummer ID 83851

Dear Chairman Stensgar

The Joint Personnel Recovery Agency (JPRA) and the United States Air Force (USAF) have prepared a Draft Environmental Assessment (EA) addressing proposed development projects at JPRA White Bluff during the next five years, depending on funding availability. JPRA White Bluff is a Geographically Separated Unit (GSU) located approximately five miles northeast of Fairchild Air Force Base. The Draft EA (attached) was prepared in accordance with the National Environmental Policy Act.

On behalf of Mr. Jeff Johnson, Installation Tribal Liaison Officer (ITLO), I respectfully invite you to participate in government-to-government consultation to exchange information, ask questions, and advise JPRA and the USAF of any concerns or suggestions you may have with this proposal. We also invite your participation in consultation under Section 106 of the National Historic Preservation Act to ensure concerns you might have are addressed.

As described in the Draft EA, the Proposed Action consists of projects involving construction of new facilities and infrastructure, facility renovations and infrastructure improvements, and building demolition. Each project has its own purpose and need; however, in general the individual projects are needed to address deficiencies of function and capability in the facilities and infrastructure that result from obsolescence, deterioration, and evolving mission needs. Both JPRA and the USAF have defined the APE for direct effects to historic properties as the specific footprint impacted by the distinct projects within the fenced boundaries of the JPRA White Bluff site. The APE for indirect effects is defined as a 1,000-foot buffer around the individual project areas. Given the auditory and visual environment of an active JPRA training site, this buffer should capture all locations from which individual project construction or demolition activity may be visible or audible.

Based on the results of previously completed cultural resource inventories and consultations, JPRA and the USAF are unaware of any archaeological resources or properties of traditional cultural or religious significance within the APE. As such, JPRA and the USAF have determined the Undertaking would have no effect on archaeological historic properties or properties of traditional cultural or religious significance.

We request your review and the assessment of effects in the Draft EA. Although you may provide comments at any time, we request your response within 30 days of receiving this letter so that we can address your concerns in the Final EA. If you have any questions, my point of contact for this consultation is Mr. Shawn Woodard, Cultural/Natural Resources Manager, 92 CES/CEIE, shawn.woodard.1@us.af.mil, 509-247-8116.

Sincerely

Ronald R Daniels
RONALD R. DANIELS
Deputy Base Civil Engineer

Attachment:
Draft Environmental Assessment for the Master Plan Update at JPRA White Bluff

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 92D AIR REFUELING WING (AMC)
FAIRCHILD AIR FORCE BASE WASHINGTON

Ronald R. Daniels
Deputy Base Civil Engineer
100 W. Ent Street
Fairchild AFB WA 99011

Francis Somday
Executive Director
Confederated Tribes of the Colville Reservation
P.O. Box 150
Nespelem WA 99155

Dear Mr. Somday

The Joint Personnel Recovery Agency (JPRA) and the United States Air Force (USAF) have prepared a Draft Environmental Assessment (EA) addressing proposed development projects at JPRA White Bluff during the next five years, depending on funding availability. JPRA White Bluff is a Geographically Separated Unit (GSU) located approximately five miles northeast of Fairchild Air Force Base. The Draft EA (attached) was prepared in accordance with the National Environmental Policy Act.

On behalf of Mr. Jeff Johnson, Installation Tribal Liaison Officer (ITLO), I respectfully invite you to participate in government-to-government consultation to exchange information, ask questions, and advise JPRA and the USAF of any concerns or suggestions you may have with this proposal. We also invite your participation in consultation under Section 106 of the National Historic Preservation Act to ensure concerns you might have are addressed.

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Sincerely

Ronald R Daniels

RONALD R. DANIELS
Deputy Base Civil Engineer

Attachment:
Draft Environmental Assessment for the Master Plan Update at JPRA White Bluff

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 92D AIR REFUELING WING (AMC)
FAIRCHILD AIR FORCE BASE WASHINGTON

Ronald R. Daniels
Deputy Base Civil Engineer
100 W. Ent Street
Fairchild AFB WA 99011

Mr. Glen Nenema
Chairman
Kalispel Tribe
P.O. Box 39
Usk WA 99180

Dear Chairman Nenema

The Joint Personnel Recovery Agency (JPRA) and the United States Air Force (USAF) have prepared a Draft Environmental Assessment (EA) addressing proposed development projects at JPRA White Bluff during the next five years, depending on funding availability. JPRA White Bluff is a Geographically Separated Unit (GSU) located approximately five miles northeast of Fairchild Air Force Base. The Draft EA (attached) was prepared in accordance with the National Environmental Policy Act.

On behalf of Mr. Jeff Johnson, Installation Tribal Liaison Officer (ITLO), I respectfully invite you to participate in government-to-government consultation to exchange information, ask questions, and advise JPRA and the USAF of any concerns or suggestions you may have with this proposal. We also invite your participation in consultation under Section 106 of the National Historic Preservation Act to ensure concerns you might have are addressed.

As described in the Draft EA, the Proposed Action consists of projects involving construction of new facilities and infrastructure, facility renovations and infrastructure improvements, and building demolition. Each project has its own purpose and need; however, in general the individual projects are needed to address deficiencies of function and capability in the facilities and infrastructure that result from obsolescence, deterioration, and evolving mission needs. Both JPRA and the USAF have defined the APE for direct effects to historic properties as the specific footprint impacted by the distinct projects within the fenced boundaries of the JPRA White Bluff site. The APE for indirect effects is defined as a 1,000-foot buffer around the individual project areas. Given the auditory and visual environment of an active JPRA training site, this buffer should capture all locations from which individual project construction or demolition activity may be visible or audible.

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We request your review and the assessment of effects in the Draft EA. Although you may provide comments at any time, we request your response within 30 days of receiving this letter so that we can address your concerns in the Final EA. If you have any questions, my point of contact for this consultation is Mr. Shawn Woodard, Cultural/Natural Resources Manager, 92 CES/CEIE, shawn.woodard.1@us.af.mil, 509-247-8116.

Sincerely

RONALD R. DANIELS
Deputy Base Civil Engineer

Attachment:
Draft Environmental Assessment for the Master Plan Update at JPRA White Bluff

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 92D AIR REFUELING WING (AMC)
FAIRCHILD AIR FORCE BASE WASHINGTON

Ronald R. Daniels
Deputy Base Civil Engineer
100 W. Ent Street
Fairchild AFB WA 99011

Ms. Carol Evans
Chairwoman
Spokane Tribe of Indians
P.O. Box 100
Wellpinit WA 99040

Dear Chairwoman Evans

The Joint Personnel Recovery Agency (JPRA) and the United States Air Force (USAF) have prepared a Draft Environmental Assessment (EA) addressing proposed development projects at JPRA White Bluff during the next five years, depending on funding availability. JPRA White Bluff is a Geographically Separated Unit (GSU) located approximately five miles northeast of Fairchild Air Force Base. The Draft EA (attached) was prepared in accordance with the National Environmental Policy Act.

On behalf of Mr. Jeff Johnson, Installation Tribal Liaison Officer (ITLO), I respectfully invite you to participate in government-to-government consultation to exchange information, ask questions, and advise JPRA and the USAF of any concerns or suggestions you may have with this proposal. We also invite your participation in consultation under Section 106 of the National Historic Preservation Act to ensure concerns you might have are addressed.

As described in the Draft EA, the Proposed Action consists of projects involving construction of new facilities and infrastructure, facility renovations and infrastructure improvements, and building demolition. Each project has its own purpose and need; however, in general the individual projects are needed to address deficiencies of function and capability in the facilities and infrastructure that result from obsolescence, deterioration, and evolving mission needs. Both JPRA and the USAF have defined the APE for direct effects to historic properties as the specific footprint impacted by the distinct projects within the fenced boundaries of the JPRA White Bluff site. The APE for indirect effects is defined as a 1,000-foot buffer around the individual project areas. Given the auditory and visual environment of an active JPRA training site, this buffer should capture all locations from which individual project construction or demolition activity may be visible or audible.

Based on the results of previously completed cultural resource inventories and consultations, JPRA and the USAF are unaware of any archaeological resources or properties of traditional cultural or religious significance within the APE. As such, JPRA and the USAF have determined the Undertaking would have no effect on archaeological historic properties or properties of traditional cultural or religious significance.

We request your review and the assessment of effects in the Draft EA. Although you may provide comments at any time, we request your response within 30 days of receiving this letter so that we can address your concerns in the Final EA. If you have any questions, my point of contact for this consultation is Mr. Shawn Woodard, Cultural/Natural Resources Manager, 92 CES/CEIE, shawn.woodard.1@us.af.mil, 509-247-8116.

Sincerely

Ronald R Daniels
RONALD R. DANIELS
Deputy Base Civil Engineer

Attachment:
Draft Environmental Assessment for the Master Plan Update at JPRA White Bluff

Stakeholder Distribution List

The USAF distributed the Draft EA and Draft Finding of No Significant Impact (FONSI) for the Proposed Action to relevant federal, state, and local government agencies for a 30-day review period on [date]. The list of federal, state, and local government agencies contacted as part of this distribution is below, followed by the distribution memorandum that the USAF sent to these agencies. This appendix also includes the 2008 letter from the Washington Department of Archaeology and Historic Preservation regarding an archeological resources survey of White Bluff.

Federal Agency Contacts

Mr. David Suomi
Regional Administrator
Federal Aviation Administration
Northwest Mountain Region
1601 Lind Avenue Southwest
Renton, WA 98057

Ms. Jill Nogi
NEPA Manager
U.S. Environmental Protection Agency, Region 10
1200 Sixth Avenue, Suite 900
Seattle, WA 98101

Mr. Russ MacRae
Field Supervisor
U.S. Fish and Wildlife Service
Eastern Washington Field Office
11103 East Montgomery Drive
Spokane, WA 99206

State Agency Contacts

Ms. Brook Beeler
Director
Washington Department of Ecology
Eastern Regional Office
4601 North Monroe Street
Spokane, WA 99205-1295

Mr. Steve Pozzanghera
Regional Director
Washington Department of Fish and Wildlife, Region 1
2315 North Discovery Place
Spokane Valley, WA 99216-1566

Dr. Allyson Brooks
State Historic Preservation Officer
Washington Department of Archaeology & Historic Preservation
P.O. Box 48343
Olympia, WA 98504-8343

Local Agency Contacts

Mr. John Pederson
Planning Director
Spokane County Building & Planning
1026 West Broadway Avenue
Spokane, WA 99260

Ms. Heather TrautmannDevelopment Services Director
City of Airway Heights: Planning Department
1208 S. Lundstrom Street
Airway Heights, WA 99001

Ms. Kris Becker
Development Services Director
City of Spokane: Planning and Development
808 W. Spokane Falls Boulevard
Spokane, WA 99201

Mr. Louis Meuler
Acting Planning Director
City of Spokane: Planning and Development
808 W. Spokane Falls Boulevard
Spokane, WA 99201

Mr. Timothy Ames
Superintendent
Medical Lake School District
P.O. Box 128
Medical Lake, WA 99022

Mr. Matt Breen
Planning & Engineering
Spokane International Airport
9000 West Airport Drive, Suite 204
Spokane, WA 99224

Mr. Joe Southwell
Air Quality Engineer
Spokane Regional Clean Air Agency
3104 E. Augusta Avenue
Spokane, WA 99207

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 92D AIR REFUELING WING (AMC)
FAIRCHILD AIR FORCE BASE WASHINGTON

MEMORANDUM FOR DISTRIBUTION

FROM: 92 CES/CD
100 W. Ent Street, Suite 155
Fairchild AFB WA 99011

SUBJECT: Distribution of Draft Environmental Assessment for Master Site Plan Update at Joint Personnel Recovery Agency White Bluff, Washington

1. The Joint Personnel Recovery Agency (JPRA) and the United States Air Force (USAF) have prepared a Draft Environmental Assessment (EA) addressing proposed development projects at JPRA White Bluff during the next five years, depending on funding availability. JPRA White Bluff is a Geographically Separated Unit (GSU) located approximately 5 miles northeast of Fairchild Air Force Base.

2. The purpose of the Master Site Plan update is to address changes that have occurred since the prior Master Site Plan was completed in 2012, and to provide more specific information on planned future projects. The purpose of implementing the projects identified in the Master Site Plan update is to make infrastructure and functionality improvements necessary to support the mission of the JPRA. The Proposed Action consists of projects involving construction of new facilities and infrastructure, facility renovations and infrastructure improvements, and demolition of redundant or obsolete facilities. Each project has its own purpose and need. In general, however, the individual projects are needed to address deficiencies of function and capability in the facilities and infrastructure that result from obsolescence, deterioration, and evolving mission needs.

3. The Draft EA was prepared in accordance with the National Environmental Policy Act. The analysis contained within the Draft EA indicates that no significant impacts would occur from the Proposed Action at JPRA White Bluff.

4. In accordance with Executive Order (EO) 12372, Intergovernmental Review of Federal Programs, as amended by EO 12416 with the same title, we request your participation and comments on the Draft EA and Draft Finding of No Significant Impact (FONSI). Your comments will be considered in the development of the Final EA and prior to a decision being made whether JPRA and USAF sign the FONSI and proceed with the Proposed Action.

5. Please provide comments on the Draft EA and Draft FONSI no later than 30 days from date of this correspondence. Comments are encouraged to be sent by email to 92arw.pa@us.af.mil but you can also mail them to 92 ARW Public Affairs, 1 East Bong Street, Suite 228, Fairchild AFB, WA 99011. The telephone number is (509) 247-5705. Thank you in advance.

Ronald R Daniels
RONALD R. DANIELS, GS-14, DAF
Deputy Base Civil Engineer

Attachment:
Draft Environmental Assessment for the Master Plan Update at JPRA White Bluff

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DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 92D AIR REFUELING WING (AMC)
FAIRCHILD AIR FORCE BASE WASHINGTON

Ronald R. Daniels
Deputy Base Civil Engineer
100 W. Ent Street
Fairchild AFB WA 99011

Dr. Allyson Brooks
State Historic Preservation Officer
Department of Archaeology and Historic Preservation
P.O. Box 48343
Olympia WA 98504-8343

Dear Dr. Brooks

The Joint Personnel Recovery Agency (JPRA) and the United States Air Force (USAF) have prepared a Draft Environmental Assessment (EA) addressing proposed development projects at JPRA White Bluff during the next five years, depending on funding availability. JPRA White Bluff is a Geographically Separated Unit (GSU) located approximately five miles northeast of Fairchild Air Force Base.

The attached Draft EA, was prepared in accordance with the National Environmental Policy Act. This proposal is an Undertaking subject to Section 106 of the National Historic Preservation Act. Pursuant to 36 Code of Federal Regulations § 800.3, this letter initiates Section 106 consultation for this Undertaking at JPRA White Bluff. We have also initiated consultation with local Tribes and provided them a copy of the Draft EA.

As described in the Draft EA, the Proposed Action consists of projects involving construction of new facilities and infrastructure, facility renovations and infrastructure improvements, and building demolition. Each project has its own purpose and need; however, in general the individual projects are needed to address deficiencies of function and capability in the facilities and infrastructure that result from obsolescence, deterioration, and evolving mission needs. JPRA and the USAF have defined the APE for direct effects to any historic properties as the specific footprint impacted by the distinct projects located at the JPRA White Bluff training site. The APE for indirect effects is defined as a 1,000-foot buffer around the individual project areas. Given the auditory and visual environment of an active cantonment, this buffer should capture all locations from which individual project construction or demolition activity may be visible or audible. There are no buildings at JPRA White Bluff that are eligible for listing on the NRHP.

We request your review of the attached Draft EA and your concurrence with our finding of *no adverse effect* on historic properties. Please contact Mr. Shawn Woodard, Cultural/Natural

Resources Manager, 92 CES/CEIE, at shawn.woodard.1@us.af.mil or 509-247-8116 if you have any questions.

Sincerely

RONALD R. DANIELS, GS-14, DAFC
Deputy Base Civil Engineer

Attachment:
Draft Environmental Assessment for the Master Plan Update at JPRA White Bluff

STATE OF WASHINGTON

DEPARTMENT OF ARCHAEOLOGY & HISTORIC PRESERVATION

1063 S. Capitol Way, Suite 106 • Olympia, Washington 98501
Mailing address: PO Box 48343 • Olympia, Washington 98504-8343
(360) 586-3065 • Fax Number (360) 586-3067 • Website: www.dahp.wa.gov

December 9, 2008

Mr. Jonathan Wald
92 Civil Engineer Squadron
100 W. Ent St., Suite 155
Fairchild Air Force Base, WA 99011

In future correspondence please refer to:
Log: 030308-10-USAF
Property: Architectural Resources Survey for Fairchild AFB Cold War Inventory
Re: Determined Eligible

Dear Mr. Wald:

Thank you for contacting our office. I have reviewed the various materials you provided to our office regarding historic properties at Fairchild Air Force Base in Spokane. I have noted that within the various documents, several different determinations of eligibility have been recommended by at least two different consultants for the various properties. After sorting all of this out, I have determined that there are at least two National Register Eligible historic districts at Fairchild and several individually eligible buildings. Please note that my determinations do differ from your two consultants.

The Joint Personnel Recovery Agency (JPRA) Facility (formerly Nike Missile Site F-07c) has a very interesting history, but due to a low level of integrity and the construction of several newer buildings, I have determined that the facility as a whole is Not Eligible for the National Register of Historic Places (NRHP). I also believe that none of the building at this time are individually eligible for the NRHP. This includes the following buildings:

Building 1	- HQ Group	– Not Eligible
Building 2-3-8	- HQ Group	– Not Eligible
Building 5	- RADOME TWR Bldg	– Not Eligible
Building 6	- Sentry Box	- Not Eligible
Building 10	- Arts & Crafts Center	– Not Eligible
Building 15	- SAT COMM GRD TERM	– Not Eligible
Building 16	- RADOME TWR	- Not Eligible
Building 17	- Water Pump Station	– Not Eligible
Building 19	- RADOME TWR	- Not Eligible

After careful evaluation, I have determined that the Deep Creek AFB area is Eligible for the National Register of Historic Places as a district under criteria A for its association to the broad pattern of early nuclear proliferation as executed in WA states and across the county. The area is also eligible under criteria C, as a rare example of an OSS Areas. Due to the lack of detailed maps as provided in the various documents, I am uncertain as to the exact boundaries of the district. It certainly would include all the 1400 series buildings of Storage Igloos, support & maintenance buildings, and administrative structures. However, for the resources constructed in 1984, these buildings would likely fall out of the period of significance (1952-1966) for the district and would be considered non-contributing properties. However, the eligible district would also include buildings in the 1300 and 1200 series which served as the operations, living quarters and support structures for Deep Creek. Per the map provided, some buildings in this area were not numbered and presumed not inventoried, so it is impossible to say how many buildings are contributing vs. non-contributing to the district. The following is a list resources which will are within the eligible district boundaries:

Building 1200	- Comm Transmitter	- Eligible
Building 1201	- Power Station	- Eligible
Building 1204	- Control Tower	- Not Eligible
Building 1207	- Exhibit Facility	- Eligible
Building 1212	- Academy Classroom	- Eligible
Building 1230	- Bottle Gases Storage	- Eligible
Building 1238	- Warehouse	- Eligible
Building 1306	- Gymnasium	- Eligible
Building 1314	- Fire Station	- Eligible
Building 1316	- Mars radio	- Eligible
Building 1324	- Group Airbase HQ	- Eligible
Building 1334	- Dormitory	- Eligible
Building 1342	- Dormitory	- Eligible
Building 1350	- Heating Plant	- Eligible
Building 1401	- Police Control and ID	- Eligible
Building 1402	- Paint & Repair Shop	- Eligible
Building 1409	- Missile Assembly Shop	- Not Eligible
Building 1410	- SRVLL Inspection Shop	- Eligible
Building 1412	- Ground Supply	- Eligible
Building 1413	-	- Eligible
Building 1414	- Stor Spare Inert	- Not Eligible
Building 1417	-	- Eligible
Building 1419	- Nuclear Engine Test Bldg	- Eligible
Building 1421-1425, 1427, 1435-1438, 1440, 1442,1444, 1449, 1450, 1473-1476, 1478-1480, 1482-1484		- Eligible
Building 1426, 1439, 1441, 1443, 1451		- Eligible
Building 1434	-	- Eligible
Building 1448	- Detonator Storage	- Eligible
Building 1453	- Observation Tower	- Not Eligible
Building 1457	- Inert Spares Storage	- Eligible
Building 1458	- Inert Spares Storage	- Eligible
Building 1459	- Inert Spares Storage	- Eligible
Building 1460	- Inert Spares Storage	- Eligible
Building 1461	- Water Pump Station	- Eligible
Building 1462	- Inert Spares Storage	- Eligible

Building 1467	- Detonator Storage	- Eligible
Building 1470	- Base Warehouse	- Eligible
Building 1471	-	- Eligible
Buildings 1489-1498	- Munitions Storage Igloo	- Eligible

The district would also include the area of the Survival School, which consists of Building 1710, 1724, and 1733. These buildings are <u>Eligible</u> as contributing properties. Per the maps provided their also appears to be additional buildings/structures in this area that were not surveyed. They may be eligible for listing based on their age and integrity, but will need to be surveyed before we can determine their exact status.

After careful evaluation and assessment I have also determined that there is indeed a historic district along the flight line that would include various hangers and support structures. The area is <u>Eligible</u> for listing under criterion A as associated with the growth and development of the Airforce in general and Fairchild AFB. The area is also significant under criterion C as home to significant, and rare examples of various hanger buildings. The district would include the following structures as contributing vs. non-contributing resources:

Building 1	- Base Operations	- Not Eligible
Building 3	- Fire Station	- Not Eligible
Building 1001, 1005,1009,1012,1013,1017,1021		- Eligible
Building 1003,1007,1011,1015,1019		- Eligible
Building 1023,1024,1025,1026		- Eligible
Building 1029, 1033, 1037		- Eligible
Building 1034	- Maintenance Hanger	- Not Eligible
Building 1045	- Storage Building	- Not Eligible
Building 1060	- Vehicle Refueling Shop	- Eligible

I have also found that the following buildings are individually Eligible for the National Register of Historic Places under criterion A (for their direct connection to the growth and development of Fairchild AFB) and under criterion C (As properties that represent a type, period or method of construction).

Building 2025	- Maintenance Hanger	- Eligible
Building 2050	- HG Hanger	- Eligible
Building 2163	- Aircraft Engine Repair	- Eligible
Building 2285	- HQ Operations	- Eligible
Building 2245	- Air Base HQ Group	- Eligible

I have also determined that the following buildings are <u>Not Eligible</u> - Building 108, 152, 159, 200, 285, 1600, 2001, 2009, 2010, 2014, 2024, 2036, 2060, 2071, 2080, 2089, 2092, 2096, 2098 (no inventory form), 2115, 2116, 2120, 2125, 2135, 2169, 2170, 2185, 2244, 2248, 2249, 2260, 2262, 2264, 2266-2279, 2292, 2319, 2325, 2365, 2383, 2392, 2393, 2402, 2404 (no images), 2407, 2408, 2412, 2426, 2428, 2447, 2451, 2452, 2459 (no image), 2463, 2464, 2465, 4200, 4206 (no image), 4325, 443, 445, 446, 447, 448, 455, 610, 615, 617, 620, 622-623, 624, 644, 70006, 716, 9000, 9002, 9005, 9008, and 9010.

These comments are based on the information available at the time of this review and on behalf of the State Historic Preservation Officer pursuant to Section 106 of the National Historic Preservation Act and its implementing regulations 36CFR800.

I look forward to further consultation regarding your determination of effect as projects arise to the various eligible resources. Thank you for the opportunity to review and comment. Should you have any questions, please feel free to contact me.

Sincerely,

Michael Houser
State Architectural Historian
(360) 586-3076
michael.houser@dahp.wa.gov

APPENDIX B

Notice of Availability

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PUBLIC NOTICE

NOTICE OF AVAILABILITY

DRAFT ENVIRONMENTAL ASSESSMENT AND PROPOSED FINDING OF NO SIGNIFICANT IMPACT FOR MASTER SITE PLAN UPDATE AT JOINT PERSONNEL RECOVERY AGENCY (JPRA) WHITE BLUFF SPOKANE COUNTY, WASHINGTON

An Environmental Assessment (EA) has been prepared to analyze the impacts of the implementing 21 development projects identified in a Master Site Plan update for White Bluff, a Geographically Separated Unit of Fairchild Air Force Base. The purpose of this projects is to make infrastructure and functionality improvements necessary to support the mission of the Joint Personnel Recovery Agency. The proposed projects include construction of new facilities and infrastructure, facility renovations and infrastructure improvements, and building demolition.

The EA, prepared in accordance with the National Environmental Policy Act (NEPA), Council on Environmental Quality regulations, and Air Force instructions implementing NEPA, evaluates potential impacts of the alternative actions on the environment, including the No Action Alternative. Based on this analysis, the Air Force has prepared a proposed Finding of No Significant Impact (FONSI).

The Draft EA and proposed FONSI, dated [month, year], are available for review on the Fairchild AFB website at [insert URL]. The Air Force is aware of the potential impact of the ongoing coronavirus (COVID-19) pandemic on the usual methods of access to information and ability to communicate, such as the mass closure of local public libraries and challenges with the sufficiency of an increasingly overburdened internet. The Air Force seeks to implement appropriate additional measures to ensure that the public and all interested stakeholders have the opportunity to participate fully in this EA process. Accordingly, please do not hesitate to contact us directly by e-mailing 92arw.pa@us.af.mil or calling (509) 247-5705; we are available to discuss and help resolve issues involving access to the Draft EA and Proposed FONSI, or the ability to comment.

You are encouraged to submit comments through [insert Date]. Comments should be provided to 92 ARW Public Affairs, 1 East Bong Street, Suite 28, Fairchild AFB, WA 99011, or by email to 92arw.pa@us.af.mil.

PRIVACY ADVISORY NOTICE

Public comments on this Draft EA are requested pursuant to NEPA, 42 United States Code 4321, et seq. All written comments received during the comment period will be made available to the public and considered during Final EA preparation. Providing private address information with your comment is voluntary and such personal information will be kept confidential unless release is required by law. However, address information will be used to compile the project mailing list and failure to provide it will result in your name not being included on the mailing list.

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APPENDIX C

Air Conformity Applicability Model Results

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

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: FAIRCHILD AFB
State: Washington
County(s): Spokane
Regulatory Area(s): Not in a Regulatory Area

b. Action Title: Master Site Plan Update at JPRA White Bluff, Washington

c. Project Number/s (if applicable):

d. Projected Action Start Date: 4/2020

e. Action Description:

The proposed action includes the following 21 individual projects:

- EC01—Training Aid Development Shop: Construct a new 2,000 square foot structure to house the training aid development shop.
- EC02—Replacement Fire Pump House and Pump: Replace existing fire pump house and pump at Building 82 with a newer model.
- EC03—Simulated Training Facility: Demolish an existing tennis court and construct a 4,500 square foot training facility and associated access road.
- EC04—Maintenance Equipment Shed: Demolish an existing Mylar tent and replace with a storage shed for maintenance equipment.
- EC05—Administration Processing Facility: Construct an 800 square foot building to house administrative tasks.
- SO01—Training Support Storage: Add 1,500 ft^2 of storage space to support the training program conducted at Building 24.
- SO02—Building 24 Training Expansion: Provide an additional 8,400 ft^2 of building space for the training program conducted at Building 24.
- SO03—Training Planning: Decommission an existing trailer and replace it with a permanent building for specific training uses.
- SO04—Special Project Training Facility: Construct a 2,000 square foot structure to house special training activities.
- SO05—Urban Training Building: Construct an 11,000 square foot warehouse that can be configured for different training activities.
- SO06—Secure Holding Facility: Construct a 1,200 square foot building in an isolated area for use as a secure holding facility.
- SO07—Two-Story Office and Storage Building: Construct a two-story, 8,000 square foot office and storage building.
- SO08—Septic Field Expansion: Expand the septic fields to increase the capacity to support planned future growth and development.
- SO09—Building 101 Expansion: Provide an additional 1,500 ft^2 of building space for the training program conducted at Building 101.
- C01—Indoor Firing Range: Construct a 12,000 square foot building to house indoor firing range/simulation training.
- C02—Addition to Fitness Center: Construct a 2,500 square foot addition to the existing fitness center.
- C03—Heritage Observation Center: Construct a 1,250 square foot observation center on the existing foundation of Building 5.
- C04—Upgrade Potable Water System: Upgrade the potable water system serving White Bluff, to include a new aboveground tank and pump/chlorination house.

- C05—Helicopter Landing Pad: Construct a 9,000 square foot paved helicopter landing pad.
- SM01—Non-Secure Visitor and Training Facility: Construct a 2,500 square foot building that can be used for non-secure activities.
- SM02—Office, Administration, Research, Development, Testing, and Lab Facility: Construct a 12,000 square foot building to house development and testing related to operations in Building 15.

f. Point of Contact:

Name: Paul K. Sanford
Title: Aviation Environmental Planner
Organization: AECOM
Email: paul.sanford@aecom.com
Phone Number: 813-675-6843

2. Air Impact Analysis: Based on the attainment status at the action location, the requirements of the GCR are:

_____ applicable
__X__ not applicable

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.

"Air Quality Indicators" were used to provide an indication of the significance of potential impacts to air quality. These Air Quality Indicators are EPA GCR thresholds (de minimis levels) that are applied out of context to their intended use. Therefore, these indicators do not trigger a regulatory requirement; however, they provide a warning that the action is potentially significant. It is important to note that these indicators only provide a clue to the potential impacts to air quality.

Given the GCR de minimis threshold values are the maximum net change an action can acceptably emit in nonattainment and maintenance areas, these threshold values would also conservatively indicate an actions emissions within an attainment would also be acceptable. An air quality indicator value of 100 tons/yr is used based on the GCR de minimis threshold for the least severe nonattainment classification for all criteria pollutants (see 40 CFR 93.153). Therefore, the worst-case year emissions were compared against the GCR Indicator and are summarized below.

Analysis Summary:

2020

Pollutant	Action Emissions (ton/yr)	Air Quality Indicator	
		Threshold (ton/yr)	Exceedance (Yes or No)
Not in a Regulatory Area			
VOC	0.065	100	No
NOx	0.288	100	No
CO	0.320	100	No
SOx	0.001	100	No
PM 10	0.020	100	No
PM 2.5	0.012	100	No
Pb	0.000	25	No
NH3	0.000	100	No
CO2e	75.7		

2021

Pollutant	Action Emissions (ton/yr)	Air Quality Indicator	
		Threshold (ton/yr)	Exceedance (Yes or No)
Not in a Regulatory Area			
VOC	0.599	100	No
NOx	1.789	100	No
CO	2.118	100	No
SOx	0.015	100	No
PM 10	0.163	100	No
PM 2.5	0.083	100	No
Pb	0.000	25	No
NH3	0.002	100	No
CO2e	529.9		

2022

Pollutant	Action Emissions (ton/yr)	Air Quality Indicator	
		Threshold (ton/yr)	Exceedance (Yes or No)
Not in a Regulatory Area			
VOC	0.392	100	No
NOx	1.263	100	No
CO	1.548	100	No
SOx	0.028	100	No
PM 10	0.111	100	No
PM 2.5	0.074	100	No
Pb	0.000	25	No
NH3	0.001	100	No
CO2e	462.4		

2023

Pollutant	Action Emissions (ton/yr)	Air Quality Indicator	
		Threshold (ton/yr)	Exceedance (Yes or No)
Not in a Regulatory Area			
VOC	0.042	100	No
NOx	0.280	100	No
CO	0.211	100	No
SOx	0.029	100	No
PM 10	0.041	100	No
PM 2.5	0.041	100	No
Pb	0.000	25	No
NH3	0.000	100	No
CO2e	185.5		

2024

Pollutant	Action Emissions (ton/yr)	Air Quality Indicator	
		Threshold (ton/yr)	Exceedance (Yes or No)
Not in a Regulatory Area			
VOC	0.446	100	No
NOx	1.188	100	No
CO	1.574	100	No
SOx	0.038	100	No
PM 10	0.151	100	No
PM 2.5	0.078	100	No
Pb	0.000	25	No
NH3	0.001	100	No
CO2e	543.1		

2025

Pollutant	Action Emissions (ton/yr)	Air Quality Indicator	
		Threshold (ton/yr)	Exceedance (Yes or No)
Not in a Regulatory Area			
VOC	0.433	100	No
NOx	1.266	100	No
CO	1.711	100	No
SOx	0.048	100	No
PM 10	0.138	100	No
PM 2.5	0.091	100	No
Pb	0.000	25	No
NH3	0.001	100	No
CO2e	636.3		

2026—(Steady State)

Pollutant	Action Emissions (ton/yr)	Air Quality Indicator	
		Threshold (ton/yr)	Exceedance (Yes or No)
Not in a Regulatory Area			
VOC	0.072	100	No
NOx	0.509	100	No
CO	0.387	100	No
SOx	0.049	100	No
PM 10	0.072	100	No
PM 2.5	0.072	100	No
Pb	0.000	25	No
NH3	0.000	100	No
CO2e	359.0		

None of estimated emissions associated with this action are above the GCR indicators, indicating no significant impact to air quality; therefore, no further air assessment is needed.

Paul K. Sanford, Aviation Environmental Planner   DATE

1. General Information

—**Action Location**
Base: FAIRCHILD AFB
State: Washington
County(s): Spokane
Regulatory Area(s): Not in a Regulatory Area

—**Action Title:** Master Site Plan Update at JPRA White Bluff, Washington

—**Project Number/s (if applicable):**

—**Projected Action Start Date:** 4/2020

—**Action Purpose and Need:**
Purpose: The purpose of the Master Site Plan update is to incorporate changes to the White Bluff site and its facilities, organizational goals, regulatory practice, and DoD Unified Facilities Criteria (UFC) that have occurred since 2012. The update also provides more specific information on future projects than the 2012 Master Site Plan, which provided a general framework for future development but did not analyze the individual projects. The purpose of implementing the projects identified in the Master Site Plan update is to make infrastructure and functionality improvements necessary to support the mission of the Joint Personnel Recovery Agency (JPRA).

Need: The Master Site Plan update is needed to address deficiencies of function and capability in the facilities and infrastructure at White Bluff that result from obsolescence, deterioration, and evolving mission needs. These deficiencies are remedied through an ongoing process of construction of new facilities and infrastructure, renovation of existing facilities, and demolition of redundant or obsolete facilities. The projects identified in the Master Site Plan are needed to allow the JPRA to successfully complete its missions.

—**Action Description:**
The proposed action includes the following 21 individual projects

- EC01—Training Aid Development Shop: Construct a new 2,000 square foot structure to house the training aid development shop.
- EC02—Replacement Fire Pump House and Pump: Replace existing fire pump house and pump at Building 82 with a newer model.
- EC03—Simulated Training Facility: Demolish an existing tennis court and construct a 4,500 square foot training facility and associated access road.
- EC04—Maintenance Equipment Shed: Demolish an existing Mylar tent and replace with a storage shed for maintenance equipment.
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- SO06—Secure Holding Facility: Construct a 1,200 square foot building in an isolated area for use as a secure holding facility.
- SO07—Two-Story Office and Storage Building: Construct a two-story, 8,000 square foot office and storage building.
- SO08—Septic Field Expansion: Expand the septic fields to increase the capacity to support planned future growth and development.

- SO09—Building 101 Expansion: Provide an additional 1,500 ft^2 of building space for the training program conducted at Building 101.
- C01—Indoor Firing Range: Construct a 12,000 square foot building to house indoor firing range/simulation training.
- C02—Addition to Fitness Center: Construct a 2,500 square foot addition to the existing fitness center.
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- C04—Upgrade Potable Water System: Upgrade the potable water system serving White Bluff, to include a new aboveground tank and pump/chlorination house.
- C05—Helicopter Landing Pad: Construct a 9,000 square foot paved helicopter landing pad.
- SM01—Non-Secure Visitor and Training Facility: Construct a 2,500 square foot building that can be used for non-secure activities.
- SM02—Office, Administration, Research, Development, Testing, and Lab Facility: Construct a 12,000 square foot building to house development and testing related to operations in Building 15.

—Point of Contact

Name: Paul K. Sanford
Title: Aviation Environmental Planner
Organization: AECOM
Email: paul.sanford@aecom.com
Phone Number: 813-675-6843

—Activity List:

Activity Type		Activity Title
2.	Construction/Demolition	EC01—Training Aid Development Shop
3.	Heating	EC01—Training Aid Development Shop
4.	Construction/Demolition	EC03—Simulated Training Facility
5.	Heating	EC03—Simulated Training Facility
6.	Emergency Generator	EC03—Simulated Training Facility
7.	Construction/Demolition	EC04—Maintenance Equipment Shed
8.	Construction/Demolition	EC05—Administration Processing Facility
9.	Heating	EC05—Administration Processing Facility
10.	Construction/Demolition	SO01—Training Support Storage
11.	Heating	SO01—Training Support Storage
12.	Construction/Demolition	SO02—Building 24 Training Expansion
13.	Heating	SO02—Building 24 Training Expansion
14.	Construction/Demolition	SO03—Training Planning
15.	Heating	SO03—Training Planning
16.	Emergency Generator	SO03—Training Planning
17.	Construction/Demolition	SO04—Special Project Training Facility
18.	Heating	SO04—Special Project Training Facility
19.	Emergency Generator	SO04—Special Project Training Facility
20.	Construction/Demolition	SO05—Urban Training Building
21.	Heating	SO05—Urban Training Building
22.	Emergency Generator	SO05—Urban Training Building
23.	Construction/Demolition	SO06—Secure Holding Facility
24.	Heating	SO06—Secure Holding Facility
25.	Emergency Generator	SO06—Secure Holding Facility
26.	Construction/Demolition	SO07—Two-Story Office and Storage Building
27.	Heating	SO07—Two-Story Office and Storage Building
28.	Emergency Generator	SO07—Two-Story Office and Storage Building
29.	Construction/Demolition	SO08—Septic Field Expansion
30.	Construction/Demolition	SO09—Building 101 Expansion
31.	Heating	SO09—Building 101 Expansion

32.	Construction/Demolition	C01—Indoor Firing Range
33.	Heating	C01—Indoor Firing Range
34.	Emergency Generator	C01—Indoor Firing Range
35.	Construction/Demolition	C02—Addition to Fitness Center
36.	Heating	C02—Addition to Fitness Center
37.	Construction/Demolition	C03—Heritage Observation Center
38.	Heating	C03—Heritage Observation Center
39.	Construction/Demolition	C04—Upgrade Potable Water System
40.	Emergency Generator	C04—Upgrade Potable Water System
41.	Construction/Demolition	C05—Helicopter Landing Pad
42.	Construction/Demolition	SM01—Non-Secure Visitor and Training Facility
43.	Heating	SM01—Non-Secure Visitor and Training Facility
44.	Emergency Generator	SM01—Non-Secure Visitor and Training Facility
45.	Construction/Demolition	SM02—Office, Administration, Research, Development, Testing, and Lab Facility
46.	Heating	SM02—Office, Administration, Research, Development, Testing, and Lab Facility
47.	Emergency Generator	SM02—Office, Administration, Research, Development, Testing, and Lab Facility

Emission factors and air emission estimating methods come from the United States Air Force's Air Emissions Guide for Air Force Stationary Sources, Air Emissions Guide for Air Force Mobile Sources, and Air Emissions Guide for Air Force Transitory Sources.

2. Construction/Demolition

2.1 General Information & Timeline Assumptions

—**Activity Location**
County: Spokane
Regulatory Area(s): Not in a Regulatory Area

—**Activity Title:** EC01—Training Aid Development Shop

—**Activity Description:**
Construct a new 2,000 square foot structure to house the training aid development shop.

—**Activity Start Date**
Start Month: 1
Start Month: 2025

—**Activity End Date**
Indefinite: False
End Month: 6
End Month: 2025

—**Activity Emissions:**

Pollutant	Total Emissions (TONs)
VOC	0.063155
SO_x	0.000806
NO_x	0.196669
CO	0.339488
PM 10	0.013034

Pollutant	Total Emissions (TONs)
PM 2.5	0.006585
Pb	0.000000
NH_3	0.000247
CO_2e	77.8

2.1 Site Grading Phase

2.1.1 Site Grading Phase Timeline Assumptions

—Phase Start Date
Start Month: 1
Start Quarter: 1
Start Year: 2025

—Phase Duration
Number of Month: 0
Number of Days: 2

2.1.2 Site Grading Phase Assumptions

—General Site Grading Information
Area of Site to be Graded (ft^2): 3500
Amount of Material to be Hauled On-Site (yd^3): 0
Amount of Material to be Hauled Off-Site (yd^3): 259

—Site Grading Default Settings
Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

—Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Graders Composite	1	6
Other Construction Equipment Composite	1	8
Rubber Tired Dozers Composite	1	6
Tractors/Loaders/Backhoes Composite	1	7

—Vehicle Exhaust
Average Hauling Truck Capacity (yd^3): 20 (default)
Average Hauling Truck Round Trip Commute (mile): 20 (default)

—Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

—Worker Trips
Average Worker Round Trip Commute (mile): 20 (default)

—Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

2.1.3 Site Grading Phase Emission Factor(s)

—Construction Exhaust Emission Factors (lb/hour) (default)

Graders Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0676	0.0014	0.3314	0.5695	0.0147	0.0147	0.0061	132.89
Other Construction Equipment Composite								

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0442	0.0012	0.2021	0.3473	0.0068	0.0068	0.0039	122.60
Rubber Tired Dozers Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.1671	0.0024	1.0824	0.6620	0.0418	0.0418	0.0150	239.45
Tractors/Loaders/Backhoes Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0335	0.0007	0.1857	0.3586	0.0058	0.0058	0.0030	66.872

—Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.278	000.002	000.219	003.276	000.008	000.007		000.023	00320.329
LDGT	000.351	000.003	000.382	004.545	000.010	000.009		000.024	00414.211
HDGV	000.705	000.005	001.074	015.763	000.025	000.022		000.045	00763.488
LDDV	000.122	000.003	000.133	002.396	000.004	000.004		000.008	00309.634
LDDT	000.266	000.004	000.384	004.133	000.007	000.007		000.008	00440.653
HDDV	000.498	000.013	005.110	001.743	000.169	000.156		000.028	01479.227
MC	002.339	000.003	000.821	013.581	000.029	000.025		000.054	00399.711

2.1.4 Site Grading Phase Formula(s)

—Fugitive Dust Emissions per Phase

$PM10_{FD} = (20 * ACRE * WD)/2000$

$PM10_{FD}$: Fugitive Dust PM 10 Emissions (TONs)
20: Conversion Factor Acre Day to pounds (20 lb/1 Acre Day)
ACRE: Total acres (acres)
WD: Number of Total Work Days (days)
2000: Conversion Factor pounds to tons

—Construction Exhaust Emissions per Phase

$CEE_{POL} = (NE * WD * H * EF_{POL})/2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

—Vehicle Exhaust Emissions per Phase

$VMT_{VE} = (HA_{OnSite} + HA_{OffSite}) * (1/HC) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
HA_{OnSite}: Amount of Material to be Hauled On-Site (yd^3)
$HA_{OffSite}$: Amount of Material to be Hauled Off-Site (yd^3)
HC: Average Hauling Truck Capacity (yd^3)
(1/HC): Conversion Factor cubic yards to trips (1 trip/HC yd^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM)/2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds

EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Vehicle Exhaust On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

—Worker Trips Emissions per Phase
VMT_{WT} = WD * WT * 1.25 * NE

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM)/2000

V_{POL}: Vehicle Emissions (TONs)
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

2.2 Trenching/Excavating Phase

2.2.1 Trenching/Excavating Phase Timeline Assumptions

—Phase Start Date
Start Month: 1
Start Quarter: 1
Start Year: 2025

—Phase Duration
Number of Month: 0
Number of Days: 2

2.2.2 Trenching/Excavating Phase Assumptions

—General Trenching/Excavating Information
Area of Site to be Trenched/Excavated (ft^2): 3500
Amount of Material to be Hauled On-Site (yd^3): 0
Amount of Material to be Hauled Off-Site (yd^3): 130

—Trenching Default Settings
Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

—Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Excavators Composite	2	8
Other General Industrial Equipment Composite	1	8
Tractors/Loaders/Backhoes Composite	1	8

—Vehicle Exhaust
Average Hauling Truck Capacity (yd^3): 20 (default)

Average Hauling Truck Round Trip Commute (mile): 20 (default)

—Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

—Worker Trips
Average Worker Round Trip Commute (mile): 20 (default)

—Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

2.2.3 Trenching/Excavating Phase Emission Factor(s)

—Construction Exhaust Emission Factors (lb/hour) (default)

Graders Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0676	0.0014	0.3314	0.5695	0.0147	0.0147	0.0061	132.89
Other Construction Equipment Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0442	0.0012	0.2021	0.3473	0.0068	0.0068	0.0039	122.60
Rubber Tired Dozers Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.1671	0.0024	1.0824	0.6620	0.0418	0.0418	0.0150	239.45
Tractors/Loaders/Backhoes Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0335	0.0007	0.1857	0.3586	0.0058	0.0058	0.0030	66.872

—Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.278	000.002	000.219	003.276	000.008	000.007		000.023	00320.329
LDGT	000.351	000.003	000.382	004.545	000.010	000.009		000.024	00414.211
HDGV	000.705	000.005	001.074	015.763	000.025	000.022		000.045	00763.488
LDDV	000.122	000.003	000.133	002.396	000.004	000.004		000.008	00309.634
LDDT	000.266	000.004	000.384	004.133	000.007	000.007		000.008	00440.653
HDDV	000.498	000.013	005.110	001.743	000.169	000.156		000.028	01479.227
MC	002.339	000.003	000.821	013.581	000.029	000.025		000.054	00399.711

2.2.4 Trenching/Excavating Phase Formula(s)

—Fugitive Dust Emissions per Phase
$PM10_{FD} = (20 * ACRE * WD)/2000$

$PM10_{FD}$: Fugitive Dust PM 10 Emissions (TONs)
20: Conversion Factor Acre Day to pounds (20 lb/1 Acre Day)
ACRE: Total acres (acres)
WD: Number of Total Work Days (days)
2000: Conversion Factor pounds to tons

—Construction Exhaust Emissions per Phase
$CEE_{POL} = (NE * WD * H * EF_{POL})/2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment

WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

—**Vehicle Exhaust Emissions per Phase**
$VMT_{VE} = (HA_{OnSite} + HA_{OffSite}) * (1/HC) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
HA_{OnSite}: Amount of Material to be Hauled On-Site (yd^3)
$HA_{OffSite}$: Amount of Material to be Hauled Off-Site (yd^3)
HC: Average Hauling Truck Capacity (yd^3)
(1/HC): Conversion Factor cubic yards to trips (1 trip/HC yd^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM)/2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Vehicle Exhaust On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

—**Worker Trips Emissions per Phase**
$VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM)/2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

2.3 Building Construction Phase

2.3.1 Building Construction Phase Timeline Assumptions

—**Phase Start Date**
Start Month: 2
Start Quarter: 1
Start Year: 2025

—**Phase Duration**
Number of Month: 3
Number of Days: 10

2.3.2 Building Construction Phase Assumptions

—**General Building Construction Information**
Building Category: Office or Industrial
Area of Building (ft^2): 2000
Height of Building (ft): 15
Number of Units: N/A

—**Building Construction Default Settings**
Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

—**Construction Exhaust (default)**

Equipment Name	Number Of Equipment	Hours Per Day
Cranes Composite	1	4
Forklifts Composite	2	6
Tractors/Loaders/Backhoes Composite	1	8

—**Vehicle Exhaust**
Average Hauling Truck Round Trip Commute (mile): 20 (default)

—**Vehicle Exhaust Vehicle Mixture (%)**

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

—**Worker Trips**
Average Worker Round Trip Commute (mile): 20 (default)

—**Worker Trips Vehicle Mixture (%)**

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

—**Vendor Trips**
Average Vendor Round Trip Commute (mile): 40 (default)

—**Vendor Trips Vehicle Mixture (%)**

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

2.3.3 Building Construction Phase Emission Factor(s)

—**Construction Exhaust Emission Factors (lb/hour) (default)**

Cranes Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0680	0.0013	0.4222	0.3737	0.0143	0.0143	0.0061	128.77
Forklifts Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0236	0.0006	0.0859	0.2147	0.0025	0.0025	0.0021	54.449
Tractors/Loaders/Backhoes Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0335	0.0007	0.1857	0.3586	0.0058	0.0058	0.0030	66.872

—**Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)**

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.278	000.002	000.219	003.276	000.008	000.007		000.023	00320.329

LDGT	000.351	000.003	000.382	004.545	000.010	000.009		000.024	00414.211
HDGV	000.705	000.005	001.074	015.763	000.025	000.022		000.045	00763.488
LDDV	000.122	000.003	000.133	002.396	000.004	000.004		000.008	00309.634
LDDT	000.266	000.004	000.384	004.133	000.007	000.007		000.008	00440.653
HDDV	000.498	000.013	005.110	001.743	000.169	000.156		000.028	01479.227
MC	002.339	000.003	000.821	013.581	000.029	000.025		000.054	00399.711

2.3.4 Building Construction Phase Formula(s)

—Construction Exhaust Emissions per Phase
$CEE_{POL} = (NE * WD * H * EF_{POL})/2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

—Vehicle Exhaust Emissions per Phase
$VMT_{VE} = BA * BH * (0.42/1000) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
BA: Area of Building (ft^2)
BH: Height of Building (ft)
(0.42/1000): Conversion Factor ft^3 to trips (0.42 trip/1000 ft^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM)/2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

—Worker Trips Emissions per Phase
$VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM)/2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

—Vender Trips Emissions per Phase

VMT_{VT} = BA * BH * (0.38/1000) * HT

VMT_{VT}: Vender Trips Vehicle Miles Travel (miles)
BA: Area of Building (ft^2)
BH: Height of Building (ft)
(0.38/1000): Conversion Factor ft^3 to trips (0.38 trip/1000 ft^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

V_{POL} = (VMT_{VT} * 0.002205 * EF_{POL} * VM)/2000

V_{POL}: Vehicle Emissions (TONs)
VMT_{VT}: Vender Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

2.4 Architectural Coatings Phase

2.4.1 Architectural Coatings Phase Timeline Assumptions

—Phase Start Date
Start Month: 6
Start Quarter: 1
Start Year: 2025

—Phase Duration
Number of Month: 0
Number of Days: 5

2.4.2 Architectural Coatings Phase Assumptions

—General Architectural Coatings Information
Building Category: Non-Residential
Total Square Footage (ft^2): 2000
Number of Units: N/A

—Architectural Coatings Default Settings
Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

—Worker Trips
Average Worker Round Trip Commute (mile): 20 (default)

—Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

2.4.3 Architectural Coatings Phase Emission Factor(s)

—Worker Trips Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.278	000.002	000.219	003.276	000.008	000.007		000.023	00320.329
LDGT	000.351	000.003	000.382	004.545	000.010	000.009		000.024	00414.211
HDGV	000.705	000.005	001.074	015.763	000.025	000.022		000.045	00763.488

LDDV	000.122	000.003	000.133	002.396	000.004	000.004		000.008	00309.634
LDDT	000.266	000.004	000.384	004.133	000.007	000.007		000.008	00440.653
HDDV	000.498	000.013	005.110	001.743	000.169	000.156		000.028	01479.227
MC	002.339	000.003	000.821	013.581	000.029	000.025		000.054	00399.711

2.4.4 Architectural Coatings Phase Formula(s)

—**Worker Trips Emissions per Phase**
$VMT_{WT} = (1 * WT * PA)/800$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
1: Conversion Factor person days to trips (1 trip/1 person * day)
WT: Average Worker Round Trip Commute (mile)
PA: Paint Area (ft^2)
800: Conversion Factor ft^2 to person days (1 ft^2/1 person * day)

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM)/2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

—**Off-Gassing Emissions per Phase**
$VOC_{AC} = (AB * 2.0 * 0.0116)/2000.0$

VOC_{AC}: Architectural Coating VOC Emissions (TONs)
BA: Area of Building (ft^2)
2.0: Conversion Factor total area to coated area (2.0 ft^2 coated area/total area)
0.0116: Emission Factor (lb/ft^2)
2000: Conversion Factor pounds to tons

2.5 Paving Phase

2.5.1 Paving Phase Timeline Assumptions

—**Phase Start Date**
Start Month: 6
Start Quarter: 1
Start Year: 2025

—**Phase Duration**
Number of Month: 0
Number of Days: 5

2.5.2 Paving Phase Assumptions

—**General Paving Information**
Paving Area (ft^2): 500

—**Paving Default Settings**
Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

—Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Cement and Mortar Mixers Composite	4	6
Pavers Composite	1	7
Rollers Composite	1	7
Tractors/Loaders/Backhoes Composite	1	7

—Vehicle Exhaust
Average Hauling Truck Round Trip Commute (mile): 20 (default)

—Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

—Worker Trips
Average Worker Round Trip Commute (mile): 20 (default)

—Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

2.5.3 Paving Phase Emission Factor(s)

—Construction Exhaust Emission Factors (lb/hour) (default)

Graders Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0676	0.0014	0.3314	0.5695	0.0147	0.0147	0.0061	132.89
Other Construction Equipment Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0442	0.0012	0.2021	0.3473	0.0068	0.0068	0.0039	122.60
Rubber Tired Dozers Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.1671	0.0024	1.0824	0.6620	0.0418	0.0418	0.0150	239.45
Tractors/Loaders/Backhoes Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0335	0.0007	0.1857	0.3586	0.0058	0.0058	0.0030	66.872

—Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.278	000.002	000.219	003.276	000.008	000.007		000.023	00320.329
LDGT	000.351	000.003	000.382	004.545	000.010	000.009		000.024	00414.211
HDGV	000.705	000.005	001.074	015.763	000.025	000.022		000.045	00763.488
LDDV	000.122	000.003	000.133	002.396	000.004	000.004		000.008	00309.634
LDDT	000.266	000.004	000.384	004.133	000.007	000.007		000.008	00440.653
HDDV	000.498	000.013	005.110	001.743	000.169	000.156		000.028	01479.227
MC	002.339	000.003	000.821	013.581	000.029	000.025		000.054	00399.711

2.5.4 Paving Phase Formula(s)

—Construction Exhaust Emissions per Phase
$CEE_{POL} = (NE * WD * H * EF_{POL})/2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)

NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

—**Vehicle Exhaust Emissions per Phase**
$VMT_{VE} = PA * 0.25 * (1/27) * (1/HC) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
PA: Paving Area (ft^2)
0.25: Thickness of Paving Area (ft)
(1/27): Conversion Factor cubic feet to cubic yards (1 yd^3/27 ft^3)
HC: Average Hauling Truck Capacity (yd^3)
(1/HC): Conversion Factor cubic yards to trips (1 trip/HC yd^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM)/2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Vehicle Exhaust On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

—**Worker Trips Emissions per Phase**
$VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM)/2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

—**Off-Gassing Emissions per Phase**
$VOC_P = (2.62 * PA)/43560$

VOC_P: Paving VOC Emissions (TONs)
2.62: Emission Factor (lb/acre)
PA: Paving Area (ft^2)
43560: Conversion Factor ft^2 to acre (43560 ft^2/acre)^2/acre)

3. Heating

3.1 General Information & Timeline Assumptions

—**Add or Remove Activity from Baseline?** Add

—**Activity Location**
County: Spokane
Regulatory Area(s): Not in a Regulatory Area

—**Activity Title:** EC01—Training Aid Development Shop

—**Activity Description:**
Construct a new 2,000 square foot structure to house the training aid development shop.

—**Activity Start Date**
Start Month: 7
Start Year: 2025

—**Activity End Date**
Indefinite: Yes
End Month: N/A
End Year: N/A

—**Activity Emissions:**

Pollutant	Emissions Per Year (TONs)
VOC	0.000422
SO_x	0.000046
NO_x	0.007676
CO	0.006448
PM 10	0.000583

Pollutant	Emissions Per Year (TONs)
PM 2.5	0.000583
Pb	0.000000
NH_3	0.000000
CO_2e	9.2

3.2 Heating Assumptions

—**Heating**
Heating Calculation Type: Heat Energy Requirement Method

—**Heat Energy Requirement Method**
Area of floorspace to be heated (ft^2): 2000
Type of fuel: Natural Gas
Type of boiler/furnace: Commercial/Institutional (0.3—9.9 MMBtu/hr)
Heat Value (MMBtu/ft^3): 0.00105
Energy Intensity (MMBtu/ft^2): 0.0806

—**Default Settings Used:** Yes

—**Boiler/Furnace Usage**
Operating Time Per Year (hours): 900 (default)

3.3 Heating Emission Factor(s)

—**Heating Emission Factors (lb/1000000 scf)**

VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
5.5	0.6	100	84	7.6	7.6			120390

3.4 Heating Formula(s)

—**Heating Fuel Consumption ft^3 per Year**

FC_{HER}= HA * EI/HV/1000000

FC_{HER}: Fuel Consumption for Heat Energy Requirement Method
HA: Area of floorspace to be heated (ft^2)
EI: Energy Intensity Requirement (MMBtu/ft^2)
HV: Heat Value (MMBTU/ft^3)
1000000: Conversion Factor

—**Heating Emissions per Year**

HE_{POL}= FC * EF_{POL}/2000

HE_{POL}: Heating Emission Emissions (TONs)
FC: Fuel Consumption
EF_{POL}: Emission Factor for Pollutant
2000: Conversion Factor pounds to tons

4. Construction/Demolition

4.1 General Information & Timeline Assumptions

—**Activity Location**
County: Spokane
Regulatory Area(s): Not in a Regulatory Area

—**Activity Title:** EC03—Simulated Training Facility

—**Activity Description:**
Demolish an existing tennis court and construct a 4,500 square foot training facility and associated access road.

—**Activity Start Date**
Start Month: 1
Start Month: 2022

—**Activity End Date**
Indefinite: False
End Month: 6
End Month: 2022

—**Activity Emissions:**

Pollutant	Total Emissions (TONs)
VOC	0.102342
SO_x	0.000877
NO_x	0.283712
CO	0.376961
PM 10	0.021538

Pollutant	Total Emissions (TONs)
PM 2.5	0.011107
Pb	0.000000
NH_3	0.000302
CO_2e	85.0

4.1 Demolition Phase

4.1.1 Demolition Phase Timeline Assumptions

—Phase Start Date
Start Month: 1
Start Quarter: 1
Start Year: 2022

—Phase Duration
Number of Month: 0
Number of Days: 10

4.1.2 Demolition Phase Assumptions

—General Demolition Information
Area of Building to be demolished (ft^2): 2808
Height of Building to be demolished (ft): 0.5

—Default Settings Used: Yes

—Average Day(s) worked per week: 5 (default)

—Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Concrete/Industrial Saws Composite	1	8
Rubber Tired Dozers Composite	1	1
Tractors/Loaders/Backhoes Composite	2	6

—Vehicle Exhaust
Average Hauling Truck Capacity (yd^3): 20 (default)
Average Hauling Truck Round Trip Commute (mile): 20 (default)

—Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

—Worker Trips
Average Worker Round Trip Commute (mile): 20 (default)

—Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

4.1.3 Demolition Phase Emission Factor(s)

—**Construction Exhaust Emission Factors (lb/hour) (default)**

Concrete/Industrial Saws Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0410	0.0006	0.2961	0.3743	0.0148	0.0148	0.0037	58.556
Rubber Tired Dozers Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.1919	0.0024	1.3611	0.7352	0.0536	0.0536	0.0173	239.51
Tractors/Loaders/Backhoes Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0383	0.0007	0.2301	0.3598	0.0095	0.0095	0.0034	66.884

—**Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)**

	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**Pb**	**NH_3**	**CO_2e**
LDGV	000.278	000.002	000.219	003.276	000.008	000.007		000.023	00320.329
LDGT	000.351	000.003	000.382	004.545	000.010	000.009		000.024	00414.211
HDGV	000.705	000.005	001.074	015.763	000.025	000.022		000.045	00763.488
LDDV	000.122	000.003	000.133	002.396	000.004	000.004		000.008	00309.634
LDDT	000.266	000.004	000.384	004.133	000.007	000.007		000.008	00440.653
HDDV	000.498	000.013	005.110	001.743	000.169	000.156		000.028	01479.227
MC	002.339	000.003	000.821	013.581	000.029	000.025		000.054	00399.711

4.1.4 Demolition Phase Formula(s)

—**Fugitive Dust Emissions per Phase**
$PM10_{FD}$ = (0.00042 * BA * BH)/2000

$PM10_{FD}$: Fugitive Dust PM 10 Emissions (TONs)
0.00042: Emission Factor (lb/ft^3)
BA: Area of Building to be demolished (ft^2)
BH: Height of Building to be demolished (ft)
2000: Conversion Factor pounds to tons

—**Construction Exhaust Emissions per Phase**
CEE_{POL} = (NE * WD * H * EF_{POL})/2000

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

—**Vehicle Exhaust Emissions per Phase**
VMT_{VE} = BA * BH * (1/27) * 0.25 * (1/HC) * HT

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
BA: Area of Building being demolish (ft^2)
BH: Height of Building being demolish (ft)
(1/27): Conversion Factor cubic feet to cubic yards (1 yd^3/27 ft^3)
0.25: Volume reduction factor (material reduced by 75% to account for air space)
HC: Average Hauling Truck Capacity (yd^3)
(1/HC): Conversion Factor cubic yards to trips (1 trip/HC yd^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM)/2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Vehicle Exhaust On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

—Worker Trips Emissions per Phase
$VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM)/2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

4.2 Site Grading Phase

4.2.1 Site Grading Phase Timeline Assumptions

—Phase Start Date
Start Month: 1
Start Quarter: 2
Start Year: 2022

—Phase Duration
Number of Month: 0
Number of Days: 2

4.2.2 Site Grading Phase Assumptions

—General Site Grading Information
Area of Site to be Graded (ft^2): 5500
Amount of Material to be Hauled On-Site (yd^3): 0
Amount of Material to be Hauled Off-Site (yd^3): 407

—Site Grading Default Settings
Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

—Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Graders Composite	1	6
Other Construction Equipment Composite	1	8
Rubber Tired Dozers Composite	1	6
Tractors/Loaders/Backhoes Composite	1	7

—Vehicle Exhaust

Average Hauling Truck Capacity (yd^3): 20 (default)

Average Hauling Truck Round Trip Commute (mile): 20 (default)

—Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

—Worker Trips

Average Worker Round Trip Commute (mile): 20 (default)

—Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

4.2.3 Site Grading Phase Emission Factor(s)

—Construction Exhaust Emission Factors (lb/hour) (default)

Graders Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0806	0.0014	0.4657	0.5731	0.0217	0.0217	0.0072	132.92
Other Construction Equipment Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0507	0.0012	0.2785	0.3488	0.0105	0.0105	0.0045	122.61
Rubber Tired Dozers Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.1919	0.0024	1.3611	0.7352	0.0536	0.0536	0.0173	239.51
Tractors/Loaders/Backhoes Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0383	0.0007	0.2301	0.3598	0.0095	0.0095	0.0034	66.884

—Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.278	000.002	000.219	003.276	000.008	000.007		000.023	00320.329
LDGT	000.351	000.003	000.382	004.545	000.010	000.009		000.024	00414.211
HDGV	000.705	000.005	001.074	015.763	000.025	000.022		000.045	00763.488
LDDV	000.122	000.003	000.133	002.396	000.004	000.004		000.008	00309.634
LDDT	000.266	000.004	000.384	004.133	000.007	000.007		000.008	00440.653
HDDV	000.498	000.013	005.110	001.743	000.169	000.156		000.028	01479.227
MC	002.339	000.003	000.821	013.581	000.029	000.025		000.054	00399.711

4.2.4 Site Grading Phase Formula(s)

—**Fugitive Dust Emissions per Phase**
$PM10_{FD} = (20 * ACRE * WD)/2000$

$PM10_{FD}$: Fugitive Dust PM 10 Emissions (TONs)
20: Conversion Factor Acre Day to pounds (20 lb/1 Acre Day)
ACRE: Total acres (acres)
WD: Number of Total Work Days (days)
2000: Conversion Factor pounds to tons

—**Construction Exhaust Emissions per Phase**
$CEE_{POL} = (NE * WD * H * EF_{POL})/2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

—**Vehicle Exhaust Emissions per Phase**
$VMT_{VE} = (HA_{OnSite} + HA_{OffSite}) * (1/HC) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
HA_{OnSite}: Amount of Material to be Hauled On-Site (yd^3)
$HA_{OffSite}$: Amount of Material to be Hauled Off-Site (yd^3)
HC: Average Hauling Truck Capacity (yd^3)
(1/HC): Conversion Factor cubic yards to trips (1 trip/HC yd^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM)/2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Vehicle Exhaust On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

—**Worker Trips Emissions per Phase**
$VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM)/2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

4.3 Trenching/Excavating Phase

4.3.1 Trenching/Excavating Phase Timeline Assumptions

—Phase Start Date
Start Month: 1
Start Quarter: 2
Start Year: 2022

—Phase Duration
Number of Month: 0
Number of Days: 2

4.3.2 Trenching/Excavating Phase Assumptions

—General Trenching/Excavating Information
Area of Site to be Trenched/Excavated (ft^2): 5500
Amount of Material to be Hauled On-Site (yd^3): 0
Amount of Material to be Hauled Off-Site (yd^3): 204

—Trenching Default Settings
Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

—Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Excavators Composite	2	8
Other General Industrial Equipment Composite	1	8
Tractors/Loaders/Backhoes Composite	1	8

—Vehicle Exhaust
Average Hauling Truck Capacity (yd^3): 20 (default)
Average Hauling Truck Round Trip Commute (mile): 20 (default)

—Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

—Worker Trips
Average Worker Round Trip Commute (mile): 20 (default)

—Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

4.3.3 Trenching/Excavating Phase Emission Factor(s)

—Construction Exhaust Emission Factors (lb/hour) (default)

Graders Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0806	0.0014	0.4657	0.5731	0.0217	0.0217	0.0072	132.92
Other Construction Equipment Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0507	0.0012	0.2785	0.3488	0.0105	0.0105	0.0045	122.61
Rubber Tired Dozers Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.1919	0.0024	1.3611	0.7352	0.0536	0.0536	0.0173	239.51
Tractors/Loaders/Backhoes Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0383	0.0007	0.2301	0.3598	0.0095	0.0095	0.0034	66.884

—Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.278	000.002	000.219	003.276	000.008	000.007		000.023	00320.329
LDGT	000.351	000.003	000.382	004.545	000.010	000.009		000.024	00414.211
HDGV	000.705	000.005	001.074	015.763	000.025	000.022		000.045	00763.488
LDDV	000.122	000.003	000.133	002.396	000.004	000.004		000.008	00309.634
LDDT	000.266	000.004	000.384	004.133	000.007	000.007		000.008	00440.653
HDDV	000.498	000.013	005.110	001.743	000.169	000.156		000.028	01479.227
MC	002.339	000.003	000.821	013.581	000.029	000.025		000.054	00399.711

4.3.4 Trenching/Excavating Phase Formula(s)

—Fugitive Dust Emissions per Phase

$PM10_{FD}$ = (20 * ACRE * WD)/2000

$PM10_{FD}$: Fugitive Dust PM 10 Emissions (TONs)
20: Conversion Factor Acre Day to pounds (20 lb/1 Acre Day)
ACRE: Total acres (acres)
WD: Number of Total Work Days (days)
2000: Conversion Factor pounds to tons

—Construction Exhaust Emissions per Phase

CEE_{POL} = (NE * WD * H * EF_{POL})/2000

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

—**Vehicle Exhaust Emissions per Phase**
$VMT_{VE} = (HA_{OnSite} + HA_{OffSite}) * (1/HC) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
HA_{OnSite}: Amount of Material to be Hauled On-Site (yd^3)
$HA_{OffSite}$: Amount of Material to be Hauled Off-Site (yd^3)
HC: Average Hauling Truck Capacity (yd^3)
(1/HC): Conversion Factor cubic yards to trips (1 trip/HC yd^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM)/2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Vehicle Exhaust On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

—**Worker Trips Emissions per Phase**
$VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM)/2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

4.4 Building Construction Phase

4.4.1 Building Construction Phase Timeline Assumptions

—**Phase Start Date**
Start Month: 2
Start Quarter: 1
Start Year: 2022

—**Phase Duration**
Number of Month: 3
Number of Days: 10

4.4.2 Building Construction Phase Assumptions

—General Building Construction Information

Building Category: Office or Industrial
Area of Building (ft^2): 4500
Height of Building (ft): 15
Number of Units: N/A

—Building Construction Default Settings

Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

—Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Cranes Composite	1	4
Forklifts Composite	2	6
Tractors/Loaders/Backhoes Composite	1	8

—Vehicle Exhaust

Average Hauling Truck Round Trip Commute (mile): 20 (default)

—Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

—Worker Trips

Average Worker Round Trip Commute (mile): 20 (default)

—Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

—Vendor Trips

Average Vendor Round Trip Commute (mile): 40 (default)

—Vendor Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

4.4.3 Building Construction Phase Emission Factor(s)

—Construction Exhaust Emission Factors (lb/hour) (default)

Cranes Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0797	0.0013	0.5505	0.3821	0.0203	0.0203	0.0071	128.81
Forklifts Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0274	0.0006	0.1265	0.2146	0.0043	0.0043	0.0024	54.457
Tractors/Loaders/Backhoes Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0383	0.0007	0.2301	0.3598	0.0095	0.0095	0.0034	66.884

—Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.278	000.002	000.219	003.276	000.008	000.007		000.023	00320.329
LDGT	000.351	000.003	000.382	004.545	000.010	000.009		000.024	00414.211
HDGV	000.705	000.005	001.074	015.763	000.025	000.022		000.045	00763.488
LDDV	000.122	000.003	000.133	002.396	000.004	000.004		000.008	00309.634
LDDT	000.266	000.004	000.384	004.133	000.007	000.007		000.008	00440.653
HDDV	000.498	000.013	005.110	001.743	000.169	000.156		000.028	01479.227
MC	002.339	000.003	000.821	013.581	000.029	000.025		000.054	00399.711

4.4.4 Building Construction Phase Formula(s)

—Construction Exhaust Emissions per Phase
$CEE_{POL} = (NE * WD * H * EF_{POL})/2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

—Vehicle Exhaust Emissions per Phase
$VMT_{VE} = BA * BH * (0.42/1000) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
BA: Area of Building (ft^2)
BH: Height of Building (ft)
(0.42/1000): Conversion Factor ft^3 to trips (0.42 trip/1000 ft^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM)/2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

—Worker Trips Emissions per Phase
$VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM)/2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

—Vender Trips Emissions per Phase
$VMT_{VT} = BA * BH * (0.38/1000) * HT$

VMT_{VT}: Vender Trips Vehicle Miles Travel (miles)
BA: Area of Building (ft^2)
BH: Height of Building (ft)
(0.38/1000): Conversion Factor ft^3 to trips (0.38 trip/1000 ft^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VT} * 0.002205 * EF_{POL} * VM)/2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VT}: Vender Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

4.5 Architectural Coatings Phase

4.5.1 Architectural Coatings Phase Timeline Assumptions

—Phase Start Date
Start Month: 6
Start Quarter: 1
Start Year: 2022

—Phase Duration
Number of Month: 0
Number of Days: 5

4.5.2 Architectural Coatings Phase Assumptions

—General Architectural Coatings Information
Building Category: Non-Residential
Total Square Footage (ft^2): 4500
Number of Units: N/A

—Architectural Coatings Default Settings
Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

—Worker Trips
Average Worker Round Trip Commute (mile): 20 (default)

—Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

4.5.3 Architectural Coatings Phase Emission Factor(s)

—Worker Trips Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.278	000.002	000.219	003.276	000.008	000.007		000.023	00320.329
LDGT	000.351	000.003	000.382	004.545	000.010	000.009		000.024	00414.211
HDGV	000.705	000.005	001.074	015.763	000.025	000.022		000.045	00763.488
LDDV	000.122	000.003	000.133	002.396	000.004	000.004		000.008	00309.634
LDDT	000.266	000.004	000.384	004.133	000.007	000.007		000.008	00440.653
HDDV	000.498	000.013	005.110	001.743	000.169	000.156		000.028	01479.227
MC	002.339	000.003	000.821	013.581	000.029	000.025		000.054	00399.711

4.5.4 Architectural Coatings Phase Formula(s)

—Worker Trips Emissions per Phase

VMT_{WT} = (1 * WT * PA)/800

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
1: Conversion Factor person days to trips (1 trip/1 person * day)
WT: Average Worker Round Trip Commute (mile)
PA: Paint Area (ft^2)
800: Conversion Factor ft^2 to person days (1 ft^2/1 person * day)

V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM)/2000

V_{POL}: Vehicle Emissions (TONs)
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

—Off-Gassing Emissions per Phase

VOC_{AC} = (AB * 2.0 * 0.0116)/2000.0

VOC_{AC}: Architectural Coating VOC Emissions (TONs)
BA: Area of Building (ft^2)
2.0: Conversion Factor total area to coated area (2.0 ft^2 coated area/total area)
0.0116: Emission Factor (lb/ft^2)
2000: Conversion Factor pounds to tons

4.6 Paving Phase

4.6.1 Paving Phase Timeline Assumptions

—Phase Start Date

Start Month: 6
Start Quarter: 1
Start Year: 2022

—Phase Duration
Number of Month: 0
Number of Days: 5

4.6.2 Paving Phase Assumptions

—General Paving Information
Paving Area (ft^2): 1350

—Paving Default Settings
Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

—Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Cement and Mortar Mixers Composite	4	6
Pavers Composite	1	7
Rollers Composite	1	7
Tractors/Loaders/Backhoes Composite	1	7

—Vehicle Exhaust
Average Hauling Truck Round Trip Commute (mile): 20 (default)

—Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

—Worker Trips
Average Worker Round Trip Commute (mile): 20 (default)

—Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

4.6.3 Paving Phase Emission Factor(s)

—Construction Exhaust Emission Factors (lb/hour) (default)

Graders Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0806	0.0014	0.4657	0.5731	0.0217	0.0217	0.0072	132.92
Other Construction Equipment Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0507	0.0012	0.2785	0.3488	0.0105	0.0105	0.0045	122.61
Rubber Tired Dozers Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.1919	0.0024	1.3611	0.7352	0.0536	0.0536	0.0173	239.51
Tractors/Loaders/Backhoes Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0383	0.0007	0.2301	0.3598	0.0095	0.0095	0.0034	66.884

—**Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)**

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.278	000.002	000.219	003.276	000.008	000.007		000.023	00320.329
LDGT	000.351	000.003	000.382	004.545	000.010	000.009		000.024	00414.211
HDGV	000.705	000.005	001.074	015.763	000.025	000.022		000.045	00763.488
LDDV	000.122	000.003	000.133	002.396	000.004	000.004		000.008	00309.634
LDDT	000.266	000.004	000.384	004.133	000.007	000.007		000.008	00440.653
HDDV	000.498	000.013	005.110	001.743	000.169	000.156		000.028	01479.227
MC	002.339	000.003	000.821	013.581	000.029	000.025		000.054	00399.711

4.6.4 Paving Phase Formula(s)

—**Construction Exhaust Emissions per Phase**
$CEE_{POL} = (NE * WD * H * EF_{POL})/2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

—**Vehicle Exhaust Emissions per Phase**
$VMT_{VE} = PA * 0.25 * (1/27) * (1/HC) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
PA: Paving Area (ft^2)
0.25: Thickness of Paving Area (ft)
(1/27): Conversion Factor cubic feet to cubic yards (1 yd^3/27 ft^3)
HC: Average Hauling Truck Capacity (yd^3)
(1/HC): Conversion Factor cubic yards to trips (1 trip/HC yd^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM)/2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Vehicle Exhaust On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

—**Worker Trips Emissions per Phase**
$VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM)/2000

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

—**Off-Gassing Emissions per Phase**
VOC_P = (2.62 * PA)/43560

VOC_P: Paving VOC Emissions (TONs)
2.62: Emission Factor (lb/acre)
PA: Paving Area (ft^2)
43560: Conversion Factor ft^2 to acre (43560 ft^2/acre)^2/acre)

5. Heating

5.1 General Information & Timeline Assumptions

—**Add or Remove Activity from Baseline?** Add

—**Activity Location**
County: Spokane
Regulatory Area(s): Not in a Regulatory Area

—**Activity Title:** EC03—Simulated Training Facility

—**Activity Description:**
Demolish an existing tennis court and construct a 4,500 square foot training facility and associated access road.

—**Activity Start Date**
Start Month: 7
Start Year: 2022

—**Activity End Date**
Indefinite: Yes
End Month: N/A
End Year: N/A

—**Activity Emissions:**

Pollutant	Emissions Per Year (TONs)
VOC	0.000950
SO_x	0.000104
NO_x	0.017271
CO	0.014508
PM 10	0.001313

Pollutant	Emissions Per Year (TONs)
PM 2.5	0.001313
Pb	0.000000
NH_3	0.000000
CO_2e	20.8

5.2 Heating Assumptions

—**Heating**
Heating Calculation Type: Heat Energy Requirement Method

—**Heat Energy Requirement Method**
Area of floorspace to be heated (ft^2): 4500
Type of fuel: Natural Gas
Type of boiler/furnace: Commercial/Institutional (0.3—9.9 MMBtu/hr)
Heat Value (MMBtu/ft^3): 0.00105
Energy Intensity (MMBtu/ft^2): 0.0806

—**Default Settings Used:** Yes

—**Boiler/Furnace Usage**
Operating Time Per Year (hours): 900 (default)

5.3 Heating Emission Factor(s)

—**Heating Emission Factors (lb/1000000 scf)**

VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
5.5	0.6	100	84	7.6	7.6			120390

5.4 Heating Formula(s)

—**Heating Fuel Consumption ft^3 per Year**
FC_{HER}= HA * EI/HV/1000000

FC_{HER}: Fuel Consumption for Heat Energy Requirement Method
HA: Area of floorspace to be heated (ft^2)
EI: Energy Intensity Requirement (MMBtu/ft^2)
HV: Heat Value (MMBTU/ft^3)
1000000: Conversion Factor

—**Heating Emissions per Year**
HE_{POL}= FC * EF_{POL}/2000

HE_{POL}: Heating Emission Emissions (TONs)
FC: Fuel Consumption
EF_{POL}: Emission Factor for Pollutant
2000: Conversion Factor pounds to tons

6. Emergency Generator

6.1 General Information & Timeline Assumptions

—**Add or Remove Activity from Baseline?** Add

—**Activity Location**
County: Spokane
Regulatory Area(s): Not in a Regulatory Area

—**Activity Title:** EC03—Simulated Training Facility

—**Activity Description:**
Demolish an existing tennis court and construct a 4,500 square foot training facility and associated access road.

—**Activity Start Date**
Start Month: 7
Start Year: 2022

—**Activity End Date**
Indefinite: Yes
End Month: N/A
End Year: N/A

—**Activity Emissions:**

Pollutant	Emissions Per Year (TONs)
VOC	0.005650
SO_x	0.004759
NO_x	0.023288
CO	0.015552
PM 10	0.005083

Pollutant	Emissions Per Year (TONs)
PM 2.5	0.005083
Pb	0.000000
NH_3	0.000000
CO_2e	2.7

6.2 Emergency Generator Assumptions

—**Emergency Generator**
Type of Fuel used in Emergency Generator: Diesel
Number of Emergency Generators: 1

—**Default Settings Used:** Yes

—**Emergency Generators Consumption**
Emergency Generator's Horsepower: 135 (default)
Average Operating Hours Per Year (hours): 30 (default)

6.3 Emergency Generator Emission Factor(s)

—**Emergency Generators Emission Factor (lb/hp-hr)**

VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
0.00279	0.00235	0.0115	0.00768	0.00251	0.00251			1.33

6.4 Emergency Generator Formula(s)

—**Emergency Generator Emissions per Year**
AE_{POL}= (NGEN * HP * OT * EF_{POL})/2000

AE_{POL}: Activity Emissions (TONs per Year)
NGEN: Number of Emergency Generators
HP: Emergency Generator's Horsepower (hp)
OT: Average Operating Hours Per Year (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hp-hr)

7. Construction/Demolition

7.1 General Information & Timeline Assumptions

—Activity Location
County: Spokane
Regulatory Area(s): Not in a Regulatory Area

—Activity Title: EC04—Maintenance Equipment Shed

—Activity Description:
Demolish an existing Mylar tent and replace with a storage shed for maintenance equipment.

—Activity Start Date
Start Month: 1
Start Month: 2021

—Activity End Date
Indefinite: False
End Month: 6
End Month: 2021

—Activity Emissions:

Pollutant	Total Emissions (TONs)
VOC	0.111204
SO_x	0.000884
NO_x	0.314603
CO	0.377827
PM 10	0.033680

Pollutant	Total Emissions (TONs)
PM 2.5	0.013036
Pb	0.000000
NH_3	0.000309
CO_2e	85.8

7.1 Demolition Phase

7.1.1 Demolition Phase Timeline Assumptions

—Phase Start Date
Start Month: 1
Start Quarter: 1
Start Year: 2021

—Phase Duration
Number of Month: 0
Number of Days: 10

7.1.2 Demolition Phase Assumptions

—General Demolition Information
Area of Building to be demolished (ft^2): 5000
Height of Building to be demolished (ft): 10

—Default Settings Used: Yes

—Average Day(s) worked per week: 5 (default)

—Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Concrete/Industrial Saws Composite	1	8
Rubber Tired Dozers Composite	1	1
Tractors/Loaders/Backhoes Composite	2	6

—Vehicle Exhaust

Average Hauling Truck Capacity (yd^3): 20 (default)
Average Hauling Truck Round Trip Commute (mile): 20 (default)

—Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

—Worker Trips

Average Worker Round Trip Commute (mile): 20 (default)

—Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

7.1.3 Demolition Phase Emission Factor(s)

—Construction Exhaust Emission Factors (lb/hour) (default)

Concrete/Industrial Saws Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0443	0.0006	0.3176	0.3761	0.0170	0.0170	0.0040	58.563
Rubber Tired Dozers Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.2015	0.0024	1.4660	0.7661	0.0581	0.0581	0.0181	239.53
Tractors/Loaders/Backhoes Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0407	0.0007	0.2505	0.3606	0.0112	0.0112	0.0036	66.890

—Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.278	000.002	000.219	003.276	000.008	000.007		000.023	00320.329
LDGT	000.351	000.003	000.382	004.545	000.010	000.009		000.024	00414.211
HDGV	000.705	000.005	001.074	015.763	000.025	000.022		000.045	00763.488
LDDV	000.122	000.003	000.133	002.396	000.004	000.004		000.008	00309.634
LDDT	000.266	000.004	000.384	004.133	000.007	000.007		000.008	00440.653
HDDV	000.498	000.013	005.110	001.743	000.169	000.156		000.028	01479.227
MC	002.339	000.003	000.821	013.581	000.029	000.025		000.054	00399.711

7.1.4 Demolition Phase Formula(s)

—Fugitive Dust Emissions per Phase

$PM10_{FD} = (0.00042 * BA * BH)/2000$

$PM10_{FD}$: Fugitive Dust PM 10 Emissions (TONs)
0.00042: Emission Factor (lb/ft^3)
BA: Area of Building to be demolished (ft^2)
BH: Height of Building to be demolished (ft)
2000: Conversion Factor pounds to tons

—**Construction Exhaust Emissions per Phase**
$CEE_{POL} = (NE * WD * H * EF_{POL})/2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

—**Vehicle Exhaust Emissions per Phase**
$VMT_{VE} = BA * BH * (1/27) * 0.25 * (1/HC) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
BA: Area of Building being demolish (ft^2)
BH: Height of Building being demolish (ft)
(1/27): Conversion Factor cubic feet to cubic yards (1 yd^3/27 ft^3)
0.25: Volume reduction factor (material reduced by 75% to account for air space)
HC: Average Hauling Truck Capacity (yd^3)
(1/HC): Conversion Factor cubic yards to trips (1 trip/HC yd^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM)/2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Vehicle Exhaust On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

—**Worker Trips Emissions per Phase**
$VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM)/2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

7.2 Site Grading Phase

7.2.1 Site Grading Phase Timeline Assumptions

—Phase Start Date
Start Month: 1
Start Quarter: 2
Start Year: 2021

—Phase Duration
Number of Month: 0
Number of Days: 2

7.2.2 Site Grading Phase Assumptions

—General Site Grading Information
Area of Site to be Graded (ft^2): 5500
Amount of Material to be Hauled On-Site (yd^3): 0
Amount of Material to be Hauled Off-Site (yd^3): 407

—Site Grading Default Settings
Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

—Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Graders Composite	1	6
Other Construction Equipment Composite	1	8
Rubber Tired Dozers Composite	1	6
Tractors/Loaders/Backhoes Composite	1	7

—Vehicle Exhaust
Average Hauling Truck Capacity (yd^3): 20 (default)
Average Hauling Truck Round Trip Commute (mile): 20 (default)

—Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

—Worker Trips
Average Worker Round Trip Commute (mile): 20 (default)

—Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

7.2.3 Site Grading Phase Emission Factor(s)

—Construction Exhaust Emission Factors (lb/hour) (default)

Graders Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0860	0.0014	0.5212	0.5747	0.0247	0.0247	0.0077	132.93
Other Construction Equipment Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0533	0.0012	0.3119	0.3497	0.0121	0.0121	0.0048	122.61
Rubber Tired Dozers Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.2015	0.0024	1.4660	0.7661	0.0581	0.0581	0.0181	239.53
Tractors/Loaders/Backhoes Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0407	0.0007	0.2505	0.3606	0.0112	0.0112	0.0036	66.890

—Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**Pb**	**NH_3**	**CO_2e**
LDGV	000.278	000.002	000.219	003.276	000.008	000.007		000.023	00320.329
LDGT	000.351	000.003	000.382	004.545	000.010	000.009		000.024	00414.211
HDGV	000.705	000.005	001.074	015.763	000.025	000.022		000.045	00763.488
LDDV	000.122	000.003	000.133	002.396	000.004	000.004		000.008	00309.634
LDDT	000.266	000.004	000.384	004.133	000.007	000.007		000.008	00440.653
HDDV	000.498	000.013	005.110	001.743	000.169	000.156		000.028	01479.227
MC	002.339	000.003	000.821	013.581	000.029	000.025		000.054	00399.711

7.2.4 Site Grading Phase Formula(s)

—Fugitive Dust Emissions per Phase
$PM10_{FD} = (20 * ACRE * WD)/2000$

$PM10_{FD}$: Fugitive Dust PM 10 Emissions (TONs)
20: Conversion Factor Acre Day to pounds (20 lb/1 Acre Day)
ACRE: Total acres (acres)
WD: Number of Total Work Days (days)
2000: Conversion Factor pounds to tons

—Construction Exhaust Emissions per Phase
$CEE_{POL} = (NE * WD * H * EF_{POL})/2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

—Vehicle Exhaust Emissions per Phase
$VMT_{VE} = (HA_{OnSite} + HA_{OffSite}) * (1/HC) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
HA_{OnSite}: Amount of Material to be Hauled On-Site (yd^3)
$HA_{OffSite}$: Amount of Material to be Hauled Off-Site (yd^3)
HC: Average Hauling Truck Capacity (yd^3)
(1/HC): Conversion Factor cubic yards to trips (1 trip/HC yd^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM)/2000

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Vehicle Exhaust On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

—**Worker Trips Emissions per Phase**
VMT_{WT} = WD * WT * 1.25 * NE

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM)/2000

V_{POL}: Vehicle Emissions (TONs)
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

7.3 Trenching/Excavating Phase

7.3.1 Trenching/Excavating Phase Timeline Assumptions

—**Phase Start Date**
Start Month: 1
Start Quarter: 2
Start Year: 2021

—**Phase Duration**
Number of Month: 0
Number of Days: 2

7.3.2 Trenching/Excavating Phase Assumptions

—**General Trenching/Excavating Information**
Area of Site to be Trenched/Excavated (ft^2): 5500
Amount of Material to be Hauled On-Site (yd^3): 0
Amount of Material to be Hauled Off-Site (yd^3): 204

—**Trenching Default Settings**
Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

—**Construction Exhaust (default)**

Equipment Name	Number Of Equipment	Hours Per Day
Excavators Composite	2	8
Other General Industrial Equipment Composite	1	8
Tractors/Loaders/Backhoes Composite	1	8

—**Vehicle Exhaust**

Average Hauling Truck Capacity (yd^3): 20 (default)
Average Hauling Truck Round Trip Commute (mile): 20 (default)

—**Vehicle Exhaust Vehicle Mixture (%)**

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

—**Worker Trips**

Average Worker Round Trip Commute (mile): 20 (default)

—**Worker Trips Vehicle Mixture (%)**

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

7.3.3 Trenching/Excavating Phase Emission Factor(s)

—**Construction Exhaust Emission Factors (lb/hour) (default)**

Graders Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0860	0.0014	0.5212	0.5747	0.0247	0.0247	0.0077	132.93
Other Construction Equipment Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0533	0.0012	0.3119	0.3497	0.0121	0.0121	0.0048	122.61
Rubber Tired Dozers Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.2015	0.0024	1.4660	0.7661	0.0581	0.0581	0.0181	239.53
Tractors/Loaders/Backhoes Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0407	0.0007	0.2505	0.3606	0.0112	0.0112	0.0036	66.890

—**Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)**

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.278	000.002	000.219	003.276	000.008	000.007		000.023	00320.329
LDGT	000.351	000.003	000.382	004.545	000.010	000.009		000.024	00414.211
HDGV	000.705	000.005	001.074	015.763	000.025	000.022		000.045	00763.488
LDDV	000.122	000.003	000.133	002.396	000.004	000.004		000.008	00309.634
LDDT	000.266	000.004	000.384	004.133	000.007	000.007		000.008	00440.653
HDDV	000.498	000.013	005.110	001.743	000.169	000.156		000.028	01479.227
MC	002.339	000.003	000.821	013.581	000.029	000.025		000.054	00399.711

7.3.4 Trenching/Excavating Phase Formula(s)

—Fugitive Dust Emissions per Phase
$PM10_{FD}$ = (20 * ACRE * WD)/2000

$PM10_{FD}$: Fugitive Dust PM 10 Emissions (TONs)
20: Conversion Factor Acre Day to pounds (20 lb/1 Acre Day)
ACRE: Total acres (acres)
WD: Number of Total Work Days (days)
2000: Conversion Factor pounds to tons

—Construction Exhaust Emissions per Phase
CEE_{POL} = (NE * WD * H * EF_{POL})/2000

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

—Vehicle Exhaust Emissions per Phase
VMT_{VE} = (HA_{OnSite} + $HA_{OffSite}$) * (1/HC) * HT

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
HA_{OnSite}: Amount of Material to be Hauled On-Site (yd^3)
$HA_{OffSite}$: Amount of Material to be Hauled Off-Site (yd^3)
HC: Average Hauling Truck Capacity (yd^3)
(1/HC): Conversion Factor cubic yards to trips (1 trip/HC yd^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM)/2000

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Vehicle Exhaust On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

—Worker Trips Emissions per Phase
VMT_{WT} = WD * WT * 1.25 * NE

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM)/2000

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

7.4 Building Construction Phase

7.4.1 Building Construction Phase Timeline Assumptions

—Phase Start Date
Start Month: 2
Start Quarter: 1
Start Year: 2021

—Phase Duration
Number of Month: 3
Number of Days: 10

7.4.2 Building Construction Phase Assumptions

—General Building Construction Information
Building Category: Office or Industrial
Area of Building (ft^2): 5000
Height of Building (ft): 15
Number of Units: N/A

—Building Construction Default Settings
Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

—Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Cranes Composite	1	4
Forklifts Composite	2	6
Tractors/Loaders/Backhoes Composite	1	8

—Vehicle Exhaust
Average Hauling Truck Round Trip Commute (mile): 20 (default)

—Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

—Worker Trips
Average Worker Round Trip Commute (mile): 20 (default)

—Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

—Vendor Trips
Average Vendor Round Trip Commute (mile): 40 (default)

—Vendor Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

7.4.3 Building Construction Phase Emission Factor(s)

—Construction Exhaust Emission Factors (lb/hour) (default)

Cranes Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0845	0.0013	0.6033	0.3865	0.0228	0.0228	0.0076	128.82
Forklifts Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0293	0.0006	0.1458	0.2148	0.0056	0.0056	0.0026	54.462
Tractors/Loaders/Backhoes Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0407	0.0007	0.2505	0.3606	0.0112	0.0112	0.0036	66.890

—Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.278	000.002	000.219	003.276	000.008	000.007		000.023	00320.329
LDGT	000.351	000.003	000.382	004.545	000.010	000.009		000.024	00414.211
HDGV	000.705	000.005	001.074	015.763	000.025	000.022		000.045	00763.488
LDDV	000.122	000.003	000.133	002.396	000.004	000.004		000.008	00309.634
LDDT	000.266	000.004	000.384	004.133	000.007	000.007		000.008	00440.653
HDDV	000.498	000.013	005.110	001.743	000.169	000.156		000.028	01479.227
MC	002.339	000.003	000.821	013.581	000.029	000.025		000.054	00399.711

7.4.4 Building Construction Phase Formula(s)

—Construction Exhaust Emissions per Phase
$CEE_{POL} = (NE * WD * H * EF_{POL})/2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

—Vehicle Exhaust Emissions per Phase
$VMT_{VE} = BA * BH * (0.42/1000) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
BA: Area of Building (ft^2)
BH: Height of Building (ft)
(0.42/1000): Conversion Factor ft^3 to trips (0.42 trip/1000 ft^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM)/2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

—**Worker Trips Emissions per Phase**
$VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM)/2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

—**Vender Trips Emissions per Phase**
$VMT_{VT} = BA * BH * (0.38/1000) * HT$

VMT_{VT}: Vender Trips Vehicle Miles Travel (miles)
BA: Area of Building (ft^2)
BH: Height of Building (ft)
(0.38/1000): Conversion Factor ft^3 to trips (0.38 trip/1000 ft^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VT} * 0.002205 * EF_{POL} * VM)/2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VT}: Vender Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

7.5 Architectural Coatings Phase

7.5.1 Architectural Coatings Phase Timeline Assumptions

—**Phase Start Date**
Start Month: 6
Start Quarter: 1
Start Year: 2021

—Phase Duration
Number of Month: 0
Number of Days: 5

7.5.2 Architectural Coatings Phase Assumptions

—General Architectural Coatings Information
Building Category: Non-Residential
Total Square Footage (ft^2): 5000
Number of Units: N/A

—Architectural Coatings Default Settings
Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

—Worker Trips
Average Worker Round Trip Commute (mile): 20 (default)

—Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

7.5.3 Architectural Coatings Phase Emission Factor(s)

—Worker Trips Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.278	000.002	000.219	003.276	000.008	000.007		000.023	00320.329
LDGT	000.351	000.003	000.382	004.545	000.010	000.009		000.024	00414.211
HDGV	000.705	000.005	001.074	015.763	000.025	000.022		000.045	00763.488
LDDV	000.122	000.003	000.133	002.396	000.004	000.004		000.008	00309.634
LDDT	000.266	000.004	000.384	004.133	000.007	000.007		000.008	00440.653
HDDV	000.498	000.013	005.110	001.743	000.169	000.156		000.028	01479.227
MC	002.339	000.003	000.821	013.581	000.029	000.025		000.054	00399.711

7.5.4 Architectural Coatings Phase Formula(s)

—Worker Trips Emissions per Phase
$VMT_{WT} = (1 * WT * PA)/800$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
1: Conversion Factor person days to trips (1 trip/1 person * day)
WT: Average Worker Round Trip Commute (mile)
PA: Paint Area (ft^2)
800: Conversion Factor ft^2 to person days (1 ft^2/1 person * day)

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM)/2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

—Off-Gassing Emissions per Phase
VOC_{AC} = (AB * 2.0 * 0.0116)/2000.0

VOC_{AC}: Architectural Coating VOC Emissions (TONs)
BA: Area of Building (ft^2)
2.0: Conversion Factor total area to coated area (2.0 ft^2 coated area/total area)
0.0116: Emission Factor (lb/ft^2)
2000: Conversion Factor pounds to tons

7.6 Paving Phase

7.6.1 Paving Phase Timeline Assumptions

—Phase Start Date
Start Month: 6
Start Quarter: 1
Start Year: 2021

—Phase Duration
Number of Month: 0
Number of Days: 5

7.6.2 Paving Phase Assumptions

—General Paving Information
Paving Area (ft^2): 1000

—Paving Default Settings
Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

—Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Cement and Mortar Mixers Composite	4	6
Pavers Composite	1	7
Rollers Composite	1	7
Tractors/Loaders/Backhoes Composite	1	7

—Vehicle Exhaust
Average Hauling Truck Round Trip Commute (mile): 20 (default)

—Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

—Worker Trips
Average Worker Round Trip Commute (mile): 20 (default)

—Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

7.6.3 Paving Phase Emission Factor(s)

—Construction Exhaust Emission Factors (lb/hour) (default)

Graders Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0860	0.0014	0.5212	0.5747	0.0247	0.0247	0.0077	132.93
Other Construction Equipment Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0533	0.0012	0.3119	0.3497	0.0121	0.0121	0.0048	122.61
Rubber Tired Dozers Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.2015	0.0024	1.4660	0.7661	0.0581	0.0581	0.0181	239.53
Tractors/Loaders/Backhoes Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0407	0.0007	0.2505	0.3606	0.0112	0.0112	0.0036	66.890

—Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**Pb**	**NH_3**	**CO_2e**
LDGV	000.278	000.002	000.219	003.276	000.008	000.007		000.023	00320.329
LDGT	000.351	000.003	000.382	004.545	000.010	000.009		000.024	00414.211
HDGV	000.705	000.005	001.074	015.763	000.025	000.022		000.045	00763.488
LDDV	000.122	000.003	000.133	002.396	000.004	000.004		000.008	00309.634
LDDT	000.266	000.004	000.384	004.133	000.007	000.007		000.008	00440.653
HDDV	000.498	000.013	005.110	001.743	000.169	000.156		000.028	01479.227
MC	002.339	000.003	000.821	013.581	000.029	000.025		000.054	00399.711

7.6.4 Paving Phase Formula(s)

—Construction Exhaust Emissions per Phase

$CEE_{POL} = (NE * WD * H * EF_{POL})/2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

—Vehicle Exhaust Emissions per Phase

$VMT_{VE} = PA * 0.25 * (1/27) * (1/HC) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
PA: Paving Area (ft^2)
0.25: Thickness of Paving Area (ft)
(1/27): Conversion Factor cubic feet to cubic yards (1 yd^3/27 ft^3)
HC: Average Hauling Truck Capacity (yd^3)
(1/HC): Conversion Factor cubic yards to trips (1 trip/HC yd^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM)/2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Vehicle Exhaust On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

—**Worker Trips Emissions per Phase**
$VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM)/2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

—**Off-Gassing Emissions per Phase**
$VOC_P = (2.62 * PA)/43560$

VOC_P: Paving VOC Emissions (TONs)
2.62: Emission Factor (lb/acre)
PA: Paving Area (ft^2)
43560: Conversion Factor ft^2 to acre (43560 ft^2/acre)^2/acre)

8. Construction/Demolition

8.1 General Information & Timeline Assumptions

—**Activity Location**
County: Spokane
Regulatory Area(s): Not in a Regulatory Area

—**Activity Title:** EC05—Administration Processing Facility

—**Activity Description:**
Construct an 800 square foot building to house administrative tasks.

—**Activity Start Date**
Start Month: 1
Start Month: 2022

—Activity End Date
Indefinite: False
End Month: 6
End Month: 2022

—Activity Emissions:

Pollutant	Total Emissions (TONs)
VOC	0.054824
SO_x	0.000800
NO_x	0.252885
CO	0.340935
PM 10	0.013543

Pollutant	Total Emissions (TONs)
PM 2.5	0.009854
Pb	0.000000
NH_3	0.000233
CO_2e	77.1

8.1 Site Grading Phase

8.1.1 Site Grading Phase Timeline Assumptions

—Phase Start Date
Start Month: 1
Start Quarter: 1
Start Year: 2022

—Phase Duration
Number of Month: 0
Number of Days: 2

8.1.2 Site Grading Phase Assumptions

—General Site Grading Information
Area of Site to be Graded (ft^2): 2000
Amount of Material to be Hauled On-Site (yd^3): 0
Amount of Material to be Hauled Off-Site (yd^3): 148

—Site Grading Default Settings
Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

—Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Graders Composite	1	6
Other Construction Equipment Composite	1	8
Rubber Tired Dozers Composite	1	6
Tractors/Loaders/Backhoes Composite	1	7

—Vehicle Exhaust
Average Hauling Truck Capacity (yd^3): 20 (default)
Average Hauling Truck Round Trip Commute (mile): 20 (default)

—Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

—Worker Trips
Average Worker Round Trip Commute (mile): 20 (default)

—Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

8.1.3 Site Grading Phase Emission Factor(s)

—Construction Exhaust Emission Factors (lb/hour) (default)

Graders Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0806	0.0014	0.4657	0.5731	0.0217	0.0217	0.0072	132.92
Other Construction Equipment Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0507	0.0012	0.2785	0.3488	0.0105	0.0105	0.0045	122.61
Rubber Tired Dozers Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.1919	0.0024	1.3611	0.7352	0.0536	0.0536	0.0173	239.51
Tractors/Loaders/Backhoes Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0383	0.0007	0.2301	0.3598	0.0095	0.0095	0.0034	66.884

—Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.278	000.002	000.219	003.276	000.008	000.007		000.023	00320.329
LDGT	000.351	000.003	000.382	004.545	000.010	000.009		000.024	00414.211
HDGV	000.705	000.005	001.074	015.763	000.025	000.022		000.045	00763.488
LDDV	000.122	000.003	000.133	002.396	000.004	000.004		000.008	00309.634
LDDT	000.266	000.004	000.384	004.133	000.007	000.007		000.008	00440.653
HDDV	000.498	000.013	005.110	001.743	000.169	000.156		000.028	01479.227
MC	002.339	000.003	000.821	013.581	000.029	000.025		000.054	00399.711

8.1.4 Site Grading Phase Formula(s)

—Fugitive Dust Emissions per Phase
$PM10_{FD}$ = (20 * ACRE * WD)/2000

$PM10_{FD}$: Fugitive Dust PM 10 Emissions (TONs)
20: Conversion Factor Acre Day to pounds (20 lb/1 Acre Day)
ACRE: Total acres (acres)
WD: Number of Total Work Days (days)
2000: Conversion Factor pounds to tons

—Construction Exhaust Emissions per Phase
CEE_{POL} = (NE * WD * H * EF_{POL})/2000

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

—Vehicle Exhaust Emissions per Phase
$VMT_{VE} = (HA_{OnSite} + HA_{OffSite}) * (1/HC) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
HA_{OnSite}: Amount of Material to be Hauled On-Site (yd^3)
$HA_{OffSite}$: Amount of Material to be Hauled Off-Site (yd^3)
HC: Average Hauling Truck Capacity (yd^3)
(1/HC): Conversion Factor cubic yards to trips (1 trip/HC yd^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM)/2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Vehicle Exhaust On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

—Worker Trips Emissions per Phase
$VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM)/2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

8.2 Trenching/Excavating Phase

8.2.1 Trenching/Excavating Phase Timeline Assumptions

—Phase Start Date
Start Month: 1
Start Quarter: 1
Start Year: 2022

—Phase Duration
Number of Month: 0
Number of Days: 2

8.2.2 Trenching/Excavating Phase Assumptions

—General Trenching/Excavating Information
Area of Site to be Trenched/Excavated (ft^2): 2000
Amount of Material to be Hauled On-Site (yd^3): 0
Amount of Material to be Hauled Off-Site (yd^3): 74

—Trenching Default Settings
Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

—Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Excavators Composite	2	8
Other General Industrial Equipment Composite	1	8
Tractors/Loaders/Backhoes Composite	1	8

—Vehicle Exhaust
Average Hauling Truck Capacity (yd^3): 20 (default)
Average Hauling Truck Round Trip Commute (mile): 20 (default)

—Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

—Worker Trips
Average Worker Round Trip Commute (mile): 20 (default)

—Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

8.2.3 Trenching/Excavating Phase Emission Factor(s)

—Construction Exhaust Emission Factors (lb/hour) (default)

Graders Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0806	0.0014	0.4657	0.5731	0.0217	0.0217	0.0072	132.92
Other Construction Equipment Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0507	0.0012	0.2785	0.3488	0.0105	0.0105	0.0045	122.61
Rubber Tired Dozers Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.1919	0.0024	1.3611	0.7352	0.0536	0.0536	0.0173	239.51
Tractors/Loaders/Backhoes Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0383	0.0007	0.2301	0.3598	0.0095	0.0095	0.0034	66.884

—Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.278	000.002	000.219	003.276	000.008	000.007		000.023	00320.329
LDGT	000.351	000.003	000.382	004.545	000.010	000.009		000.024	00414.211
HDGV	000.705	000.005	001.074	015.763	000.025	000.022		000.045	00763.488
LDDV	000.122	000.003	000.133	002.396	000.004	000.004		000.008	00309.634
LDDT	000.266	000.004	000.384	004.133	000.007	000.007		000.008	00440.653
HDDV	000.498	000.013	005.110	001.743	000.169	000.156		000.028	01479.227
MC	002.339	000.003	000.821	013.581	000.029	000.025		000.054	00399.711

8.2.4 Trenching/Excavating Phase Formula(s)

—Fugitive Dust Emissions per Phase
$PM10_{FD} = (20 * ACRE * WD)/2000$

$PM10_{FD}$: Fugitive Dust PM 10 Emissions (TONs)
20: Conversion Factor Acre Day to pounds (20 lb/1 Acre Day)
ACRE: Total acres (acres)
WD: Number of Total Work Days (days)
2000: Conversion Factor pounds to tons

—Construction Exhaust Emissions per Phase
$CEE_{POL} = (NE * WD * H * EF_{POL})/2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

—Vehicle Exhaust Emissions per Phase
$VMT_{VE} = (HA_{OnSite} + HA_{OffSite}) * (1/HC) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
HA_{OnSite}: Amount of Material to be Hauled On-Site (yd^3)
$HA_{OffSite}$: Amount of Material to be Hauled Off-Site (yd^3)
HC: Average Hauling Truck Capacity (yd^3)
(1/HC): Conversion Factor cubic yards to trips (1 trip/HC yd^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM)/2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Vehicle Exhaust On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

—Worker Trips Emissions per Phase
$VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM)/2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)

2000: Conversion Factor pounds to tons

8.3 Building Construction Phase

8.3.1 Building Construction Phase Timeline Assumptions

—Phase Start Date
Start Month: 2
Start Quarter: 1
Start Year: 2022

—Phase Duration
Number of Month: 3
Number of Days: 10

8.3.2 Building Construction Phase Assumptions

—General Building Construction Information
Building Category: Office or Industrial
Area of Building (ft^2): 800
Height of Building (ft): 15
Number of Units: N/A

—Building Construction Default Settings
Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

—Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Cranes Composite	1	4
Forklifts Composite	2	6
Tractors/Loaders/Backhoes Composite	1	8

—Vehicle Exhaust
Average Hauling Truck Round Trip Commute (mile): 20 (default)

—Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

—Worker Trips
Average Worker Round Trip Commute (mile): 20 (default)

—Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

—Vendor Trips
Average Vendor Round Trip Commute (mile): 40 (default)

—Vendor Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

8.3.3 Building Construction Phase Emission Factor(s)

—Construction Exhaust Emission Factors (lb/hour) (default)

Cranes Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0797	0.0013	0.5505	0.3821	0.0203	0.0203	0.0071	128.81
Forklifts Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0274	0.0006	0.1265	0.2146	0.0043	0.0043	0.0024	54.457
Tractors/Loaders/Backhoes Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0383	0.0007	0.2301	0.3598	0.0095	0.0095	0.0034	66.884

—Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**Pb**	**NH_3**	**CO_2e**
LDGV	000.278	000.002	000.219	003.276	000.008	000.007		000.023	00320.329
LDGT	000.351	000.003	000.382	004.545	000.010	000.009		000.024	00414.211
HDGV	000.705	000.005	001.074	015.763	000.025	000.022		000.045	00763.488
LDDV	000.122	000.003	000.133	002.396	000.004	000.004		000.008	00309.634
LDDT	000.266	000.004	000.384	004.133	000.007	000.007		000.008	00440.653
HDDV	000.498	000.013	005.110	001.743	000.169	000.156		000.028	01479.227
MC	002.339	000.003	000.821	013.581	000.029	000.025		000.054	00399.711

8.3.4 Building Construction Phase Formula(s)

—Construction Exhaust Emissions per Phase

$CEE_{POL} = (NE * WD * H * EF_{POL})/2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

—Vehicle Exhaust Emissions per Phase

$VMT_{VE} = BA * BH * (0.42/1000) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
BA: Area of Building (ft^2)
BH: Height of Building (ft)
(0.42/1000): Conversion Factor ft^3 to trips (0.42 trip/1000 ft^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM)/2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

—Worker Trips Emissions per Phase
VMT_{WT} = WD * WT * 1.25 * NE

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM)/2000

V_{POL}: Vehicle Emissions (TONs)
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

—Vender Trips Emissions per Phase
VMT_{VT} = BA * BH * (0.38/1000) * HT

VMT_{VT}: Vender Trips Vehicle Miles Travel (miles)
BA: Area of Building (ft^2)
BH: Height of Building (ft)
(0.38/1000): Conversion Factor ft^3 to trips (0.38 trip/1000 ft^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

V_{POL} = (VMT_{VT} * 0.002205 * EF_{POL} * VM)/2000

V_{POL}: Vehicle Emissions (TONs)
VMT_{VT}: Vender Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

8.4 Architectural Coatings Phase

8.4.1 Architectural Coatings Phase Timeline Assumptions

—Phase Start Date
Start Month: 6
Start Quarter: 1
Start Year: 2022

—Phase Duration
Number of Month: 0
Number of Days: 5

8.4.2 Architectural Coatings Phase Assumptions

—General Architectural Coatings Information
Building Category: Non-Residential
Total Square Footage (ft^2): 800
Number of Units: N/A

—**Architectural Coatings Default Settings**
Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

—**Worker Trips**
Average Worker Round Trip Commute (mile): 20 (default)

—**Worker Trips Vehicle Mixture (%)**

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

8.4.3 Architectural Coatings Phase Emission Factor(s)

—**Worker Trips Emission Factors (grams/mile)**

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.278	000.002	000.219	003.276	000.008	000.007		000.023	00320.329
LDGT	000.351	000.003	000.382	004.545	000.010	000.009		000.024	00414.211
HDGV	000.705	000.005	001.074	015.763	000.025	000.022		000.045	00763.488
LDDV	000.122	000.003	000.133	002.396	000.004	000.004		000.008	00309.634
LDDT	000.266	000.004	000.384	004.133	000.007	000.007		000.008	00440.653
HDDV	000.498	000.013	005.110	001.743	000.169	000.156		000.028	01479.227
MC	002.339	000.003	000.821	013.581	000.029	000.025		000.054	00399.711

8.4.4 Architectural Coatings Phase Formula(s)

—**Worker Trips Emissions per Phase**
$VMT_{WT} = (1 * WT * PA)/800$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
1: Conversion Factor person days to trips (1 trip/1 person * day)
WT: Average Worker Round Trip Commute (mile)
PA: Paint Area (ft^2)
800: Conversion Factor ft^2 to person days (1 ft^2/1 person * day)

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM)/2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

—**Off-Gassing Emissions per Phase**
$VOC_{AC} = (AB * 2.0 * 0.0116)/2000.0$

VOC_{AC}: Architectural Coating VOC Emissions (TONs)
BA: Area of Building (ft^2)
2.0: Conversion Factor total area to coated area (2.0 ft^2 coated area/total area)
0.0116: Emission Factor (lb/ft^2)
2000: Conversion Factor pounds to tons

8.5 Paving Phase

8.5.1 Paving Phase Timeline Assumptions

—Phase Start Date
Start Month: 6
Start Quarter: 1
Start Year: 2022

—Phase Duration
Number of Month: 0
Number of Days: 5

8.5.2 Paving Phase Assumptions

—General Paving Information
Paving Area (ft^2): 1200

—Paving Default Settings
Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

—Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Cement and Mortar Mixers Composite	4	6
Pavers Composite	1	7
Rollers Composite	1	7
Tractors/Loaders/Backhoes Composite	1	7

—Vehicle Exhaust
Average Hauling Truck Round Trip Commute (mile): 20 (default)

—Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

—Worker Trips
Average Worker Round Trip Commute (mile): 20 (default)

—Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

8.5.3 Paving Phase Emission Factor(s)

—Construction Exhaust Emission Factors (lb/hour) (default)

Graders Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0806	0.0014	0.4657	0.5731	0.0217	0.0217	0.0072	132.92
Other Construction Equipment Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0507	0.0012	0.2785	0.3488	0.0105	0.0105	0.0045	122.61
Rubber Tired Dozers Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.1919	0.0024	1.3611	0.7352	0.0536	0.0536	0.0173	239.51
Tractors/Loaders/Backhoes Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0383	0.0007	0.2301	0.3598	0.0095	0.0095	0.0034	66.884

—Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**Pb**	**NH_3**	**CO_2e**
LDGV	000.278	000.002	000.219	003.276	000.008	000.007		000.023	00320.329
LDGT	000.351	000.003	000.382	004.545	000.010	000.009		000.024	00414.211
HDGV	000.705	000.005	001.074	015.763	000.025	000.022		000.045	00763.488
LDDV	000.122	000.003	000.133	002.396	000.004	000.004		000.008	00309.634
LDDT	000.266	000.004	000.384	004.133	000.007	000.007		000.008	00440.653
HDDV	000.498	000.013	005.110	001.743	000.169	000.156		000.028	01479.227
MC	002.339	000.003	000.821	013.581	000.029	000.025		000.054	00399.711

8.5.4 Paving Phase Formula(s)

—Construction Exhaust Emissions per Phase

$CEE_{POL} = (NE * WD * H * EF_{POL})/2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

—Vehicle Exhaust Emissions per Phase

$VMT_{VE} = PA * 0.25 * (1/27) * (1/HC) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
PA: Paving Area (ft^2)
0.25: Thickness of Paving Area (ft)
(1/27): Conversion Factor cubic feet to cubic yards (1 yd^3/27 ft^3)
HC: Average Hauling Truck Capacity (yd^3)
(1/HC): Conversion Factor cubic yards to trips (1 trip/HC yd^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM)/2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Vehicle Exhaust On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

—**Worker Trips Emissions per Phase**
$VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM)/2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

—**Off-Gassing Emissions per Phase**
$VOC_P = (2.62 * PA)/43560$

VOC_P: Paving VOC Emissions (TONs)
2.62: Emission Factor (lb/acre)
PA: Paving Area (ft^2)
43560: Conversion Factor ft^2 to acre (43560 ft^2/acre)^2/acre)

9. Heating

9.1 General Information & Timeline Assumptions

—**Add or Remove Activity from Baseline?** Add

—**Activity Location**
County: Spokane
Regulatory Area(s): Not in a Regulatory Area

—**Activity Title:** EC05—Administration Processing Facility

—**Activity Description:**
Construct an 800 square foot building to house administrative tasks.

—**Activity Start Date**
Start Month: 7
Start Year: 2022

—**Activity End Date**
Indefinite: Yes
End Month: N/A
End Year: N/A

—**Activity Emissions:**

Pollutant	Emissions Per Year (TONs)
VOC	0.000169
SO_x	0.000018
NO_x	0.003070
CO	0.002579
PM 10	0.000233

Pollutant	Emissions Per Year (TONs)
PM 2.5	0.000233
Pb	0.000000
NH_3	0.000000
CO_2e	3.7

9.2 Heating Assumptions

—**Heating**
Heating Calculation Type: Heat Energy Requirement Method

—**Heat Energy Requirement Method**
Area of floorspace to be heated (ft^2): 800
Type of fuel: Natural Gas
Type of boiler/furnace: Commercial/Institutional (0.3—9.9 MMBtu/hr)
Heat Value (MMBtu/ft^3): 0.00105
Energy Intensity (MMBtu/ft^2): 0.0806

—**Default Settings Used:** Yes

—**Boiler/Furnace Usage**
Operating Time Per Year (hours): 900 (default)

9.3 Heating Emission Factor(s)

—**Heating Emission Factors (lb/1000000 scf)**

VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
5.5	0.6	100	84	7.6	7.6			120390

9.4 Heating Formula(s)

—**Heating Fuel Consumption ft^3 per Year**
FC_{HER}= HA * EI/HV/1000000

FC_{HER}: Fuel Consumption for Heat Energy Requirement Method
HA: Area of floorspace to be heated (ft^2)
EI: Energy Intensity Requirement (MMBtu/ft^2)
HV: Heat Value (MMBTU/ft^3)
1000000: Conversion Factor

—**Heating Emissions per Year**
HE_{POL}= FC * EF_{POL}/2000

HE_{POL}: Heating Emission Emissions (TONs)
FC: Fuel Consumption
EF_{POL}: Emission Factor for Pollutant
2000: Conversion Factor pounds to tons

10. Construction/Demolition

10.1 General Information & Timeline Assumptions

—Activity Location
County: Spokane
Regulatory Area(s): Not in a Regulatory Area

—Activity Title: SO01—Training Support Storage

—Activity Description:
Add 1,500 ft^2 of storage space to support the training program conducted at Building 24.

—Activity Start Date
Start Month: 4
Start Month: 2020

—Activity End Date
Indefinite: False
End Month: 8
End Month: 2020

—Activity Emissions:

Pollutant	Total Emissions (TONs)
VOC	0.064892
SO_x	0.000759
NO_x	0.286578
CO	0.318763
PM 10	0.019526

Pollutant	Total Emissions (TONs)
PM 2.5	0.012159
Pb	0.000000
NH_3	0.000232
CO_2e	73.4

10.1 Site Grading Phase

10.1.1 Site Grading Phase Timeline Assumptions

—Phase Start Date
Start Month: 4
Start Quarter: 1
Start Year: 2020

—Phase Duration
Number of Month: 0
Number of Days: 2

10.1.2 Site Grading Phase Assumptions

—General Site Grading Information
Area of Site to be Graded (ft^2): 4000
Amount of Material to be Hauled On-Site (yd^3): 0
Amount of Material to be Hauled Off-Site (yd^3): 296

—Site Grading Default Settings
Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

—Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Graders Composite	1	6
Other Construction Equipment Composite	1	8
Rubber Tired Dozers Composite	1	6
Tractors/Loaders/Backhoes Composite	1	7

—Vehicle Exhaust
Average Hauling Truck Capacity (yd^3): 20 (default)
Average Hauling Truck Round Trip Commute (mile): 20 (default)

—Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

—Worker Trips
Average Worker Round Trip Commute (mile): 20 (default)

—Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

10.1.3 Site Grading Phase Emission Factor(s)

—Construction Exhaust Emission Factors (lb/hour) (default)

Graders Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0919	0.0014	0.5823	0.5765	0.0280	0.0280	0.0082	132.95
Other Construction Equipment Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0562	0.0012	0.3519	0.3508	0.0138	0.0138	0.0050	122.62
Rubber Tired Dozers Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.2117	0.0024	1.5772	0.8005	0.0630	0.0630	0.0191	239.56
Tractors/Loaders/Backhoes Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0436	0.0007	0.2744	0.3616	0.0134	0.0134	0.0039	66.897

—Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.278	000.002	000.219	003.276	000.008	000.007		000.023	00320.329
LDGT	000.351	000.003	000.382	004.545	000.010	000.009		000.024	00414.211
HDGV	000.705	000.005	001.074	015.763	000.025	000.022		000.045	00763.488
LDDV	000.122	000.003	000.133	002.396	000.004	000.004		000.008	00309.634
LDDT	000.266	000.004	000.384	004.133	000.007	000.007		000.008	00440.653
HDDV	000.498	000.013	005.110	001.743	000.169	000.156		000.028	01479.227
MC	002.339	000.003	000.821	013.581	000.029	000.025		000.054	00399.711

10.1.4 Site Grading Phase Formula(s)

—**Fugitive Dust Emissions per Phase**
$PM10_{FD} = (20 * ACRE * WD)/2000$

$PM10_{FD}$: Fugitive Dust PM 10 Emissions (TONs)
20: Conversion Factor Acre Day to pounds (20 lb/1 Acre Day)
ACRE: Total acres (acres)
WD: Number of Total Work Days (days)
2000: Conversion Factor pounds to tons

—**Construction Exhaust Emissions per Phase**
$CEE_{POL} = (NE * WD * H * EF_{POL})/2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

—**Vehicle Exhaust Emissions per Phase**
$VMT_{VE} = (HA_{OnSite} + HA_{OffSite}) * (1/HC) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
HA_{OnSite}: Amount of Material to be Hauled On-Site (yd^3)
$HA_{OffSite}$: Amount of Material to be Hauled Off-Site (yd^3)
HC: Average Hauling Truck Capacity (yd^3)
(1/HC): Conversion Factor cubic yards to trips (1 trip/HC yd^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM)/2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Vehicle Exhaust On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

—**Worker Trips Emissions per Phase**
$VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM)/2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

10.2 Trenching/Excavating Phase

10.2.1 Trenching/Excavating Phase Timeline Assumptions

—Phase Start Date
Start Month: 4
Start Quarter: 1
Start Year: 2020

—Phase Duration
Number of Month: 0
Number of Days: 2

10.2.2 Trenching/Excavating Phase Assumptions

—General Trenching/Excavating Information
Area of Site to be Trenched/Excavated (ft^2): 4000
Amount of Material to be Hauled On-Site (yd^3): 0
Amount of Material to be Hauled Off-Site (yd^3): 148

—Trenching Default Settings
Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

—Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Excavators Composite	2	8
Other General Industrial Equipment Composite	1	8
Tractors/Loaders/Backhoes Composite	1	8

—Vehicle Exhaust
Average Hauling Truck Capacity (yd^3): 20 (default)
Average Hauling Truck Round Trip Commute (mile): 20 (default)

—Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

—Worker Trips
Average Worker Round Trip Commute (mile): 20 (default)

—Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

10.2.3 Trenching/Excavating Phase Emission Factor(s)

—Construction Exhaust Emission Factors (lb/hour) (default)

Graders Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0919	0.0014	0.5823	0.5765	0.0280	0.0280	0.0082	132.95
Other Construction Equipment Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0562	0.0012	0.3519	0.3508	0.0138	0.0138	0.0050	122.62
Rubber Tired Dozers Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.2117	0.0024	1.5772	0.8005	0.0630	0.0630	0.0191	239.56
Tractors/Loaders/Backhoes Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0436	0.0007	0.2744	0.3616	0.0134	0.0134	0.0039	66.897

—Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**Pb**	**NH_3**	**CO_2e**
LDGV	000.278	000.002	000.219	003.276	000.008	000.007		000.023	00320.329
LDGT	000.351	000.003	000.382	004.545	000.010	000.009		000.024	00414.211
HDGV	000.705	000.005	001.074	015.763	000.025	000.022		000.045	00763.488
LDDV	000.122	000.003	000.133	002.396	000.004	000.004		000.008	00309.634
LDDT	000.266	000.004	000.384	004.133	000.007	000.007		000.008	00440.653
HDDV	000.498	000.013	005.110	001.743	000.169	000.156		000.028	01479.227
MC	002.339	000.003	000.821	013.581	000.029	000.025		000.054	00399.711

10.2.4 Trenching/Excavating Phase Formula(s)

—Fugitive Dust Emissions per Phase

$PM10_{FD}$ = (20 * ACRE * WD)/2000

$PM10_{FD}$: Fugitive Dust PM 10 Emissions (TONs)
20: Conversion Factor Acre Day to pounds (20 lb/1 Acre Day)
ACRE: Total acres (acres)
WD: Number of Total Work Days (days)
2000: Conversion Factor pounds to tons

—Construction Exhaust Emissions per Phase

CEE_{POL} = (NE * WD * H * EF_{POL})/2000

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

—**Vehicle Exhaust Emissions per Phase**
$VMT_{VE} = (HA_{OnSite} + HA_{OffSite}) * (1/HC) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
HA_{OnSite}: Amount of Material to be Hauled On-Site (yd^3)
$HA_{OffSite}$: Amount of Material to be Hauled Off-Site (yd^3)
HC: Average Hauling Truck Capacity (yd^3)
(1/HC): Conversion Factor cubic yards to trips (1 trip/HC yd^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM)/2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Vehicle Exhaust On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

—**Worker Trips Emissions per Phase**
$VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM)/2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

10.3 Building Construction Phase

10.3.1 Building Construction Phase Timeline Assumptions

—**Phase Start Date**
Start Month: 5
Start Quarter: 1
Start Year: 2020

—**Phase Duration**
Number of Month: 3
Number of Days: 10

10.3.2 Building Construction Phase Assumptions

—General Building Construction Information
Building Category: Office or Industrial
Area of Building (ft^2): 1500
Height of Building (ft): 15
Number of Units: N/A

—Building Construction Default Settings
Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

—Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Cranes Composite	1	4
Forklifts Composite	2	6
Tractors/Loaders/Backhoes Composite	1	8

—Vehicle Exhaust
Average Hauling Truck Round Trip Commute (mile): 20 (default)

—Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

—Worker Trips
Average Worker Round Trip Commute (mile): 20 (default)

—Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

—Vendor Trips
Average Vendor Round Trip Commute (mile): 40 (default)

—Vendor Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

10.3.3 Building Construction Phase Emission Factor(s)

—Construction Exhaust Emission Factors (lb/hour) (default)

Cranes Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0898	0.0013	0.6610	0.3917	0.0256	0.0256	0.0081	128.83
Forklifts Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0320	0.0006	0.1690	0.2160	0.0070	0.0070	0.0028	54.467
Tractors/Loaders/Backhoes Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0436	0.0007	0.2744	0.3616	0.0134	0.0134	0.0039	66.897

—Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.278	000.002	000.219	003.276	000.008	000.007		000.023	00320.329
LDGT	000.351	000.003	000.382	004.545	000.010	000.009		000.024	00414.211
HDGV	000.705	000.005	001.074	015.763	000.025	000.022		000.045	00763.488
LDDV	000.122	000.003	000.133	002.396	000.004	000.004		000.008	00309.634
LDDT	000.266	000.004	000.384	004.133	000.007	000.007		000.008	00440.653
HDDV	000.498	000.013	005.110	001.743	000.169	000.156		000.028	01479.227
MC	002.339	000.003	000.821	013.581	000.029	000.025		000.054	00399.711

10.3.4 Building Construction Phase Formula(s)

—Construction Exhaust Emissions per Phase

$CEE_{POL} = (NE * WD * H * EF_{POL})/2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

—Vehicle Exhaust Emissions per Phase

$VMT_{VE} = BA * BH * (0.42/1000) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
BA: Area of Building (ft^2)
BH: Height of Building (ft)
(0.42/1000): Conversion Factor ft^3 to trips (0.42 trip/1000 ft^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM)/2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

—Worker Trips Emissions per Phase

$VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM)/2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

—**Vender Trips Emissions per Phase**
$VMT_{VT} = BA * BH * (0.38/1000) * HT$

VMT_{VT}: Vender Trips Vehicle Miles Travel (miles)
BA: Area of Building (ft^2)
BH: Height of Building (ft)
(0.38/1000): Conversion Factor ft^3 to trips (0.38 trip/1000 ft^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VT} * 0.002205 * EF_{POL} * VM)/2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VT}: Vender Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

10.4 Architectural Coatings Phase

10.4.1 Architectural Coatings Phase Timeline Assumptions

—**Phase Start Date**
Start Month: 8
Start Quarter: 1
Start Year: 2020

—**Phase Duration**
Number of Month: 0
Number of Days: 5

10.4.2 Architectural Coatings Phase Assumptions

—**General Architectural Coatings Information**
Building Category: Non-Residential
Total Square Footage (ft^2): 1500
Number of Units: N/A

—**Architectural Coatings Default Settings**
Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

—**Worker Trips**
Average Worker Round Trip Commute (mile): 20 (default)

—Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

10.4.3 Architectural Coatings Phase Emission Factor(s)

—Worker Trips Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.278	000.002	000.219	003.276	000.008	000.007		000.023	00320.329
LDGT	000.351	000.003	000.382	004.545	000.010	000.009		000.024	00414.211
HDGV	000.705	000.005	001.074	015.763	000.025	000.022		000.045	00763.488
LDDV	000.122	000.003	000.133	002.396	000.004	000.004		000.008	00309.634
LDDT	000.266	000.004	000.384	004.133	000.007	000.007		000.008	00440.653
HDDV	000.498	000.013	005.110	001.743	000.169	000.156		000.028	01479.227
MC	002.339	000.003	000.821	013.581	000.029	000.025		000.054	00399.711

10.4.4 Architectural Coatings Phase Formula(s)

—Worker Trips Emissions per Phase
$VMT_{WT} = (1 * WT * PA)/800$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
1: Conversion Factor person days to trips (1 trip/1 person * day)
WT: Average Worker Round Trip Commute (mile)
PA: Paint Area (ft^2)
800: Conversion Factor ft^2 to person days (1 ft^2/1 person * day)

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM)/2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

—Off-Gassing Emissions per Phase
$VOC_{AC} = (AB * 2.0 * 0.0116)/2000.0$

VOC_{AC}: Architectural Coating VOC Emissions (TONs)
BA: Area of Building (ft^2)
2.0: Conversion Factor total area to coated area (2.0 ft^2 coated area/total area)
0.0116: Emission Factor (lb/ft^2)
2000: Conversion Factor pounds to tons

11. Heating

11.1 General Information & Timeline Assumptions

—Add or Remove Activity from Baseline? Add

—Activity Location
County: Spokane
Regulatory Area(s): Not in a Regulatory Area

—Activity Title: SO01—Training Support Storage

—Activity Description:
Add 1,500 ft^2 of storage space to support the training program conducted at Building 24.

—Activity Start Date
Start Month: 9
Start Year: 2020

—Activity End Date
Indefinite: Yes
End Month: N/A
End Year: N/A

—Activity Emissions:

Pollutant	Emissions Per Year (TONs)
VOC	0.000317
SO_x	0.000035
NO_x	0.005757
CO	0.004836
PM 10	0.000438

Pollutant	Emissions Per Year (TONs)
PM 2.5	0.000438
Pb	0.000000
NH_3	0.000000
CO_2e	6.9

11.2 Heating Assumptions

—Heating
Heating Calculation Type: Heat Energy Requirement Method

—Heat Energy Requirement Method
Area of floorspace to be heated (ft^2): 1500
Type of fuel: Natural Gas
Type of boiler/furnace: Commercial/Institutional (0.3—9.9 MMBtu/hr)
Heat Value (MMBtu/ft^3): 0.00105
Energy Intensity (MMBtu/ft^2): 0.0806

—Default Settings Used: Yes

—Boiler/Furnace Usage
Operating Time Per Year (hours): 900 (default)

11.3 Heating Emission Factor(s)

—Heating Emission Factors (lb/1000000 scf)

VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
5.5	0.6	100	84	7.6	7.6			120390

11.4 Heating Formula(s)

—Heating Fuel Consumption ft^3 per Year

FC_{HER}= HA * EI/HV/1000000

FC_{HER}: Fuel Consumption for Heat Energy Requirement Method
HA: Area of floorspace to be heated (ft^2)
EI: Energy Intensity Requirement (MMBtu/ft^2)
HV: Heat Value (MMBTU/ft^3)
1000000: Conversion Factor

—Heating Emissions per Year

HE_{POL}= FC * EF_{POL}/2000

HE_{POL}: Heating Emission Emissions (TONs)
FC: Fuel Consumption
EF_{POL}: Emission Factor for Pollutant
2000: Conversion Factor pounds to tons

12. Construction/Demolition

12.1 General Information & Timeline Assumptions

—Activity Location

County: Spokane
Regulatory Area(s): Not in a Regulatory Area

—Activity Title: SO02—Building 24 Training Expansion

—Activity Description:

Provide an additional 8,400 ft^2 of building space for the training program conducted at Building 24

—Activity Start Date

Start Month: 1
Start Month: 2022

—Activity End Date

Indefinite: False
End Month: 6
End Month: 2022

—Activity Emissions:

Pollutant	Total Emissions (TONs)
VOC	0.140554
SO_x	0.000792
NO_x	0.246679
CO	0.318460
PM 10	0.027610

Pollutant	Total Emissions (TONs)
PM 2.5	0.009192
Pb	0.000000
NH_3	0.000294
CO_2e	77.0

12.1 Site Grading Phase

12.1.1 Site Grading Phase Timeline Assumptions

—Phase Start Date
Start Month: 1
Start Quarter: 1
Start Year: 2022

—Phase Duration
Number of Month: 0
Number of Days: 2

12.1.2 Site Grading Phase Assumptions

—General Site Grading Information
Area of Site to be Graded (ft^2): 10000
Amount of Material to be Hauled On-Site (yd^3): 0
Amount of Material to be Hauled Off-Site (yd^3): 741

—Site Grading Default Settings
Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

—Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Graders Composite	1	6
Other Construction Equipment Composite	1	8
Rubber Tired Dozers Composite	1	6
Tractors/Loaders/Backhoes Composite	1	7

—Vehicle Exhaust
Average Hauling Truck Capacity (yd^3): 20 (default)
Average Hauling Truck Round Trip Commute (mile): 20 (default)

—Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

—Worker Trips
Average Worker Round Trip Commute (mile): 20 (default)

—Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

12.1.3 Site Grading Phase Emission Factor(s)

—Construction Exhaust Emission Factors (lb/hour) (default)

Graders Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0806	0.0014	0.4657	0.5731	0.0217	0.0217	0.0072	132.92
Other Construction Equipment Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0507	0.0012	0.2785	0.3488	0.0105	0.0105	0.0045	122.61
Rubber Tired Dozers Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.1919	0.0024	1.3611	0.7352	0.0536	0.0536	0.0173	239.51
Tractors/Loaders/Backhoes Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0383	0.0007	0.2301	0.3598	0.0095	0.0095	0.0034	66.884

—Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**Pb**	**NH_3**	**CO_2e**
LDGV	000.278	000.002	000.219	003.276	000.008	000.007		000.023	00320.329
LDGT	000.351	000.003	000.382	004.545	000.010	000.009		000.024	00414.211
HDGV	000.705	000.005	001.074	015.763	000.025	000.022		000.045	00763.488
LDDV	000.122	000.003	000.133	002.396	000.004	000.004		000.008	00309.634
LDDT	000.266	000.004	000.384	004.133	000.007	000.007		000.008	00440.653
HDDV	000.498	000.013	005.110	001.743	000.169	000.156		000.028	01479.227
MC	002.339	000.003	000.821	013.581	000.029	000.025		000.054	00399.711

12.1.4 Site Grading Phase Formula(s)

—Fugitive Dust Emissions per Phase
$PM10_{FD}$ = (20 * ACRE * WD)/2000

$PM10_{FD}$: Fugitive Dust PM 10 Emissions (TONs)
20: Conversion Factor Acre Day to pounds (20 lb/1 Acre Day)
ACRE: Total acres (acres)
WD: Number of Total Work Days (days)
2000: Conversion Factor pounds to tons

—Construction Exhaust Emissions per Phase
CEE_{POL} = (NE * WD * H * EF_{POL})/2000

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

—Vehicle Exhaust Emissions per Phase
VMT_{VE} = (HA_{OnSite} + $HA_{OffSite}$) * (1/HC) * HT

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
HA_{OnSite}: Amount of Material to be Hauled On-Site (yd^3)
$HA_{OffSite}$: Amount of Material to be Hauled Off-Site (yd^3)
HC: Average Hauling Truck Capacity (yd^3)
(1/HC): Conversion Factor cubic yards to trips (1 trip/HC yd^3)

HT: Average Hauling Truck Round Trip Commute (mile/trip)

V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM)/2000

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Vehicle Exhaust On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

—**Worker Trips Emissions per Phase**
VMT_{WT} = WD * WT * 1.25 * NE

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM)/2000

V_{POL}: Vehicle Emissions (TONs)
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

12.2 Trenching/Excavating Phase

12.2.1 Trenching/Excavating Phase Timeline Assumptions

—**Phase Start Date**
Start Month: 1
Start Quarter: 1
Start Year: 2022

—**Phase Duration**
Number of Month: 0
Number of Days: 2

12.2.2 Trenching/Excavating Phase Assumptions

—**General Trenching/Excavating Information**
Area of Site to be Trenched/Excavated (ft^2): 10000
Amount of Material to be Hauled On-Site (yd^3): 0
Amount of Material to be Hauled Off-Site (yd^3): 370

—**Trenching Default Settings**
Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

—Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Excavators Composite	2	8
Other General Industrial Equipment Composite	1	8
Tractors/Loaders/Backhoes Composite	1	8

—Vehicle Exhaust

Average Hauling Truck Capacity (yd^3): 20 (default)
Average Hauling Truck Round Trip Commute (mile): 20 (default)

—Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

—Worker Trips

Average Worker Round Trip Commute (mile): 20 (default)

—Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

12.2.3 Trenching/Excavating Phase Emission Factor(s)

—Construction Exhaust Emission Factors (lb/hour) (default)

Graders Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0806	0.0014	0.4657	0.5731	0.0217	0.0217	0.0072	132.92
Other Construction Equipment Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0507	0.0012	0.2785	0.3488	0.0105	0.0105	0.0045	122.61
Rubber Tired Dozers Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.1919	0.0024	1.3611	0.7352	0.0536	0.0536	0.0173	239.51
Tractors/Loaders/Backhoes Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0383	0.0007	0.2301	0.3598	0.0095	0.0095	0.0034	66.884

—Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.278	000.002	000.219	003.276	000.008	000.007		000.023	00320.329
LDGT	000.351	000.003	000.382	004.545	000.010	000.009		000.024	00414.211
HDGV	000.705	000.005	001.074	015.763	000.025	000.022		000.045	00763.488
LDDV	000.122	000.003	000.133	002.396	000.004	000.004		000.008	00309.634
LDDT	000.266	000.004	000.384	004.133	000.007	000.007		000.008	00440.653
HDDV	000.498	000.013	005.110	001.743	000.169	000.156		000.028	01479.227
MC	002.339	000.003	000.821	013.581	000.029	000.025		000.054	00399.711

12.2.4 Trenching/Excavating Phase Formula(s)

—Fugitive Dust Emissions per Phase
$PM10_{FD} = (20 * ACRE * WD)/2000$

$PM10_{FD}$: Fugitive Dust PM 10 Emissions (TONs)
20: Conversion Factor Acre Day to pounds (20 lb/1 Acre Day)
ACRE: Total acres (acres)
WD: Number of Total Work Days (days)
2000: Conversion Factor pounds to tons

—Construction Exhaust Emissions per Phase
$CEE_{POL} = (NE * WD * H * EF_{POL})/2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

—Vehicle Exhaust Emissions per Phase
$VMT_{VE} = (HA_{OnSite} + HA_{OffSite}) * (1/HC) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
HA_{OnSite}: Amount of Material to be Hauled On-Site (yd^3)
$HA_{OffSite}$: Amount of Material to be Hauled Off-Site (yd^3)
HC: Average Hauling Truck Capacity (yd^3)
(1/HC): Conversion Factor cubic yards to trips (1 trip/HC yd^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM)/2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Vehicle Exhaust On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

—Worker Trips Emissions per Phase
$VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM)/2000

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

12.3 Building Construction Phase

12.3.1 Building Construction Phase Timeline Assumptions

—Phase Start Date
Start Month: 2
Start Quarter: 1
Start Year: 2022

—Phase Duration
Number of Month: 3
Number of Days: 10

12.3.2 Building Construction Phase Assumptions

—General Building Construction Information
Building Category: Office or Industrial
Area of Building (ft^2): 8400
Height of Building (ft): 15
Number of Units: N/A

—Building Construction Default Settings
Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

—Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Cranes Composite	1	4
Forklifts Composite	2	6
Tractors/Loaders/Backhoes Composite	1	8

—Vehicle Exhaust
Average Hauling Truck Round Trip Commute (mile): 20 (default)

—Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

—Worker Trips
Average Worker Round Trip Commute (mile): 20 (default)

—Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

—Vendor Trips
Average Vendor Round Trip Commute (mile): 40 (default)

—Vendor Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

12.3.3 Building Construction Phase Emission Factor(s)

—Construction Exhaust Emission Factors (lb/hour) (default)

Cranes Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0797	0.0013	0.5505	0.3821	0.0203	0.0203	0.0071	128.81
Forklifts Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0274	0.0006	0.1265	0.2146	0.0043	0.0043	0.0024	54.457
Tractors/Loaders/Backhoes Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0383	0.0007	0.2301	0.3598	0.0095	0.0095	0.0034	66.884

—Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.278	000.002	000.219	003.276	000.008	000.007		000.023	00320.329
LDGT	000.351	000.003	000.382	004.545	000.010	000.009		000.024	00414.211
HDGV	000.705	000.005	001.074	015.763	000.025	000.022		000.045	00763.488
LDDV	000.122	000.003	000.133	002.396	000.004	000.004		000.008	00309.634
LDDT	000.266	000.004	000.384	004.133	000.007	000.007		000.008	00440.653
HDDV	000.498	000.013	005.110	001.743	000.169	000.156		000.028	01479.227
MC	002.339	000.003	000.821	013.581	000.029	000.025		000.054	00399.711

12.3.4 Building Construction Phase Formula(s)

—Construction Exhaust Emissions per Phase
$CEE_{POL} = (NE * WD * H * EF_{POL})/2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

—Vehicle Exhaust Emissions per Phase
$VMT_{VE} = BA * BH * (0.42/1000) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
BA: Area of Building (ft^2)
BH: Height of Building (ft)
(0.42/1000): Conversion Factor ft^3 to trips (0.42 trip/1000 ft^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM)/2000

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

—**Worker Trips Emissions per Phase**
VMT_{WT} = WD * WT * 1.25 * NE

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM)/2000

V_{POL}: Vehicle Emissions (TONs)
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

—**Vender Trips Emissions per Phase**
VMT_{VT} = BA * BH * (0.38/1000) * HT

VMT_{VT}: Vender Trips Vehicle Miles Travel (miles)
BA: Area of Building (ft^2)
BH: Height of Building (ft)
(0.38/1000): Conversion Factor ft^3 to trips (0.38 trip/1000 ft^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

V_{POL} = (VMT_{VT} * 0.002205 * EF_{POL} * VM)/2000

V_{POL}: Vehicle Emissions (TONs)
VMT_{VT}: Vender Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

12.4 Architectural Coatings Phase

12.4.1 Architectural Coatings Phase Timeline Assumptions

—**Phase Start Date**
Start Month: 6
Start Quarter: 1
Start Year: 2022

—**Phase Duration**
Number of Month: 0
Number of Days: 5

12.4.2 Architectural Coatings Phase Assumptions

—**General Architectural Coatings Information**
Building Category: Non-Residential
Total Square Footage (ft^2): 8400
Number of Units: N/A

—**Architectural Coatings Default Settings**
Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

—**Worker Trips**
Average Worker Round Trip Commute (mile): 20 (default)

—**Worker Trips Vehicle Mixture (%)**

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

12.4.3 Architectural Coatings Phase Emission Factor(s)

—**Worker Trips Emission Factors (grams/mile)**

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.278	000.002	000.219	003.276	000.008	000.007		000.023	00320.329
LDGT	000.351	000.003	000.382	004.545	000.010	000.009		000.024	00414.211
HDGV	000.705	000.005	001.074	015.763	000.025	000.022		000.045	00763.488
LDDV	000.122	000.003	000.133	002.396	000.004	000.004		000.008	00309.634
LDDT	000.266	000.004	000.384	004.133	000.007	000.007		000.008	00440.653
HDDV	000.498	000.013	005.110	001.743	000.169	000.156		000.028	01479.227
MC	002.339	000.003	000.821	013.581	000.029	000.025		000.054	00399.711

12.4.4 Architectural Coatings Phase Formula(s)

—**Worker Trips Emissions per Phase**
$VMT_{WT} = (1 * WT * PA)/800$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
1: Conversion Factor person days to trips (1 trip/1 person * day)
WT: Average Worker Round Trip Commute (mile)
PA: Paint Area (ft^2)
800: Conversion Factor ft^2 to person days (1 ft^2/1 person * day)

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM)/2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

—**Off-Gassing Emissions per Phase**
VOC_{AC} = (AB * 2.0 * 0.0116)/2000.0

VOC_{AC}: Architectural Coating VOC Emissions (TONs)
BA: Area of Building (ft^2)
2.0: Conversion Factor total area to coated area (2.0 ft^2 coated area/total area)
0.0116: Emission Factor (lb/ft^2)
2000: Conversion Factor pounds to tons

13. Heating

13.1 General Information & Timeline Assumptions

—**Add or Remove Activity from Baseline?** Add

—**Activity Location**
County: Spokane
Regulatory Area(s): Not in a Regulatory Area

—**Activity Title:** SO02—Building 24 Training Expansion

—**Activity Description:**
Provide an additional 8,400 ft^2 of building space for the training program conducted at Building 24

—**Activity Start Date**
Start Month: 7
Start Year: 2022

—**Activity End Date**
Indefinite: Yes
End Month: N/A
End Year: N/A

—**Activity Emissions:**

Pollutant	Emissions Per Year (TONs)
VOC	0.001998
SO_x	0.000218
NO_x	0.036320
CO	0.030509
PM 10	0.002760

Pollutant	Emissions Per Year (TONs)
PM 2.5	0.002760
Pb	0.000000
NH_3	0.000000
CO_2e	43.7

13.2 Heating Assumptions

—**Heating**
Heating Calculation Type: Heat Energy Requirement Method

—**Heat Energy Requirement Method**
Area of floorspace to be heated (ft^2): 8400
Type of fuel: Natural Gas
Type of boiler/furnace: Commercial/Institutional (0.3—9.9 MMBtu/hr)
Heat Value ($MMBtu/ft^3$): 0.00105
Energy Intensity ($MMBtu/ft^2$): 0.0908

—**Default Settings Used:** Yes

—**Boiler/Furnace Usage**
Operating Time Per Year (hours): 900 (default)

13.3 Heating Emission Factor(s)

—**Heating Emission Factors (lb/1000000 scf)**

VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
5.5	0.6	100	84	7.6	7.6			120390

13.4 Heating Formula(s)

—**Heating Fuel Consumption ft^3 per Year**
FC_{HER}= HA * EI/HV/1000000

FC_{HER}: Fuel Consumption for Heat Energy Requirement Method
HA: Area of floorspace to be heated (ft^2)
EI: Energy Intensity Requirement (MMBtu/ft^2)
HV: Heat Value (MMBTU/ft^3)
1000000: Conversion Factor

—**Heating Emissions per Year**
HE_{POL}= FC * EF_{POL}/2000

HE_{POL}: Heating Emission Emissions (TONs)
FC: Fuel Consumption
EF_{POL}: Emission Factor for Pollutant
2000: Conversion Factor pounds to tons

14. Construction/Demolition

14.1 General Information & Timeline Assumptions

—**Activity Location**
County: Spokane
Regulatory Area(s): Not in a Regulatory Area

—**Activity Title:** SO03—Training Planning

—**Activity Description:**
Decommission an existing trailer and replace it with a permanent building for specific training uses.

—**Activity Start Date**
Start Month: 1
Start Month: 2021

—**Activity End Date**
Indefinite: False
End Month: 6
End Month: 2021

—**Activity Emissions:**

Pollutant	Total Emissions (TONs)
VOC	0.077688
SO_x	0.000809
NO_x	0.282255
CO	0.345081
PM 10	0.018092

Pollutant	Total Emissions (TONs)
PM 2.5	0.011640
Pb	0.000000
NH_3	0.000261
CO_2e	78.2

14.1 Site Grading Phase

14.1.1 Site Grading Phase Timeline Assumptions

—**Phase Start Date**
Start Month: 1
Start Quarter: 1
Start Year: 2021

—**Phase Duration**
Number of Month: 0
Number of Days: 2

14.1.2 Site Grading Phase Assumptions

—**General Site Grading Information**
Area of Site to be Graded (ft^2): 3500
Amount of Material to be Hauled On-Site (yd^3): 0
Amount of Material to be Hauled Off-Site (yd^3): 259

—**Site Grading Default Settings**
Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

—**Construction Exhaust (default)**

Equipment Name	Number Of Equipment	Hours Per Day
Graders Composite	1	6
Other Construction Equipment Composite	1	8
Rubber Tired Dozers Composite	1	6
Tractors/Loaders/Backhoes Composite	1	7

—**Vehicle Exhaust**
Average Hauling Truck Capacity (yd^3): 20 (default)
Average Hauling Truck Round Trip Commute (mile): 20 (default)

—**Vehicle Exhaust Vehicle Mixture (%)**

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

—**Worker Trips**
Average Worker Round Trip Commute (mile): 20 (default)

—**Worker Trips Vehicle Mixture (%)**

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

14.1.3 Site Grading Phase Emission Factor(s)

—Construction Exhaust Emission Factors (lb/hour) (default)

Graders Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0860	0.0014	0.5212	0.5747	0.0247	0.0247	0.0077	132.93
Other Construction Equipment Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0533	0.0012	0.3119	0.3497	0.0121	0.0121	0.0048	122.61
Rubber Tired Dozers Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.2015	0.0024	1.4660	0.7661	0.0581	0.0581	0.0181	239.53
Tractors/Loaders/Backhoes Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0407	0.0007	0.2505	0.3606	0.0112	0.0112	0.0036	66.890

—Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.278	000.002	000.219	003.276	000.008	000.007		000.023	00320.329
LDGT	000.351	000.003	000.382	004.545	000.010	000.009		000.024	00414.211
HDGV	000.705	000.005	001.074	015.763	000.025	000.022		000.045	00763.488
LDDV	000.122	000.003	000.133	002.396	000.004	000.004		000.008	00309.634
LDDT	000.266	000.004	000.384	004.133	000.007	000.007		000.008	00440.653
HDDV	000.498	000.013	005.110	001.743	000.169	000.156		000.028	01479.227
MC	002.339	000.003	000.821	013.581	000.029	000.025		000.054	00399.711

14.1.4 Site Grading Phase Formula(s)

—Fugitive Dust Emissions per Phase
$PM10_{FD} = (20 * ACRE * WD)/2000$

$PM10_{FD}$: Fugitive Dust PM 10 Emissions (TONs)
20: Conversion Factor Acre Day to pounds (20 lb/1 Acre Day)
ACRE: Total acres (acres)
WD: Number of Total Work Days (days)
2000: Conversion Factor pounds to tons

—Construction Exhaust Emissions per Phase
$CEE_{POL} = (NE * WD * H * EF_{POL})/2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

—**Vehicle Exhaust Emissions per Phase**
$VMT_{VE} = (HA_{OnSite} + HA_{OffSite}) * (1/HC) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
HA_{OnSite}: Amount of Material to be Hauled On-Site (yd^3)
$HA_{OffSite}$: Amount of Material to be Hauled Off-Site (yd^3)
HC: Average Hauling Truck Capacity (yd^3)
(1/HC): Conversion Factor cubic yards to trips (1 trip/HC yd^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM)/2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Vehicle Exhaust On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

—**Worker Trips Emissions per Phase**
$VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM)/2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

14.2 Trenching/Excavating Phase

14.2.1 Trenching/Excavating Phase Timeline Assumptions

—**Phase Start Date**
Start Month: 1
Start Quarter: 1
Start Year: 2021

—**Phase Duration**
Number of Month: 0
Number of Days: 2

14.2.2 Trenching/Excavating Phase Assumptions

—General Trenching/Excavating Information
Area of Site to be Trenched/Excavated (ft^2): 3500
Amount of Material to be Hauled On-Site (yd^3): 0
Amount of Material to be Hauled Off-Site (yd^3): 130

—Trenching Default Settings
Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

—Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Excavators Composite	2	8
Other General Industrial Equipment Composite	1	8
Tractors/Loaders/Backhoes Composite	1	8

—Vehicle Exhaust
Average Hauling Truck Capacity (yd^3): 20 (default)
Average Hauling Truck Round Trip Commute (mile): 20 (default)

—Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

—Worker Trips
Average Worker Round Trip Commute (mile): 20 (default)

—Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

14.2.3 Trenching/Excavating Phase Emission Factor(s)

—Construction Exhaust Emission Factors (lb/hour) (default)

Graders Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0860	0.0014	0.5212	0.5747	0.0247	0.0247	0.0077	132.93
Other Construction Equipment Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0533	0.0012	0.3119	0.3497	0.0121	0.0121	0.0048	122.61
Rubber Tired Dozers Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.2015	0.0024	1.4660	0.7661	0.0581	0.0581	0.0181	239.53
Tractors/Loaders/Backhoes Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0407	0.0007	0.2505	0.3606	0.0112	0.0112	0.0036	66.890

—Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.278	000.002	000.219	003.276	000.008	000.007		000.023	00320.329
LDGT	000.351	000.003	000.382	004.545	000.010	000.009		000.024	00414.211
HDGV	000.705	000.005	001.074	015.763	000.025	000.022		000.045	00763.488
LDDV	000.122	000.003	000.133	002.396	000.004	000.004		000.008	00309.634
LDDT	000.266	000.004	000.384	004.133	000.007	000.007		000.008	00440.653
HDDV	000.498	000.013	005.110	001.743	000.169	000.156		000.028	01479.227
MC	002.339	000.003	000.821	013.581	000.029	000.025		000.054	00399.711

14.2.4 Trenching/Excavating Phase Formula(s)

—Fugitive Dust Emissions per Phase

$PM10_{FD}$ = (20 * ACRE * WD)/2000

$PM10_{FD}$: Fugitive Dust PM 10 Emissions (TONs)
20: Conversion Factor Acre Day to pounds (20 lb/1 Acre Day)
ACRE: Total acres (acres)
WD: Number of Total Work Days (days)
2000: Conversion Factor pounds to tons

—Construction Exhaust Emissions per Phase

CEE_{POL} = (NE * WD * H * EF_{POL})/2000

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

—Vehicle Exhaust Emissions per Phase

VMT_{VE} = (HA_{OnSite} + $HA_{OffSite}$) * (1/HC) * HT

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
HA_{OnSite}: Amount of Material to be Hauled On-Site (yd^3)
$HA_{OffSite}$: Amount of Material to be Hauled Off-Site (yd^3)
HC: Average Hauling Truck Capacity (yd^3)
(1/HC): Conversion Factor cubic yards to trips (1 trip/HC yd^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM)/2000

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Vehicle Exhaust On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

—Worker Trips Emissions per Phase
$VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM)/2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

14.3 Building Construction Phase

14.3.1 Building Construction Phase Timeline Assumptions

—Phase Start Date
Start Month: 2
Start Quarter: 1
Start Year: 2021

—Phase Duration
Number of Month: 3
Number of Days: 10

14.3.2 Building Construction Phase Assumptions

—General Building Construction Information
Building Category: Office or Industrial
Area of Building (ft^2): 2500
Height of Building (ft): 15
Number of Units: N/A

—Building Construction Default Settings
Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

—Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Cranes Composite	1	4
Forklifts Composite	2	6
Tractors/Loaders/Backhoes Composite	1	8

—Vehicle Exhaust
Average Hauling Truck Round Trip Commute (mile): 20 (default)

—Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

—Worker Trips
Average Worker Round Trip Commute (mile): 20 (default)

—Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

—Vendor Trips
Average Vendor Round Trip Commute (mile): 40 (default)

—Vendor Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

14.3.3 Building Construction Phase Emission Factor(s)

—Construction Exhaust Emission Factors (lb/hour) (default)

Cranes Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0845	0.0013	0.6033	0.3865	0.0228	0.0228	0.0076	128.82
Forklifts Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0293	0.0006	0.1458	0.2148	0.0056	0.0056	0.0026	54.462
Tractors/Loaders/Backhoes Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0407	0.0007	0.2505	0.3606	0.0112	0.0112	0.0036	66.890

—Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.278	000.002	000.219	003.276	000.008	000.007		000.023	00320.329
LDGT	000.351	000.003	000.382	004.545	000.010	000.009		000.024	00414.211
HDGV	000.705	000.005	001.074	015.763	000.025	000.022		000.045	00763.488
LDDV	000.122	000.003	000.133	002.396	000.004	000.004		000.008	00309.634
LDDT	000.266	000.004	000.384	004.133	000.007	000.007		000.008	00440.653
HDDV	000.498	000.013	005.110	001.743	000.169	000.156		000.028	01479.227
MC	002.339	000.003	000.821	013.581	000.029	000.025		000.054	00399.711

14.3.4 Building Construction Phase Formula(s)

—Construction Exhaust Emissions per Phase
$CEE_{POL} = (NE * WD * H * EF_{POL})/2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

—**Vehicle Exhaust Emissions per Phase**
VMT_{VE} = BA * BH * (0.42/1000) * HT

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
BA: Area of Building (ft^2)
BH: Height of Building (ft)
(0.42/1000): Conversion Factor ft^3 to trips (0.42 trip/1000 ft^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM)/2000

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

—**Worker Trips Emissions per Phase**
VMT_{WT} = WD * WT * 1.25 * NE

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM)/2000

V_{POL}: Vehicle Emissions (TONs)
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

—**Vender Trips Emissions per Phase**
VMT_{VT} = BA * BH * (0.38/1000) * HT

VMT_{VT}: Vender Trips Vehicle Miles Travel (miles)
BA: Area of Building (ft^2)
BH: Height of Building (ft)
(0.38/1000): Conversion Factor ft^3 to trips (0.38 trip/1000 ft^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

V_{POL} = (VMT_{VT} * 0.002205 * EF_{POL} * VM)/2000

V_{POL}: Vehicle Emissions (TONs)
VMT_{VT}: Vender Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

14.4 Architectural Coatings Phase

14.4.1 Architectural Coatings Phase Timeline Assumptions

—Phase Start Date
Start Month: 6
Start Quarter: 1
Start Year: 2021

—Phase Duration
Number of Month: 0
Number of Days: 5

14.4.2 Architectural Coatings Phase Assumptions

—General Architectural Coatings Information
Building Category: Non-Residential
Total Square Footage (ft^2): 2500
Number of Units: N/A

—Architectural Coatings Default Settings
Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

—Worker Trips
Average Worker Round Trip Commute (mile): 20 (default)

—Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

14.4.3 Architectural Coatings Phase Emission Factor(s)

—Worker Trips Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.278	000.002	000.219	003.276	000.008	000.007		000.023	00320.329
LDGT	000.351	000.003	000.382	004.545	000.010	000.009		000.024	00414.211
HDGV	000.705	000.005	001.074	015.763	000.025	000.022		000.045	00763.488
LDDV	000.122	000.003	000.133	002.396	000.004	000.004		000.008	00309.634
LDDT	000.266	000.004	000.384	004.133	000.007	000.007		000.008	00440.653
HDDV	000.498	000.013	005.110	001.743	000.169	000.156		000.028	01479.227
MC	002.339	000.003	000.821	013.581	000.029	000.025		000.054	00399.711

14.4.4 Architectural Coatings Phase Formula(s)

—Worker Trips Emissions per Phase
$VMT_{WT} = (1 * WT * PA)/800$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
1: Conversion Factor person days to trips (1 trip/1 person * day)
WT: Average Worker Round Trip Commute (mile)
PA: Paint Area (ft^2)
800: Conversion Factor ft^2 to person days (1 ft^2/1 person * day)

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM)/2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

—**Off-Gassing Emissions per Phase**
$VOC_{AC} = (AB * 2.0 * 0.0116)/2000.0$

VOC_{AC}: Architectural Coating VOC Emissions (TONs)
BA: Area of Building (ft^2)
2.0: Conversion Factor total area to coated area (2.0 ft^2 coated area/total area)
0.0116: Emission Factor (lb/ft^2)
2000: Conversion Factor pounds to tons

14.5 Paving Phase

14.5.1 Paving Phase Timeline Assumptions

—**Phase Start Date**
Start Month: 6
Start Quarter: 1
Start Year: 2021

—**Phase Duration**
Number of Month: 0
Number of Days: 5

14.5.2 Paving Phase Assumptions

—**General Paving Information**
Paving Area (ft^2): 1800

—**Paving Default Settings**
Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

—**Construction Exhaust (default)**

Equipment Name	Number Of Equipment	Hours Per Day
Cement and Mortar Mixers Composite	4	6
Pavers Composite	1	7
Rollers Composite	1	7
Tractors/Loaders/Backhoes Composite	1	7

—Vehicle Exhaust
Average Hauling Truck Round Trip Commute (mile): 20 (default)

—Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

—Worker Trips
Average Worker Round Trip Commute (mile): 20 (default)

—Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

14.5.3 Paving Phase Emission Factor(s)

—Construction Exhaust Emission Factors (lb/hour) (default)

Graders Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0860	0.0014	0.5212	0.5747	0.0247	0.0247	0.0077	132.93
Other Construction Equipment Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0533	0.0012	0.3119	0.3497	0.0121	0.0121	0.0048	122.61
Rubber Tired Dozers Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.2015	0.0024	1.4660	0.7661	0.0581	0.0581	0.0181	239.53
Tractors/Loaders/Backhoes Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0407	0.0007	0.2505	0.3606	0.0112	0.0112	0.0036	66.890

—Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.278	000.002	000.219	003.276	000.008	000.007		000.023	00320.329
LDGT	000.351	000.003	000.382	004.545	000.010	000.009		000.024	00414.211
HDGV	000.705	000.005	001.074	015.763	000.025	000.022		000.045	00763.488
LDDV	000.122	000.003	000.133	002.396	000.004	000.004		000.008	00309.634
LDDT	000.266	000.004	000.384	004.133	000.007	000.007		000.008	00440.653
HDDV	000.498	000.013	005.110	001.743	000.169	000.156		000.028	01479.227
MC	002.339	000.003	000.821	013.581	000.029	000.025		000.054	00399.711

14.5.4 Paving Phase Formula(s)

—Construction Exhaust Emissions per Phase
$CEE_{POL} = (NE * WD * H * EF_{POL})/2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

—Vehicle Exhaust Emissions per Phase
$VMT_{VE} = PA * 0.25 * (1/27) * (1/HC) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
PA: Paving Area (ft^2)
0.25: Thickness of Paving Area (ft)
(1/27): Conversion Factor cubic feet to cubic yards (1 yd^3/27 ft^3)
HC: Average Hauling Truck Capacity (yd^3)
(1/HC): Conversion Factor cubic yards to trips (1 trip/HC yd^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM)/2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Vehicle Exhaust On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

—Worker Trips Emissions per Phase
$VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM)/2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

—Off-Gassing Emissions per Phase
$VOC_P = (2.62 * PA)/43560$

VOC_P: Paving VOC Emissions (TONs)
2.62: Emission Factor (lb/acre)
PA: Paving Area (ft^2)
43560: Conversion Factor ft^2 to acre (43560 ft^2/acre)^2/acre)

15. Heating

15.1 General Information & Timeline Assumptions

—**Add or Remove Activity from Baseline?** Add

—**Activity Location**
County: Spokane
Regulatory Area(s): Not in a Regulatory Area

—**Activity Title:** SO03—Training Planning

—**Activity Description:**
Decommission an existing trailer and replace it with a permanent building for specific training uses.

—**Activity Start Date**
Start Month: 7
Start Year: 2021

—**Activity End Date**
Indefinite: Yes
End Month: N/A
End Year: N/A

—**Activity Emissions:**

Pollutant	Emissions Per Year (TONs)
VOC	0.000528
SO_x	0.000058
NO_x	0.009595
CO	0.008060
PM 10	0.000729

Pollutant	Emissions Per Year (TONs)
PM 2.5	0.000729
Pb	0.000000
NH_3	0.000000
CO_2e	11.6

15.2 Heating Assumptions

—**Heating**
Heating Calculation Type: Heat Energy Requirement Method

—**Heat Energy Requirement Method**
Area of floorspace to be heated (ft^2): 2500
Type of fuel: Natural Gas
Type of boiler/furnace: Commercial/Institutional (0.3—9.9 MMBtu/hr)
Heat Value (MMBtu/ft^3): 0.00105
Energy Intensity (MMBtu/ft^2): 0.0806

—**Default Settings Used:** Yes

—**Boiler/Furnace Usage**
Operating Time Per Year (hours): 900 (default)

15.3 Heating Emission Factor(s)

—Heating Emission Factors (lb/1000000 scf)

VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
5.5	0.6	100	84	7.6	7.6			120390

15.4 Heating Formula(s)

—Heating Fuel Consumption ft^3 per Year

FC_{HER}= HA * EI/HV/1000000

FC_{HER}: Fuel Consumption for Heat Energy Requirement Method
HA: Area of floorspace to be heated (ft^2)
EI: Energy Intensity Requirement (MMBtu/ft^2)
HV: Heat Value (MMBTU/ft^3)
1000000: Conversion Factor

—Heating Emissions per Year

HE_{POL}= FC * EF_{POL}/2000

HE_{POL}: Heating Emission Emissions (TONs)
FC: Fuel Consumption
EF_{POL}: Emission Factor for Pollutant
2000: Conversion Factor pounds to tons

16. Emergency Generator

16.1 General Information & Timeline Assumptions

—Add or Remove Activity from Baseline? Add

—Activity Location
County: Spokane
Regulatory Area(s): Not in a Regulatory Area

—Activity Title: SO03—Training Planning

—Activity Description:
Decommission an existing trailer and replace it with a permanent building for specific training uses.

—Activity Start Date
Start Month: 7
Start Year: 2021

—Activity End Date
Indefinite: Yes
End Month: N/A
End Year: N/A

—**Activity Emissions:**

Pollutant	Emissions Per Year (TONs)
VOC	0.005650
SO_x	0.004759
NO_x	0.023288
CO	0.015552
PM 10	0.005083

Pollutant	Emissions Per Year (TONs)
PM 2.5	0.005083
Pb	0.000000
NH_3	0.000000
CO_2e	2.7

16.2 Emergency Generator Assumptions

—**Emergency Generator**
Type of Fuel used in Emergency Generator: Diesel
Number of Emergency Generators: 1

—**Default Settings Used:** Yes

—**Emergency Generators Consumption**
Emergency Generator's Horsepower: 135 (default)
Average Operating Hours Per Year (hours): 30 (default)

16.3 Emergency Generator Emission Factor(s)

—**Emergency Generators Emission Factor (lb/hp-hr)**

VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
0.00279	0.00235	0.0115	0.00768	0.00251	0.00251			1.33

16.4 Emergency Generator Formula(s)

—**Emergency Generator Emissions per Year**
AE_{POL}= (NGEN * HP * OT * EF_{POL})/2000

AE_{POL}: Activity Emissions (TONs per Year)
NGEN: Number of Emergency Generators
HP: Emergency Generator's Horsepower (hp)
OT: Average Operating Hours Per Year (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hp-hr)

17. Construction/Demolition

17.1 General Information & Timeline Assumptions

—**Activity Location**
County: Spokane
Regulatory Area(s): Not in a Regulatory Area

—**Activity Title:** SO04—Special Project Training Facility

—**Activity Description:**
Construct a 2,000 square foot structure to house special training activities.

—**Activity Start Date**
Start Month: 1
Start Month: 2021

—Activity End Date
Indefinite: False
End Month: 6
End Month: 2021

—Activity Emissions:

Pollutant	Total Emissions (TONs)
VOC	0.071660
SO_x	0.000806
NO_x	0.281412
CO	0.343114
PM 10	0.018065

Pollutant	Total Emissions (TONs)
PM 2.5	0.011615
Pb	0.000000
NH_3	0.000247
CO_2e	77.8

17.1 Site Grading Phase

17.1.1 Site Grading Phase Timeline Assumptions

—Phase Start Date
Start Month: 1
Start Quarter: 1
Start Year: 2021

—Phase Duration
Number of Month: 0
Number of Days: 2

17.1.2 Site Grading Phase Assumptions

—General Site Grading Information
Area of Site to be Graded (ft^2): 3500
Amount of Material to be Hauled On-Site (yd^3): 0
Amount of Material to be Hauled Off-Site (yd^3): 259

—Site Grading Default Settings
Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

—Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Graders Composite	1	6
Other Construction Equipment Composite	1	8
Rubber Tired Dozers Composite	1	6
Tractors/Loaders/Backhoes Composite	1	7

—Vehicle Exhaust
Average Hauling Truck Capacity (yd^3): 20 (default)
Average Hauling Truck Round Trip Commute (mile): 20 (default)

—Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

—**Worker Trips**
Average Worker Round Trip Commute (mile): 20 (default)

—**Worker Trips Vehicle Mixture (%)**

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

17.1.3 Site Grading Phase Emission Factor(s)

—**Construction Exhaust Emission Factors (lb/hour) (default)**

Graders Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0860	0.0014	0.5212	0.5747	0.0247	0.0247	0.0077	132.93
Other Construction Equipment Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0533	0.0012	0.3119	0.3497	0.0121	0.0121	0.0048	122.61
Rubber Tired Dozers Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.2015	0.0024	1.4660	0.7661	0.0581	0.0581	0.0181	239.53
Tractors/Loaders/Backhoes Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0407	0.0007	0.2505	0.3606	0.0112	0.0112	0.0036	66.890

—**Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)**

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.278	000.002	000.219	003.276	000.008	000.007		000.023	00320.329
LDGT	000.351	000.003	000.382	004.545	000.010	000.009		000.024	00414.211
HDGV	000.705	000.005	001.074	015.763	000.025	000.022		000.045	00763.488
LDDV	000.122	000.003	000.133	002.396	000.004	000.004		000.008	00309.634
LDDT	000.266	000.004	000.384	004.133	000.007	000.007		000.008	00440.653
HDDV	000.498	000.013	005.110	001.743	000.169	000.156		000.028	01479.227
MC	002.339	000.003	000.821	013.581	000.029	000.025		000.054	00399.711

17.1.4 Site Grading Phase Formula(s)

—**Fugitive Dust Emissions per Phase**
$PM10_{FD}$ = (20 * ACRE * WD)/2000

$PM10_{FD}$: Fugitive Dust PM 10 Emissions (TONs)
20: Conversion Factor Acre Day to pounds (20 lb/1 Acre Day)
ACRE: Total acres (acres)
WD: Number of Total Work Days (days)
2000: Conversion Factor pounds to tons

—**Construction Exhaust Emissions per Phase**
CEE_{POL} = (NE * WD * H * EF_{POL})/2000

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

—**Vehicle Exhaust Emissions per Phase**
$VMT_{VE} = (HA_{OnSite} + HA_{OffSite}) * (1/HC) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
HA_{OnSite}: Amount of Material to be Hauled On-Site (yd^3)
$HA_{OffSite}$: Amount of Material to be Hauled Off-Site (yd^3)
HC: Average Hauling Truck Capacity (yd^3)
(1/HC): Conversion Factor cubic yards to trips (1 trip/HC yd^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM)/2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Vehicle Exhaust On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

—**Worker Trips Emissions per Phase**
$VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM)/2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

17.2 Trenching/Excavating Phase

17.2.1 Trenching/Excavating Phase Timeline Assumptions

—**Phase Start Date**
Start Month: 1
Start Quarter: 1
Start Year: 2021

—**Phase Duration**
Number of Month: 0
Number of Days: 2

17.2.2 Trenching/Excavating Phase Assumptions

—**General Trenching/Excavating Information**
Area of Site to be Trenched/Excavated (ft^2): 3500
Amount of Material to be Hauled On-Site (yd^3): 0
Amount of Material to be Hauled Off-Site (yd^3): 130

—Trenching Default Settings

Default Settings Used: Yes

Average Day(s) worked per week: 5 (default)

—Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Excavators Composite	2	8
Other General Industrial Equipment Composite	1	8
Tractors/Loaders/Backhoes Composite	1	8

—Vehicle Exhaust

Average Hauling Truck Capacity (yd^3): 20 (default)

Average Hauling Truck Round Trip Commute (mile): 20 (default)

—Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

—Worker Trips

Average Worker Round Trip Commute (mile): 20 (default)

—Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

17.2.3 Trenching/Excavating Phase Emission Factor(s)

—Construction Exhaust Emission Factors (lb/hour) (default)

Graders Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0860	0.0014	0.5212	0.5747	0.0247	0.0247	0.0077	132.93
Other Construction Equipment Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0533	0.0012	0.3119	0.3497	0.0121	0.0121	0.0048	122.61
Rubber Tired Dozers Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.2015	0.0024	1.4660	0.7661	0.0581	0.0581	0.0181	239.53
Tractors/Loaders/Backhoes Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0407	0.0007	0.2505	0.3606	0.0112	0.0112	0.0036	66.890

—Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.278	000.002	000.219	003.276	000.008	000.007		000.023	00320.329
LDGT	000.351	000.003	000.382	004.545	000.010	000.009		000.024	00414.211
HDGV	000.705	000.005	001.074	015.763	000.025	000.022		000.045	00763.488
LDDV	000.122	000.003	000.133	002.396	000.004	000.004		000.008	00309.634
LDDT	000.266	000.004	000.384	004.133	000.007	000.007		000.008	00440.653
HDDV	000.498	000.013	005.110	001.743	000.169	000.156		000.028	01479.227
MC	002.339	000.003	000.821	013.581	000.029	000.025		000.054	00399.711

17.2.4 Trenching/Excavating Phase Formula(s)

—**Fugitive Dust Emissions per Phase**
$PM10_{FD} = (20 * ACRE * WD)/2000$

$PM10_{FD}$: Fugitive Dust PM 10 Emissions (TONs)
20: Conversion Factor Acre Day to pounds (20 lb/1 Acre Day)
ACRE: Total acres (acres)
WD: Number of Total Work Days (days)
2000: Conversion Factor pounds to tons

—**Construction Exhaust Emissions per Phase**
$CEE_{POL} = (NE * WD * H * EF_{POL})/2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

—**Vehicle Exhaust Emissions per Phase**
$VMT_{VE} = (HA_{OnSite} + HA_{OffSite}) * (1/HC) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
HA_{OnSite}: Amount of Material to be Hauled On-Site (yd^3)
$HA_{OffSite}$: Amount of Material to be Hauled Off-Site (yd^3)
HC: Average Hauling Truck Capacity (yd^3)
(1/HC): Conversion Factor cubic yards to trips (1 trip/HC yd^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM)/2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Vehicle Exhaust On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

—**Worker Trips Emissions per Phase**
$VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM)/2000

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

17.3 Building Construction Phase

17.3.1 Building Construction Phase Timeline Assumptions

—Phase Start Date
Start Month: 2
Start Quarter: 1
Start Year: 2021

—Phase Duration
Number of Month: 3
Number of Days: 10

17.3.2 Building Construction Phase Assumptions

—General Building Construction Information
Building Category: Office or Industrial
Area of Building (ft^2): 2000
Height of Building (ft): 15
Number of Units: N/A

—Building Construction Default Settings
Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

—Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Cranes Composite	1	4
Forklifts Composite	2	6
Tractors/Loaders/Backhoes Composite	1	8

—Vehicle Exhaust
Average Hauling Truck Round Trip Commute (mile): 20 (default)

—Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

—Worker Trips
Average Worker Round Trip Commute (mile): 20 (default)

—Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

—**Vendor Trips**
Average Vendor Round Trip Commute (mile): 40 (default)

—**Vendor Trips Vehicle Mixture (%)**

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

17.3.3 Building Construction Phase Emission Factor(s)

—**Construction Exhaust Emission Factors (lb/hour) (default)**

Cranes Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0845	0.0013	0.6033	0.3865	0.0228	0.0228	0.0076	128.82
Forklifts Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0293	0.0006	0.1458	0.2148	0.0056	0.0056	0.0026	54.462
Tractors/Loaders/Backhoes Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0407	0.0007	0.2505	0.3606	0.0112	0.0112	0.0036	66.890

—**Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)**

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.278	000.002	000.219	003.276	000.008	000.007		000.023	00320.329
LDGT	000.351	000.003	000.382	004.545	000.010	000.009		000.024	00414.211
HDGV	000.705	000.005	001.074	015.763	000.025	000.022		000.045	00763.488
LDDV	000.122	000.003	000.133	002.396	000.004	000.004		000.008	00309.634
LDDT	000.266	000.004	000.384	004.133	000.007	000.007		000.008	00440.653
HDDV	000.498	000.013	005.110	001.743	000.169	000.156		000.028	01479.227
MC	002.339	000.003	000.821	013.581	000.029	000.025		000.054	00399.711

17.3.4 Building Construction Phase Formula(s)

—**Construction Exhaust Emissions per Phase**
$CEE_{POL} = (NE * WD * H * EF_{POL})/2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

—**Vehicle Exhaust Emissions per Phase**
$VMT_{VE} = BA * BH * (0.42/1000) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
BA: Area of Building (ft^2)
BH: Height of Building (ft)
(0.42/1000): Conversion Factor ft^3 to trips (0.42 trip/1000 ft^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM)/2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

—**Worker Trips Emissions per Phase**
$VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM)/2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

—**Vender Trips Emissions per Phase**
$VMT_{VT} = BA * BH * (0.38/1000) * HT$

VMT_{VT}: Vender Trips Vehicle Miles Travel (miles)
BA: Area of Building (ft^2)
BH: Height of Building (ft)
(0.38/1000): Conversion Factor ft^3 to trips (0.38 trip/1000 ft^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VT} * 0.002205 * EF_{POL} * VM)/2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VT}: Vender Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

17.4 Architectural Coatings Phase

17.4.1 Architectural Coatings Phase Timeline Assumptions

—**Phase Start Date**
Start Month: 6
Start Quarter: 1
Start Year: 2021

—Phase Duration
Number of Month: 0
Number of Days: 5

17.4.2 Architectural Coatings Phase Assumptions

—General Architectural Coatings Information
Building Category: Non-Residential
Total Square Footage (ft^2): 2000
Number of Units: N/A

—Architectural Coatings Default Settings
Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

—Worker Trips
Average Worker Round Trip Commute (mile): 20 (default)

—Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

17.4.3 Architectural Coatings Phase Emission Factor(s)

—Worker Trips Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.278	000.002	000.219	003.276	000.008	000.007		000.023	00320.329
LDGT	000.351	000.003	000.382	004.545	000.010	000.009		000.024	00414.211
HDGV	000.705	000.005	001.074	015.763	000.025	000.022		000.045	00763.488
LDDV	000.122	000.003	000.133	002.396	000.004	000.004		000.008	00309.634
LDDT	000.266	000.004	000.384	004.133	000.007	000.007		000.008	00440.653
HDDV	000.498	000.013	005.110	001.743	000.169	000.156		000.028	01479.227
MC	002.339	000.003	000.821	013.581	000.029	000.025		000.054	00399.711

17.4.4 Architectural Coatings Phase Formula(s)

—Worker Trips Emissions per Phase
$VMT_{WT} = (1 * WT * PA)/800$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
1: Conversion Factor person days to trips (1 trip/1 person * day)
WT: Average Worker Round Trip Commute (mile)
PA: Paint Area (ft^2)
800: Conversion Factor ft^2 to person days (1 ft^2/1 person * day)

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM)/2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

—Off-Gassing Emissions per Phase
VOC_{AC} = (AB * 2.0 * 0.0116)/2000.0

VOC_{AC}: Architectural Coating VOC Emissions (TONs)
BA: Area of Building (ft^2)
2.0: Conversion Factor total area to coated area (2.0 ft^2 coated area/total area)
0.0116: Emission Factor (lb/ft^2)
2000: Conversion Factor pounds to tons

17.5 Paving Phase

17.5.1 Paving Phase Timeline Assumptions

—Phase Start Date
Start Month: 6
Start Quarter: 1
Start Year: 2021

—Phase Duration
Number of Month: 0
Number of Days: 5

17.5.2 Paving Phase Assumptions

—General Paving Information
Paving Area (ft^2): 1125

—Paving Default Settings
Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

—Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Cement and Mortar Mixers Composite	4	6
Pavers Composite	1	7
Rollers Composite	1	7
Tractors/Loaders/Backhoes Composite	1	7

—Vehicle Exhaust
Average Hauling Truck Round Trip Commute (mile): 20 (default)

—Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

—Worker Trips
Average Worker Round Trip Commute (mile): 20 (default)

—Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

17.5.3 Paving Phase Emission Factor(s)

—Construction Exhaust Emission Factors (lb/hour) (default)

Graders Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0860	0.0014	0.5212	0.5747	0.0247	0.0247	0.0077	132.93
Other Construction Equipment Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0533	0.0012	0.3119	0.3497	0.0121	0.0121	0.0048	122.61
Rubber Tired Dozers Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.2015	0.0024	1.4660	0.7661	0.0581	0.0581	0.0181	239.53
Tractors/Loaders/Backhoes Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0407	0.0007	0.2505	0.3606	0.0112	0.0112	0.0036	66.890

—Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.278	000.002	000.219	003.276	000.008	000.007		000.023	00320.329
LDGT	000.351	000.003	000.382	004.545	000.010	000.009		000.024	00414.211
HDGV	000.705	000.005	001.074	015.763	000.025	000.022		000.045	00763.488
LDDV	000.122	000.003	000.133	002.396	000.004	000.004		000.008	00309.634
LDDT	000.266	000.004	000.384	004.133	000.007	000.007		000.008	00440.653
HDDV	000.498	000.013	005.110	001.743	000.169	000.156		000.028	01479.227
MC	002.339	000.003	000.821	013.581	000.029	000.025		000.054	00399.711

17.5.4 Paving Phase Formula(s)

—Construction Exhaust Emissions per Phase

$CEE_{POL} = (NE * WD * H * EF_{POL})/2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

—Vehicle Exhaust Emissions per Phase

$VMT_{VE} = PA * 0.25 * (1/27) * (1/HC) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
PA: Paving Area (ft^2)
0.25: Thickness of Paving Area (ft)
(1/27): Conversion Factor cubic feet to cubic yards (1 yd^3/27 ft^3)
HC: Average Hauling Truck Capacity (yd^3)
(1/HC): Conversion Factor cubic yards to trips (1 trip/HC yd^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM)/2000

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Vehicle Exhaust On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

—**Worker Trips Emissions per Phase**
VMT_{WT} = WD * WT * 1.25 * NE

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM)/2000

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

—**Off-Gassing Emissions per Phase**
VOC_P = (2.62 * PA)/43560

VOC_P: Paving VOC Emissions (TONs)
2.62: Emission Factor (lb/acre)
PA: Paving Area (ft^2)
43560: Conversion Factor ft^2 to acre (43560 ft^2/acre)^2/acre)

18. Heating

18.1 General Information & Timeline Assumptions

—**Add or Remove Activity from Baseline?** Add

—**Activity Location**
County: Spokane
Regulatory Area(s): Not in a Regulatory Area

—**Activity Title:** SO04—Special Project Training Facility

—**Activity Description:**
Construct a 2,000 square foot structure to house special training activities.

—**Activity Start Date**
Start Month: 7
Start Year: 2021

—**Activity End Date**
Indefinite: Yes
End Month: N/A
End Year: N/A

—**Activity Emissions:**

Pollutant	Emissions Per Year (TONs)
VOC	0.000422
SO_x	0.000046
NO_x	0.007676
CO	0.006448
PM 10	0.000583

Pollutant	Emissions Per Year (TONs)
PM 2.5	0.000583
Pb	0.000000
NH_3	0.000000
CO_2e	9.2

18.2 Heating Assumptions

—**Heating**
Heating Calculation Type: Heat Energy Requirement Method

—**Heat Energy Requirement Method**
Area of floorspace to be heated (ft^2): 2000
Type of fuel: Natural Gas
Type of boiler/furnace: Commercial/Institutional (0.3—9.9 MMBtu/hr)
Heat Value (MMBtu/ft^3): 0.00105
Energy Intensity (MMBtu/ft^2): 0.0806

—**Default Settings Used:** Yes

—**Boiler/Furnace Usage**
Operating Time Per Year (hours): 900 (default)

18.3 Heating Emission Factor(s)

—**Heating Emission Factors (lb/1000000 scf)**

VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
5.5	0.6	100	84	7.6	7.6			120390

18.4 Heating Formula(s)

—**Heating Fuel Consumption ft^3 per Year**
FC_{HER}= HA * EI/HV/1000000

FC_{HER}: Fuel Consumption for Heat Energy Requirement Method
HA: Area of floorspace to be heated (ft^2)
EI: Energy Intensity Requirement (MMBtu/ft^2)
HV: Heat Value (MMBTU/ft^3)
1000000: Conversion Factor

—**Heating Emissions per Year**
HE_{POL}= FC * EF_{POL}/2000

HE_{POL}: Heating Emission Emissions (TONs)
FC: Fuel Consumption
EF_{POL}: Emission Factor for Pollutant
2000: Conversion Factor pounds to tons

19. Emergency Generator

19.1 General Information & Timeline Assumptions

—Add or Remove Activity from Baseline? Add

—Activity Location
County: Spokane
Regulatory Area(s): Not in a Regulatory Area

—Activity Title: SO04—Special Project Training Facility

—Activity Description:
Construct a 2,000 square foot structure to house special training activities.

—Activity Start Date
Start Month: 7
Start Year: 2021

—Activity End Date
Indefinite: Yes
End Month: N/A
End Year: N/A

—Activity Emissions:

Pollutant	Emissions Per Year (TONs)
VOC	0.005650
SO_x	0.004759
NO_x	0.023288
CO	0.015552
PM 10	0.005083

Pollutant	Emissions Per Year (TONs)
PM 2.5	0.005083
Pb	0.000000
NH_3	0.000000
CO_2e	2.7

19.2 Emergency Generator Assumptions

—Emergency Generator
Type of Fuel used in Emergency Generator: Diesel
Number of Emergency Generators: 1

—Default Settings Used: Yes

—Emergency Generators Consumption
Emergency Generator's Horsepower: 135 (default)
Average Operating Hours Per Year (hours): 30 (default)

19.3 Emergency Generator Emission Factor(s)

—Emergency Generators Emission Factor (lb/hp-hr)

VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
0.00279	0.00235	0.0115	0.00768	0.00251	0.00251			1.33

19.4 Emergency Generator Formula(s)

—Emergency Generator Emissions per Year
AE_{POL}= (NGEN * HP * OT * EF_{POL})/2000

AE_{POL}: Activity Emissions (TONs per Year)
NGEN: Number of Emergency Generators
HP: Emergency Generator's Horsepower (hp)
OT: Average Operating Hours Per Year (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hp-hr)

20. Construction/Demolition

20.1 General Information & Timeline Assumptions

—**Activity Location**
County: Spokane
Regulatory Area(s): Not in a Regulatory Area

—**Activity Title:** SO05—Urban Training Building

—**Activity Description:**
Construct an 11,000 square foot warehouse that can be configured for different training activities.

—**Activity Start Date**
Start Month: 1
Start Month: 2024

—**Activity End Date**
Indefinite: False
End Month: 6
End Month: 2024

—**Activity Emissions:**

Pollutant	Total Emissions (TONs)
VOC	0.171160
SO_x	0.000857
NO_x	0.233562
CO	0.346894
PM 10	0.037561

Pollutant	Total Emissions (TONs)
PM 2.5	0.008103
Pb	0.000000
NH_3	0.000357
CO_2e	83.6

20.1 Site Grading Phase

20.1.1 Site Grading Phase Timeline Assumptions

—**Phase Start Date**
Start Month: 1
Start Quarter: 1
Start Year: 2024

—**Phase Duration**
Number of Month: 0
Number of Days: 2

20.1.2 Site Grading Phase Assumptions

—General Site Grading Information
Area of Site to be Graded (ft^2): 16000
Amount of Material to be Hauled On-Site (yd^3): 0
Amount of Material to be Hauled Off-Site (yd^3): 1185

—Site Grading Default Settings
Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

—Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Graders Composite	1	6
Other Construction Equipment Composite	1	8
Rubber Tired Dozers Composite	1	6
Tractors/Loaders/Backhoes Composite	1	7

—Vehicle Exhaust
Average Hauling Truck Capacity (yd^3): 20 (default)
Average Hauling Truck Round Trip Commute (mile): 20 (default)

—Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

—Worker Trips
Average Worker Round Trip Commute (mile): 20 (default)

—Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

20.1.3 Site Grading Phase Emission Factor(s)

—Construction Exhaust Emission Factors (lb/hour) (default)

Graders Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0714	0.0014	0.3708	0.5706	0.0167	0.0167	0.0064	132.90
Other Construction Equipment Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0461	0.0012	0.2243	0.3477	0.0079	0.0079	0.0041	122.61
Rubber Tired Dozers Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.1747	0.0024	1.1695	0.6834	0.0454	0.0454	0.0157	239.47
Tractors/Loaders/Backhoes Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0348	0.0007	0.1980	0.3589	0.0068	0.0068	0.0031	66.875

—Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.278	000.002	000.219	003.276	000.008	000.007		000.023	00320.329
LDGT	000.351	000.003	000.382	004.545	000.010	000.009		000.024	00414.211
HDGV	000.705	000.005	001.074	015.763	000.025	000.022		000.045	00763.488
LDDV	000.122	000.003	000.133	002.396	000.004	000.004		000.008	00309.634
LDDT	000.266	000.004	000.384	004.133	000.007	000.007		000.008	00440.653
HDDV	000.498	000.013	005.110	001.743	000.169	000.156		000.028	01479.227
MC	002.339	000.003	000.821	013.581	000.029	000.025		000.054	00399.711

20.1.4 Site Grading Phase Formula(s)

—Fugitive Dust Emissions per Phase
$PM10_{FD} = (20 * ACRE * WD)/2000$

$PM10_{FD}$: Fugitive Dust PM 10 Emissions (TONs)
20: Conversion Factor Acre Day to pounds (20 lb/1 Acre Day)
ACRE: Total acres (acres)
WD: Number of Total Work Days (days)
2000: Conversion Factor pounds to tons

—Construction Exhaust Emissions per Phase
$CEE_{POL} = (NE * WD * H * EF_{POL})/2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

—Vehicle Exhaust Emissions per Phase
$VMT_{VE} = (HA_{OnSite} + HA_{OffSite}) * (1/HC) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
HA_{OnSite}: Amount of Material to be Hauled On-Site (yd^3)
$HA_{OffSite}$: Amount of Material to be Hauled Off-Site (yd^3)
HC: Average Hauling Truck Capacity (yd^3)
(1/HC): Conversion Factor cubic yards to trips (1 trip/HC yd^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM)/2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Vehicle Exhaust On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

—Worker Trips Emissions per Phase
VMT_{WT} = WD * WT * 1.25 * NE

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM)/2000

V_{POL}: Vehicle Emissions (TONs)
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

20.2 Trenching/Excavating Phase

20.2.1 Trenching/Excavating Phase Timeline Assumptions

—Phase Start Date
Start Month: 1
Start Quarter: 1
Start Year: 2024

—Phase Duration
Number of Month: 0
Number of Days: 2

20.2.2 Trenching/Excavating Phase Assumptions

—General Trenching/Excavating Information
Area of Site to be Trenched/Excavated (ft^2): 16000
Amount of Material to be Hauled On-Site (yd^3): 0
Amount of Material to be Hauled Off-Site (yd^3): 593

—Trenching Default Settings
Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

—Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Excavators Composite	2	8
Other General Industrial Equipment Composite	1	8
Tractors/Loaders/Backhoes Composite	1	8

—Vehicle Exhaust
Average Hauling Truck Capacity (yd^3): 20 (default)
Average Hauling Truck Round Trip Commute (mile): 20 (default)

—Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

—Worker Trips
Average Worker Round Trip Commute (mile): 20 (default)

—Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

20.2.3 Trenching/Excavating Phase Emission Factor(s)

—Construction Exhaust Emission Factors (lb/hour) (default)

Graders Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0714	0.0014	0.3708	0.5706	0.0167	0.0167	0.0064	132.90
Other Construction Equipment Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0461	0.0012	0.2243	0.3477	0.0079	0.0079	0.0041	122.61
Rubber Tired Dozers Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.1747	0.0024	1.1695	0.6834	0.0454	0.0454	0.0157	239.47
Tractors/Loaders/Backhoes Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0348	0.0007	0.1980	0.3589	0.0068	0.0068	0.0031	66.875

—Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.278	000.002	000.219	003.276	000.008	000.007		000.023	00320.329
LDGT	000.351	000.003	000.382	004.545	000.010	000.009		000.024	00414.211
HDGV	000.705	000.005	001.074	015.763	000.025	000.022		000.045	00763.488
LDDV	000.122	000.003	000.133	002.396	000.004	000.004		000.008	00309.634
LDDT	000.266	000.004	000.384	004.133	000.007	000.007		000.008	00440.653
HDDV	000.498	000.013	005.110	001.743	000.169	000.156		000.028	01479.227
MC	002.339	000.003	000.821	013.581	000.029	000.025		000.054	00399.711

20.2.4 Trenching/Excavating Phase Formula(s)

—Fugitive Dust Emissions per Phase
$PM10_{FD} = (20 * ACRE * WD)/2000$

$PM10_{FD}$: Fugitive Dust PM 10 Emissions (TONs)
20: Conversion Factor Acre Day to pounds (20 lb/1 Acre Day)
ACRE: Total acres (acres)
WD: Number of Total Work Days (days)
2000: Conversion Factor pounds to tons

—Construction Exhaust Emissions per Phase
$CEE_{POL} = (NE * WD * H * EF_{POL})/2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

—Vehicle Exhaust Emissions per Phase
$VMT_{VE} = (HA_{OnSite} + HA_{OffSite}) * (1/HC) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
HA_{OnSite}: Amount of Material to be Hauled On-Site (yd^3)
$HA_{OffSite}$: Amount of Material to be Hauled Off-Site (yd^3)
HC: Average Hauling Truck Capacity (yd^3)
(1/HC): Conversion Factor cubic yards to trips (1 trip/HC yd^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM)/2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Vehicle Exhaust On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

—Worker Trips Emissions per Phase
$VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM)/2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

20.3 Building Construction Phase

20.3.1 Building Construction Phase Timeline Assumptions

—Phase Start Date
Start Month: 2
Start Quarter: 1
Start Year: 2024

—Phase Duration
Number of Month: 3
Number of Days: 10

20.3.2 Building Construction Phase Assumptions

—General Building Construction Information
Building Category: Office or Industrial
Area of Building (ft^2): 11000
Height of Building (ft): 15
Number of Units: N/A

—Building Construction Default Settings
Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

—Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Cranes Composite	1	4
Forklifts Composite	2	6
Tractors/Loaders/Backhoes Composite	1	8

—Vehicle Exhaust
Average Hauling Truck Round Trip Commute (mile): 20 (default)

—Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

—Worker Trips
Average Worker Round Trip Commute (mile): 20 (default)

—Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

—Vendor Trips
Average Vendor Round Trip Commute (mile): 40 (default)

—Vendor Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

20.3.3 Building Construction Phase Emission Factor(s)

—Construction Exhaust Emission Factors (lb/hour) (default)

Cranes Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0715	0.0013	0.4600	0.3758	0.0161	0.0161	0.0064	128.78
Forklifts Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0246	0.0006	0.0973	0.2146	0.0029	0.0029	0.0022	54.451
Tractors/Loaders/Backhoes Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0348	0.0007	0.1980	0.3589	0.0068	0.0068	0.0031	66.875

—Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**Pb**	**NH_3**	**CO_2e**
LDGV	000.278	000.002	000.219	003.276	000.008	000.007		000.023	00320.329
LDGT	000.351	000.003	000.382	004.545	000.010	000.009		000.024	00414.211
HDGV	000.705	000.005	001.074	015.763	000.025	000.022		000.045	00763.488
LDDV	000.122	000.003	000.133	002.396	000.004	000.004		000.008	00309.634
LDDT	000.266	000.004	000.384	004.133	000.007	000.007		000.008	00440.653
HDDV	000.498	000.013	005.110	001.743	000.169	000.156		000.028	01479.227
MC	002.339	000.003	000.821	013.581	000.029	000.025		000.054	00399.711

20.3.4 Building Construction Phase Formula(s)

—Construction Exhaust Emissions per Phase

$CEE_{POL} = (NE * WD * H * EF_{POL})/2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

—Vehicle Exhaust Emissions per Phase

$VMT_{VE} = BA * BH * (0.42/1000) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
BA: Area of Building (ft^2)
BH: Height of Building (ft)
(0.42/1000): Conversion Factor ft^3 to trips (0.42 trip/1000 ft^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM)/2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

—Worker Trips Emissions per Phase
VMT_{WT} = WD * WT * 1.25 * NE

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM)/2000

V_{POL}: Vehicle Emissions (TONs)
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

—Vender Trips Emissions per Phase
VMT_{VT} = BA * BH * (0.38/1000) * HT

VMT_{VT}: Vender Trips Vehicle Miles Travel (miles)
BA: Area of Building (ft^2)
BH: Height of Building (ft)
(0.38/1000): Conversion Factor ft^3 to trips (0.38 trip/1000 ft^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

V_{POL} = (VMT_{VT} * 0.002205 * EF_{POL} * VM)/2000

V_{POL}: Vehicle Emissions (TONs)
VMT_{VT}: Vender Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

20.4 Architectural Coatings Phase

20.4.1 Architectural Coatings Phase Timeline Assumptions

—Phase Start Date
Start Month: 6
Start Quarter: 1
Start Year: 2024

—Phase Duration
Number of Month: 0
Number of Days: 5

20.4.2 Architectural Coatings Phase Assumptions

—General Architectural Coatings Information
Building Category: Non-Residential
Total Square Footage (ft^2): 11000
Number of Units: N/A

—Architectural Coatings Default Settings
Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

—Worker Trips
Average Worker Round Trip Commute (mile): 20 (default)

—Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

20.4.3 Architectural Coatings Phase Emission Factor(s)

—Worker Trips Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.278	000.002	000.219	003.276	000.008	000.007		000.023	00320.329
LDGT	000.351	000.003	000.382	004.545	000.010	000.009		000.024	00414.211
HDGV	000.705	000.005	001.074	015.763	000.025	000.022		000.045	00763.488
LDDV	000.122	000.003	000.133	002.396	000.004	000.004		000.008	00309.634
LDDT	000.266	000.004	000.384	004.133	000.007	000.007		000.008	00440.653
HDDV	000.498	000.013	005.110	001.743	000.169	000.156		000.028	01479.227
MC	002.339	000.003	000.821	013.581	000.029	000.025		000.054	00399.711

20.4.4 Architectural Coatings Phase Formula(s)

—Worker Trips Emissions per Phase
$VMT_{WT} = (1 * WT * PA)/800$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
1: Conversion Factor person days to trips (1 trip/1 person * day)
WT: Average Worker Round Trip Commute (mile)
PA: Paint Area (ft^2)
800: Conversion Factor ft^2 to person days (1 ft^2/1 person * day)

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM)/2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

—Off-Gassing Emissions per Phase
$VOC_{AC} = (AB * 2.0 * 0.0116)/2000.0$

VOC_{AC}: Architectural Coating VOC Emissions (TONs)
BA: Area of Building (ft^2)
2.0: Conversion Factor total area to coated area (2.0 ft^2 coated area/total area)
0.0116: Emission Factor (lb/ft^2)
2000: Conversion Factor pounds to tons

20.5 Paving Phase

20.5.1 Paving Phase Timeline Assumptions

—Phase Start Date
Start Month: 6
Start Quarter: 1
Start Year: 2024

—Phase Duration
Number of Month: 0
Number of Days: 5

20.5.2 Paving Phase Assumptions

—General Paving Information
Paving Area (ft^2): 1125

—Paving Default Settings
Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

—Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Cement and Mortar Mixers Composite	4	6
Pavers Composite	1	7
Rollers Composite	1	7
Tractors/Loaders/Backhoes Composite	1	7

—Vehicle Exhaust
Average Hauling Truck Round Trip Commute (mile): 20 (default)

—Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

—Worker Trips
Average Worker Round Trip Commute (mile): 20 (default)

—Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

20.5.3 Paving Phase Emission Factor(s)

—Construction Exhaust Emission Factors (lb/hour) (default)

Graders Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0714	0.0014	0.3708	0.5706	0.0167	0.0167	0.0064	132.90
Other Construction Equipment Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0461	0.0012	0.2243	0.3477	0.0079	0.0079	0.0041	122.61
Rubber Tired Dozers Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.1747	0.0024	1.1695	0.6834	0.0454	0.0454	0.0157	239.47
Tractors/Loaders/Backhoes Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0348	0.0007	0.1980	0.3589	0.0068	0.0068	0.0031	66.875

—Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**Pb**	**NH_3**	**CO_2e**
LDGV	000.278	000.002	000.219	003.276	000.008	000.007		000.023	00320.329
LDGT	000.351	000.003	000.382	004.545	000.010	000.009		000.024	00414.211
HDGV	000.705	000.005	001.074	015.763	000.025	000.022		000.045	00763.488
LDDV	000.122	000.003	000.133	002.396	000.004	000.004		000.008	00309.634
LDDT	000.266	000.004	000.384	004.133	000.007	000.007		000.008	00440.653
HDDV	000.498	000.013	005.110	001.743	000.169	000.156		000.028	01479.227
MC	002.339	000.003	000.821	013.581	000.029	000.025		000.054	00399.711

20.5.4 Paving Phase Formula(s)

—Construction Exhaust Emissions per Phase
$CEE_{POL} = (NE * WD * H * EF_{POL})/2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

—Vehicle Exhaust Emissions per Phase
$VMT_{VE} = PA * 0.25 * (1/27) * (1/HC) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
PA: Paving Area (ft^2)
0.25: Thickness of Paving Area (ft)
(1/27): Conversion Factor cubic feet to cubic yards (1 yd^3/27 ft^3)
HC: Average Hauling Truck Capacity (yd^3)
(1/HC): Conversion Factor cubic yards to trips (1 trip/HC yd^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM)/2000

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Vehicle Exhaust On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

—**Worker Trips Emissions per Phase**
VMT_{WT} = WD * WT * 1.25 * NE

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM)/2000

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

—**Off-Gassing Emissions per Phase**
VOC_P = (2.62 * PA)/43560

VOC_P: Paving VOC Emissions (TONs)
2.62: Emission Factor (lb/acre)
PA: Paving Area (ft^2)
43560: Conversion Factor ft^2 to acre (43560 ft^2/acre)^2/acre)

21. Heating

21.1 General Information & Timeline Assumptions

—**Add or Remove Activity from Baseline?** Add

—**Activity Location**
County: Spokane
Regulatory Area(s): Not in a Regulatory Area

—**Activity Title:** SO05—Urban Training Building

—**Activity Description:**
Construct an 11,000 square foot warehouse that can be configured for different training activities.

—**Activity Start Date**
Start Month: 7
Start Year: 2024

—Activity End Date
Indefinite: Yes
End Month: N/A
End Year: N/A

—Activity Emissions:

Pollutant	Emissions Per Year (TONs)
VOC	0.002066
SO_x	0.000225
NO_x	0.037557
CO	0.031548
PM 10	0.002854

Pollutant	Emissions Per Year (TONs)
PM 2.5	0.002854
Pb	0.000000
NH_3	0.000000
CO_2e	45.2

21.2 Heating Assumptions

—Heating
Heating Calculation Type: Heat Energy Requirement Method

—Heat Energy Requirement Method
Area of floorspace to be heated (ft^2): 11000
Type of fuel: Natural Gas
Type of boiler/furnace: Commercial/Institutional (0.3—9.9 MMBtu/hr)
Heat Value (MMBtu/ft^3): 0.00105
Energy Intensity (MMBtu/ft^2): 0.0717

—Default Settings Used: Yes

—Boiler/Furnace Usage
Operating Time Per Year (hours): 900 (default)

21.3 Heating Emission Factor(s)

—Heating Emission Factors (lb/1000000 scf)

VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
5.5	0.6	100	84	7.6	7.6			120390

21.4 Heating Formula(s)

—Heating Fuel Consumption ft^3 per Year
FC_{HER}= HA * EI/HV/1000000

FC_{HER}: Fuel Consumption for Heat Energy Requirement Method
HA: Area of floorspace to be heated (ft^2)
EI: Energy Intensity Requirement (MMBtu/ft^2)
HV: Heat Value (MMBTU/ft^3)
1000000: Conversion Factor

—Heating Emissions per Year
HE_{POL}= FC * EF_{POL}/2000

HE_{POL}: Heating Emission Emissions (TONs)
FC: Fuel Consumption
EF_{POL}: Emission Factor for Pollutant
2000: Conversion Factor pounds to tons

22. Emergency Generator

22.1 General Information & Timeline Assumptions

—**Add or Remove Activity from Baseline?** Add

—**Activity Location**
County: Spokane
Regulatory Area(s): Not in a Regulatory Area

—**Activity Title:** SO05—Urban Training Building

—**Activity Description:**
Construct an 11,000 square foot warehouse that can be configured for different training activities.

—**Activity Start Date**
Start Month: 7
Start Year: 2024

—**Activity End Date**
Indefinite: Yes
End Month: N/A
End Year: N/A

—**Activity Emissions:**

Pollutant	Emissions Per Year (TONs)
VOC	0.005650
SO_x	0.004759
NO_x	0.023288
CO	0.015552
PM 10	0.005083

Pollutant	Emissions Per Year (TONs)
PM 2.5	0.005083
Pb	0.000000
NH_3	0.000000
CO_2e	2.7

22.2 Emergency Generator Assumptions

—**Emergency Generator**
Type of Fuel used in Emergency Generator: Diesel
Number of Emergency Generators: 1

—**Default Settings Used:** Yes

—**Emergency Generators Consumption**
Emergency Generator's Horsepower: 135 (default)
Average Operating Hours Per Year (hours): 30 (default)

22.3 Emergency Generator Emission Factor(s)

—**Emergency Generators Emission Factor (lb/hp-hr)**

VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
0.00279	0.00235	0.0115	0.00768	0.00251	0.00251			1.33

22.4 Emergency Generator Formula(s)

—**Emergency Generator Emissions per Year**
AE_{POL}= (NGEN * HP * OT * EF_{POL})/2000

AE_{POL}: Activity Emissions (TONs per Year)
NGEN: Number of Emergency Generators
HP: Emergency Generator's Horsepower (hp)
OT: Average Operating Hours Per Year (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hp-hr)

23. Construction/Demolition

23.1 General Information & Timeline Assumptions

—**Activity Location**
County: Spokane
Regulatory Area(s): Not in a Regulatory Area

—**Activity Title:** SO06—Secure Holding Facility

—**Activity Description:**
Construct a 1,200 square foot building in an isolated area for use as a secure holding facility.

—**Activity Start Date**
Start Month: 1
Start Month: 2022

—**Activity End Date**
Indefinite: False
End Month: 6
End Month: 2022

—**Activity Emissions:**

Pollutant	Total Emissions (TONs)
VOC	0.059561
SO_x	0.000802
NO_x	0.253760
CO	0.341234
PM 10	0.014490

Pollutant	Total Emissions (TONs)
PM 2.5	0.009881
Pb	0.000000
NH_3	0.000238
CO_2e	77.3

23.1 Site Grading Phase

23.1.1 Site Grading Phase Timeline Assumptions

—**Phase Start Date**
Start Month: 1
Start Quarter: 1
Start Year: 2022

—**Phase Duration**
Number of Month: 0
Number of Days: 2

23.1.2 Site Grading Phase Assumptions

—General Site Grading Information
Area of Site to be Graded (ft^2): 2500
Amount of Material to be Hauled On-Site (yd^3): 0
Amount of Material to be Hauled Off-Site (yd^3): 185

—Site Grading Default Settings
Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

—Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Graders Composite	1	6
Other Construction Equipment Composite	1	8
Rubber Tired Dozers Composite	1	6
Tractors/Loaders/Backhoes Composite	1	7

—Vehicle Exhaust
Average Hauling Truck Capacity (yd^3): 20 (default)
Average Hauling Truck Round Trip Commute (mile): 20 (default)

—Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

—Worker Trips
Average Worker Round Trip Commute (mile): 20 (default)

—Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

23.1.3 Site Grading Phase Emission Factor(s)

—Construction Exhaust Emission Factors (lb/hour) (default)

Graders Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0806	0.0014	0.4657	0.5731	0.0217	0.0217	0.0072	132.92
Other Construction Equipment Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0507	0.0012	0.2785	0.3488	0.0105	0.0105	0.0045	122.61
Rubber Tired Dozers Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.1919	0.0024	1.3611	0.7352	0.0536	0.0536	0.0173	239.51
Tractors/Loaders/Backhoes Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0383	0.0007	0.2301	0.3598	0.0095	0.0095	0.0034	66.884

—Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.278	000.002	000.219	003.276	000.008	000.007		000.023	00320.329
LDGT	000.351	000.003	000.382	004.545	000.010	000.009		000.024	00414.211
HDGV	000.705	000.005	001.074	015.763	000.025	000.022		000.045	00763.488
LDDV	000.122	000.003	000.133	002.396	000.004	000.004		000.008	00309.634
LDDT	000.266	000.004	000.384	004.133	000.007	000.007		000.008	00440.653
HDDV	000.498	000.013	005.110	001.743	000.169	000.156		000.028	01479.227
MC	002.339	000.003	000.821	013.581	000.029	000.025		000.054	00399.711

23.1.4 Site Grading Phase Formula(s)

—Fugitive Dust Emissions per Phase
$PM10_{FD} = (20 * ACRE * WD)/2000$

$PM10_{FD}$: Fugitive Dust PM 10 Emissions (TONs)
20: Conversion Factor Acre Day to pounds (20 lb/1 Acre Day)
ACRE: Total acres (acres)
WD: Number of Total Work Days (days)
2000: Conversion Factor pounds to tons

—Construction Exhaust Emissions per Phase
$CEE_{POL} = (NE * WD * H * EF_{POL})/2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

—Vehicle Exhaust Emissions per Phase
$VMT_{VE} = (HA_{OnSite} + HA_{OffSite}) * (1/HC) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
HA_{OnSite}: Amount of Material to be Hauled On-Site (yd^3)
$HA_{OffSite}$: Amount of Material to be Hauled Off-Site (yd^3)
HC: Average Hauling Truck Capacity (yd^3)
(1/HC): Conversion Factor cubic yards to trips (1 trip/HC yd^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM)/2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Vehicle Exhaust On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

—Worker Trips Emissions per Phase
VMT_{WT} = WD * WT * 1.25 * NE

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM)/2000

V_{POL}: Vehicle Emissions (TONs)
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

23.2 Trenching/Excavating Phase

23.2.1 Trenching/Excavating Phase Timeline Assumptions

—Phase Start Date
Start Month: 1
Start Quarter: 1
Start Year: 2022

—Phase Duration
Number of Month: 0
Number of Days: 2

23.2.2 Trenching/Excavating Phase Assumptions

—General Trenching/Excavating Information
Area of Site to be Trenched/Excavated (ft^2): 2500
Amount of Material to be Hauled On-Site (yd^3): 0
Amount of Material to be Hauled Off-Site (yd^3): 93

—Trenching Default Settings
Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

—Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Excavators Composite	2	8
Other General Industrial Equipment Composite	1	8
Tractors/Loaders/Backhoes Composite	1	8

—Vehicle Exhaust

Average Hauling Truck Capacity (yd^3): 20 (default)
Average Hauling Truck Round Trip Commute (mile): 20 (default)

—Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

—Worker Trips

Average Worker Round Trip Commute (mile): 20 (default)

—Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

23.2.3 Trenching/Excavating Phase Emission Factor(s)

—Construction Exhaust Emission Factors (lb/hour) (default)

Graders Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0806	0.0014	0.4657	0.5731	0.0217	0.0217	0.0072	132.92
Other Construction Equipment Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0507	0.0012	0.2785	0.3488	0.0105	0.0105	0.0045	122.61
Rubber Tired Dozers Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.1919	0.0024	1.3611	0.7352	0.0536	0.0536	0.0173	239.51
Tractors/Loaders/Backhoes Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0383	0.0007	0.2301	0.3598	0.0095	0.0095	0.0034	66.884

—Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.278	000.002	000.219	003.276	000.008	000.007		000.023	00320.329
LDGT	000.351	000.003	000.382	004.545	000.010	000.009		000.024	00414.211
HDGV	000.705	000.005	001.074	015.763	000.025	000.022		000.045	00763.488
LDDV	000.122	000.003	000.133	002.396	000.004	000.004		000.008	00309.634
LDDT	000.266	000.004	000.384	004.133	000.007	000.007		000.008	00440.653
HDDV	000.498	000.013	005.110	001.743	000.169	000.156		000.028	01479.227
MC	002.339	000.003	000.821	013.581	000.029	000.025		000.054	00399.711

23.2.4 Trenching/Excavating Phase Formula(s)

—Fugitive Dust Emissions per Phase

$PM10_{FD} = (20 * ACRE * WD)/2000$

$PM10_{FD}$: Fugitive Dust PM 10 Emissions (TONs)
20: Conversion Factor Acre Day to pounds (20 lb/1 Acre Day)
ACRE: Total acres (acres)
WD: Number of Total Work Days (days)
2000: Conversion Factor pounds to tons

—**Construction Exhaust Emissions per Phase**
$CEE_{POL} = (NE * WD * H * EF_{POL})/2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

—**Vehicle Exhaust Emissions per Phase**
$VMT_{VE} = (HA_{OnSite} + HA_{OffSite}) * (1/HC) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
HA_{OnSite}: Amount of Material to be Hauled On-Site (yd^3)
$HA_{OffSite}$: Amount of Material to be Hauled Off-Site (yd^3)
HC: Average Hauling Truck Capacity (yd^3)
(1/HC): Conversion Factor cubic yards to trips (1 trip/HC yd^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM)/2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Vehicle Exhaust On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

—**Worker Trips Emissions per Phase**
$VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM)/2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

23.3 Building Construction Phase

23.3.1 Building Construction Phase Timeline Assumptions

—**Phase Start Date**
Start Month: 2
Start Quarter: 1
Start Year: 2022

—Phase Duration
Number of Month: 3
Number of Days: 10

23.3.2 Building Construction Phase Assumptions

—General Building Construction Information
Building Category: Office or Industrial
Area of Building (ft^2): 1200
Height of Building (ft): 15
Number of Units: N/A

—Building Construction Default Settings
Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

—Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Cranes Composite	1	4
Forklifts Composite	2	6
Tractors/Loaders/Backhoes Composite	1	8

—Vehicle Exhaust
Average Hauling Truck Round Trip Commute (mile): 20 (default)

—Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

—Worker Trips
Average Worker Round Trip Commute (mile): 20 (default)

—Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

—Vendor Trips
Average Vendor Round Trip Commute (mile): 40 (default)

—Vendor Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

23.3.3 Building Construction Phase Emission Factor(s)

—Construction Exhaust Emission Factors (lb/hour) (default)

Cranes Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0797	0.0013	0.5505	0.3821	0.0203	0.0203	0.0071	128.81
Forklifts Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0274	0.0006	0.1265	0.2146	0.0043	0.0043	0.0024	54.457
Tractors/Loaders/Backhoes Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0383	0.0007	0.2301	0.3598	0.0095	0.0095	0.0034	66.884

—Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**Pb**	**NH_3**	**CO_2e**
LDGV	000.278	000.002	000.219	003.276	000.008	000.007		000.023	00320.329
LDGT	000.351	000.003	000.382	004.545	000.010	000.009		000.024	00414.211
HDGV	000.705	000.005	001.074	015.763	000.025	000.022		000.045	00763.488
LDDV	000.122	000.003	000.133	002.396	000.004	000.004		000.008	00309.634
LDDT	000.266	000.004	000.384	004.133	000.007	000.007		000.008	00440.653
HDDV	000.498	000.013	005.110	001.743	000.169	000.156		000.028	01479.227
MC	002.339	000.003	000.821	013.581	000.029	000.025		000.054	00399.711

23.3.4 Building Construction Phase Formula(s)

—Construction Exhaust Emissions per Phase

$CEE_{POL} = (NE * WD * H * EF_{POL})/2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

—Vehicle Exhaust Emissions per Phase

$VMT_{VE} = BA * BH * (0.42/1000) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
BA: Area of Building (ft^2)
BH: Height of Building (ft)
(0.42/1000): Conversion Factor ft^3 to trips (0.42 trip/1000 ft^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM)/2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

—Worker Trips Emissions per Phase
VMT_{WT} = WD * WT * 1.25 * NE

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM)/2000

V_{POL}: Vehicle Emissions (TONs)
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

—Vender Trips Emissions per Phase
VMT_{VT} = BA * BH * (0.38/1000) * HT

VMT_{VT}: Vender Trips Vehicle Miles Travel (miles)
BA: Area of Building (ft^2)
BH: Height of Building (ft)
(0.38/1000): Conversion Factor ft^3 to trips (0.38 trip/1000 ft^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

V_{POL} = (VMT_{VT} * 0.002205 * EF_{POL} * VM)/2000

V_{POL}: Vehicle Emissions (TONs)
VMT_{VT}: Vender Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

23.4 Architectural Coatings Phase

23.4.1 Architectural Coatings Phase Timeline Assumptions

—Phase Start Date
Start Month: 6
Start Quarter: 1
Start Year: 2022

—Phase Duration
Number of Month: 0
Number of Days: 5

23.4.2 Architectural Coatings Phase Assumptions

—General Architectural Coatings Information
Building Category: Non-Residential
Total Square Footage (ft^2): 1200
Number of Units: N/A

—**Architectural Coatings Default Settings**
Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

—**Worker Trips**
Average Worker Round Trip Commute (mile): 20 (default)

—**Worker Trips Vehicle Mixture (%)**

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

23.4.3 Architectural Coatings Phase Emission Factor(s)

—**Worker Trips Emission Factors (grams/mile)**

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.278	000.002	000.219	003.276	000.008	000.007		000.023	00320.329
LDGT	000.351	000.003	000.382	004.545	000.010	000.009		000.024	00414.211
HDGV	000.705	000.005	001.074	015.763	000.025	000.022		000.045	00763.488
LDDV	000.122	000.003	000.133	002.396	000.004	000.004		000.008	00309.634
LDDT	000.266	000.004	000.384	004.133	000.007	000.007		000.008	00440.653
HDDV	000.498	000.013	005.110	001.743	000.169	000.156		000.028	01479.227
MC	002.339	000.003	000.821	013.581	000.029	000.025		000.054	00399.711

23.4.4 Architectural Coatings Phase Formula(s)

—**Worker Trips Emissions per Phase**
$VMT_{WT} = (1 * WT * PA)/800$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
1: Conversion Factor person days to trips (1 trip/1 person * day)
WT: Average Worker Round Trip Commute (mile)
PA: Paint Area (ft^2)
800: Conversion Factor ft^2 to person days (1 ft^2/1 person * day)

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM)/2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

—**Off-Gassing Emissions per Phase**
$VOC_{AC} = (AB * 2.0 * 0.0116)/2000.0$

VOC_{AC}: Architectural Coating VOC Emissions (TONs)
BA: Area of Building (ft^2)
2.0: Conversion Factor total area to coated area (2.0 ft^2 coated area/total area)
0.0116: Emission Factor (lb/ft^2)
2000: Conversion Factor pounds to tons

23.5 Paving Phase

23.5.1 Paving Phase Timeline Assumptions

—Phase Start Date
Start Month: 6
Start Quarter: 1
Start Year: 2022

—Phase Duration
Number of Month: 0
Number of Days: 5

23.5.2 Paving Phase Assumptions

—General Paving Information
Paving Area (ft^2): 1575

—Paving Default Settings
Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

—Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Cement and Mortar Mixers Composite	4	6
Pavers Composite	1	7
Rollers Composite	1	7
Tractors/Loaders/Backhoes Composite	1	7

—Vehicle Exhaust
Average Hauling Truck Round Trip Commute (mile): 20 (default)

—Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

—Worker Trips
Average Worker Round Trip Commute (mile): 20 (default)

—Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

23.5.3 Paving Phase Emission Factor(s)

—Construction Exhaust Emission Factors (lb/hour) (default)

Graders Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0806	0.0014	0.4657	0.5731	0.0217	0.0217	0.0072	132.92
Other Construction Equipment Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0507	0.0012	0.2785	0.3488	0.0105	0.0105	0.0045	122.61
Rubber Tired Dozers Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.1919	0.0024	1.3611	0.7352	0.0536	0.0536	0.0173	239.51
Tractors/Loaders/Backhoes Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0383	0.0007	0.2301	0.3598	0.0095	0.0095	0.0034	66.884

—Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**Pb**	**NH_3**	**CO_2e**
LDGV	000.278	000.002	000.219	003.276	000.008	000.007		000.023	00320.329
LDGT	000.351	000.003	000.382	004.545	000.010	000.009		000.024	00414.211
HDGV	000.705	000.005	001.074	015.763	000.025	000.022		000.045	00763.488
LDDV	000.122	000.003	000.133	002.396	000.004	000.004		000.008	00309.634
LDDT	000.266	000.004	000.384	004.133	000.007	000.007		000.008	00440.653
HDDV	000.498	000.013	005.110	001.743	000.169	000.156		000.028	01479.227
MC	002.339	000.003	000.821	013.581	000.029	000.025		000.054	00399.711

23.5.4 Paving Phase Formula(s)

—Construction Exhaust Emissions per Phase

$CEE_{POL} = (NE * WD * H * EF_{POL})/2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

—Vehicle Exhaust Emissions per Phase

$VMT_{VE} = PA * 0.25 * (1/27) * (1/HC) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
PA: Paving Area (ft^2)
0.25: Thickness of Paving Area (ft)
(1/27): Conversion Factor cubic feet to cubic yards (1 yd^3/27 ft^3)
HC: Average Hauling Truck Capacity (yd^3)
(1/HC): Conversion Factor cubic yards to trips (1 trip/HC yd^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM)/2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Vehicle Exhaust On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

—**Worker Trips Emissions per Phase**
$VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM)/2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

—**Off-Gassing Emissions per Phase**
$VOC_P = (2.62 * PA)/43560$

VOC_P: Paving VOC Emissions (TONs)
2.62: Emission Factor (lb/acre)
PA: Paving Area (ft^2)
43560: Conversion Factor ft^2 to acre (43560 ft^2/acre)^2/acre)

24. Heating

24.1 General Information & Timeline Assumptions

—**Add or Remove Activity from Baseline?** Add

—**Activity Location**
County: Spokane
Regulatory Area(s): Not in a Regulatory Area

—**Activity Title:** SO06—Secure Holding Facility

—**Activity Description:**
Construct a 1,200 square foot building in an isolated area for use as a secure holding facility.

—**Activity Start Date**
Start Month: 7
Start Year: 2022

—**Activity End Date**
Indefinite: Yes
End Month: N/A
End Year: N/A

—**Activity Emissions:**

Pollutant	Emissions Per Year (TONs)
VOC	0.000253
SO_x	0.000028
NO_x	0.004606
CO	0.003869
PM 10	0.000350

Pollutant	Emissions Per Year (TONs)
PM 2.5	0.000350
Pb	0.000000
NH_3	0.000000
CO_2e	5.5

24.2 Heating Assumptions

—**Heating**
Heating Calculation Type: Heat Energy Requirement Method

—**Heat Energy Requirement Method**
Area of floorspace to be heated (ft^2): 1200
Type of fuel: Natural Gas
Type of boiler/furnace: Commercial/Institutional (0.3—9.9 MMBtu/hr)
Heat Value (MMBtu/ft^3): 0.00105
Energy Intensity (MMBtu/ft^2): 0.0806

—**Default Settings Used:** Yes

—**Boiler/Furnace Usage**
Operating Time Per Year (hours): 900 (default)

24.3 Heating Emission Factor(s)

—**Heating Emission Factors (lb/1000000 scf)**

VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
5.5	0.6	100	84	7.6	7.6			120390

24.4 Heating Formula(s)

—**Heating Fuel Consumption ft^3 per Year**
FC_{HER}= HA * EI/HV/1000000

FC_{HER}: Fuel Consumption for Heat Energy Requirement Method
HA: Area of floorspace to be heated (ft^2)
EI: Energy Intensity Requirement (MMBtu/ft^2)
HV: Heat Value (MMBTU/ft^3)
1000000: Conversion Factor

—**Heating Emissions per Year**
HE_{POL}= FC * EF_{POL}/2000

HE_{POL}: Heating Emission Emissions (TONs)
FC: Fuel Consumption
EF_{POL}: Emission Factor for Pollutant
2000: Conversion Factor pounds to tons

25. Emergency Generator

25.1 General Information & Timeline Assumptions

—**Add or Remove Activity from Baseline?** Add

—**Activity Location**
County: Spokane
Regulatory Area(s): Not in a Regulatory Area

—**Activity Title:** SO06—Secure Holding Facility

—**Activity Description:**
Construct a 1,200 square foot building in an isolated area for use as a secure holding facility.

—**Activity Start Date**
Start Month: 7
Start Year: 2022

—**Activity End Date**
Indefinite: Yes
End Month: N/A
End Year: N/A

—**Activity Emissions:**

Pollutant	Emissions Per Year (TONs)
VOC	0.005650
SO_x	0.004759
NO_x	0.023288
CO	0.015552
PM 10	0.005083

Pollutant	Emissions Per Year (TONs)
PM 2.5	0.005083
Pb	0.000000
NH_3	0.000000
CO_2e	2.7

25.2 Emergency Generator Assumptions

—**Emergency Generator**
Type of Fuel used in Emergency Generator: Diesel
Number of Emergency Generators: 1

—**Default Settings Used:** Yes

—**Emergency Generators Consumption**
Emergency Generator's Horsepower: 135 (default)
Average Operating Hours Per Year (hours): 30 (default)

25.3 Emergency Generator Emission Factor(s)

—**Emergency Generators Emission Factor (lb/hp-hr)**

VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
0.00279	0.00235	0.0115	0.00768	0.00251	0.00251			1.33

25.4 Emergency Generator Formula(s)

—**Emergency Generator Emissions per Year**

AE_{POL}= (NGEN * HP * OT * EF_{POL})/2000

AE_{POL}: Activity Emissions (TONs per Year)
NGEN: Number of Emergency Generators
HP: Emergency Generator's Horsepower (hp)
OT: Average Operating Hours Per Year (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hp-hr)

26. Construction/Demolition

26.1 General Information & Timeline Assumptions

—**Activity Location**
County: Spokane
Regulatory Area(s): Not in a Regulatory Area

—**Activity Title:** SO07—Two-Story Office and Storage Building

—**Activity Description:**
Construct a two-story, 8,000 square foot office and storage building.

—**Activity Start Date**
Start Month: 1
Start Month: 2024

—**Activity End Date**
Indefinite: False
End Month: 6
End Month: 2024

—**Activity Emissions:**

Pollutant	Total Emissions (TONs)
VOC	0.135180
SO_x	0.000826
NO_x	0.221175
CO	0.342668
PM 10	0.017867

Pollutant	Total Emissions (TONs)
PM 2.5	0.007725
Pb	0.000000
NH_3	0.000289
CO_2e	80.0

26.1 Site Grading Phase

26.1.1 Site Grading Phase Timeline Assumptions

—Phase Start Date
Start Month: 1
Start Quarter: 1
Start Year: 2024

—Phase Duration
Number of Month: 0
Number of Days: 2

26.1.2 Site Grading Phase Assumptions

—General Site Grading Information
Area of Site to be Graded (ft^2): 5500
Amount of Material to be Hauled On-Site (yd^3): 0
Amount of Material to be Hauled Off-Site (yd^3): 407

—Site Grading Default Settings
Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

—Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Graders Composite	1	6
Other Construction Equipment Composite	1	8
Rubber Tired Dozers Composite	1	6
Tractors/Loaders/Backhoes Composite	1	7

—Vehicle Exhaust
Average Hauling Truck Capacity (yd^3): 20 (default)
Average Hauling Truck Round Trip Commute (mile): 20 (default)

—Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

—Worker Trips
Average Worker Round Trip Commute (mile): 20 (default)

—Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

26.1.3 Site Grading Phase Emission Factor(s)

—Construction Exhaust Emission Factors (lb/hour) (default)

Graders Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0714	0.0014	0.3708	0.5706	0.0167	0.0167	0.0064	132.90
Other Construction Equipment Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0461	0.0012	0.2243	0.3477	0.0079	0.0079	0.0041	122.61
Rubber Tired Dozers Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.1747	0.0024	1.1695	0.6834	0.0454	0.0454	0.0157	239.47
Tractors/Loaders/Backhoes Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0348	0.0007	0.1980	0.3589	0.0068	0.0068	0.0031	66.875

—Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**Pb**	**NH_3**	**CO_2e**
LDGV	000.278	000.002	000.219	003.276	000.008	000.007		000.023	00320.329
LDGT	000.351	000.003	000.382	004.545	000.010	000.009		000.024	00414.211
HDGV	000.705	000.005	001.074	015.763	000.025	000.022		000.045	00763.488
LDDV	000.122	000.003	000.133	002.396	000.004	000.004		000.008	00309.634
LDDT	000.266	000.004	000.384	004.133	000.007	000.007		000.008	00440.653
HDDV	000.498	000.013	005.110	001.743	000.169	000.156		000.028	01479.227
MC	002.339	000.003	000.821	013.581	000.029	000.025		000.054	00399.711

26.1.4 Site Grading Phase Formula(s)

—Fugitive Dust Emissions per Phase
$PM10_{FD}$ = (20 * ACRE * WD)/2000

$PM10_{FD}$: Fugitive Dust PM 10 Emissions (TONs)
20: Conversion Factor Acre Day to pounds (20 lb/1 Acre Day)
ACRE: Total acres (acres)
WD: Number of Total Work Days (days)
2000: Conversion Factor pounds to tons

—Construction Exhaust Emissions per Phase
CEE_{POL} = (NE * WD * H * EF_{POL})/2000

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

—**Vehicle Exhaust Emissions per Phase**
$VMT_{VE} = (HA_{OnSite} + HA_{OffSite}) * (1/HC) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
HA_{OnSite}: Amount of Material to be Hauled On-Site (yd^3)
$HA_{OffSite}$: Amount of Material to be Hauled Off-Site (yd^3)
HC: Average Hauling Truck Capacity (yd^3)
(1/HC): Conversion Factor cubic yards to trips (1 trip/HC yd^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM)/2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Vehicle Exhaust On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

—**Worker Trips Emissions per Phase**
$VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM)/2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

26.2 Trenching/Excavating Phase

26.2.1 Trenching/Excavating Phase Timeline Assumptions

—**Phase Start Date**
Start Month: 1
Start Quarter: 1
Start Year: 2024

—**Phase Duration**
Number of Month: 0
Number of Days: 2

26.2.2 Trenching/Excavating Phase Assumptions

—**General Trenching/Excavating Information**
Area of Site to be Trenched/Excavated (ft^2): 5500
Amount of Material to be Hauled On-Site (yd^3): 0
Amount of Material to be Hauled Off-Site (yd^3): 204

—Trenching Default Settings
Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

—Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Excavators Composite	2	8
Other General Industrial Equipment Composite	1	8
Tractors/Loaders/Backhoes Composite	1	8

—Vehicle Exhaust
Average Hauling Truck Capacity (yd^3): 20 (default)
Average Hauling Truck Round Trip Commute (mile): 20 (default)

—Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

—Worker Trips
Average Worker Round Trip Commute (mile): 20 (default)

—Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

26.2.3 Trenching/Excavating Phase Emission Factor(s)

—Construction Exhaust Emission Factors (lb/hour) (default)

Graders Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0714	0.0014	0.3708	0.5706	0.0167	0.0167	0.0064	132.90
Other Construction Equipment Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0461	0.0012	0.2243	0.3477	0.0079	0.0079	0.0041	122.61
Rubber Tired Dozers Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.1747	0.0024	1.1695	0.6834	0.0454	0.0454	0.0157	239.47
Tractors/Loaders/Backhoes Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0348	0.0007	0.1980	0.3589	0.0068	0.0068	0.0031	66.875

—Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.278	000.002	000.219	003.276	000.008	000.007		000.023	00320.329
LDGT	000.351	000.003	000.382	004.545	000.010	000.009		000.024	00414.211
HDGV	000.705	000.005	001.074	015.763	000.025	000.022		000.045	00763.488
LDDV	000.122	000.003	000.133	002.396	000.004	000.004		000.008	00309.634
LDDT	000.266	000.004	000.384	004.133	000.007	000.007		000.008	00440.653
HDDV	000.498	000.013	005.110	001.743	000.169	000.156		000.028	01479.227
MC	002.339	000.003	000.821	013.581	000.029	000.025		000.054	00399.711

26.2.4 Trenching/Excavating Phase Formula(s)

—Fugitive Dust Emissions per Phase
$PM10_{FD} = (20 * ACRE * WD)/2000$

$PM10_{FD}$: Fugitive Dust PM 10 Emissions (TONs)
20: Conversion Factor Acre Day to pounds (20 lb/1 Acre Day)
ACRE: Total acres (acres)
WD: Number of Total Work Days (days)
2000: Conversion Factor pounds to tons

—Construction Exhaust Emissions per Phase
$CEE_{POL} = (NE * WD * H * EF_{POL})/2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

—Vehicle Exhaust Emissions per Phase
$VMT_{VE} = (HA_{OnSite} + HA_{OffSite}) * (1/HC) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
HA_{OnSite}: Amount of Material to be Hauled On-Site (yd^3)
$HA_{OffSite}$: Amount of Material to be Hauled Off-Site (yd^3)
HC: Average Hauling Truck Capacity (yd^3)
(1/HC): Conversion Factor cubic yards to trips (1 trip/HC yd^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM)/2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Vehicle Exhaust On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

—Worker Trips Emissions per Phase
$VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM)/2000

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

26.3 Building Construction Phase

26.3.1 Building Construction Phase Timeline Assumptions

—Phase Start Date
Start Month: 2
Start Quarter: 1
Start Year: 2024

—Phase Duration
Number of Month: 3
Number of Days: 10

26.3.2 Building Construction Phase Assumptions

—General Building Construction Information
Building Category: Office or Industrial
Area of Building (ft^2): 4000
Height of Building (ft): 25
Number of Units: N/A

—Building Construction Default Settings
Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

—Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Cranes Composite	1	4
Forklifts Composite	2	6
Tractors/Loaders/Backhoes Composite	1	8

—Vehicle Exhaust
Average Hauling Truck Round Trip Commute (mile): 20 (default)

—Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

—Worker Trips
Average Worker Round Trip Commute (mile): 20 (default)

—Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

—**Vendor Trips**
Average Vendor Round Trip Commute (mile): 40 (default)

—**Vendor Trips Vehicle Mixture (%)**

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

26.3.3 Building Construction Phase Emission Factor(s)

—**Construction Exhaust Emission Factors (lb/hour) (default)**

Cranes Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0715	0.0013	0.4600	0.3758	0.0161	0.0161	0.0064	128.78
Forklifts Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0246	0.0006	0.0973	0.2146	0.0029	0.0029	0.0022	54.451
Tractors/Loaders/Backhoes Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0348	0.0007	0.1980	0.3589	0.0068	0.0068	0.0031	66.875

—**Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)**

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.278	000.002	000.219	003.276	000.008	000.007		000.023	00320.329
LDGT	000.351	000.003	000.382	004.545	000.010	000.009		000.024	00414.211
HDGV	000.705	000.005	001.074	015.763	000.025	000.022		000.045	00763.488
LDDV	000.122	000.003	000.133	002.396	000.004	000.004		000.008	00309.634
LDDT	000.266	000.004	000.384	004.133	000.007	000.007		000.008	00440.653
HDDV	000.498	000.013	005.110	001.743	000.169	000.156		000.028	01479.227
MC	002.339	000.003	000.821	013.581	000.029	000.025		000.054	00399.711

26.3.4 Building Construction Phase Formula(s)

—**Construction Exhaust Emissions per Phase**
$CEE_{POL} = (NE * WD * H * EF_{POL})/2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

—**Vehicle Exhaust Emissions per Phase**
$VMT_{VE} = BA * BH * (0.42/1000) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
BA: Area of Building (ft^2)
BH: Height of Building (ft)
(0.42/1000): Conversion Factor ft^3 to trips (0.42 trip/1000 ft^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM)/2000

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

—**Worker Trips Emissions per Phase**
VMT_{WT} = WD * WT * 1.25 * NE

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM)/2000

V_{POL}: Vehicle Emissions (TONs)
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

—**Vender Trips Emissions per Phase**
VMT_{VT} = BA * BH * (0.38/1000) * HT

VMT_{VT}: Vender Trips Vehicle Miles Travel (miles)
BA: Area of Building (ft^2)
BH: Height of Building (ft)
(0.38/1000): Conversion Factor ft^3 to trips (0.38 trip/1000 ft^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

V_{POL} = (VMT_{VT} * 0.002205 * EF_{POL} * VM)/2000

V_{POL}: Vehicle Emissions (TONs)
VMT_{VT}: Vender Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

26.4 Architectural Coatings Phase

26.4.1 Architectural Coatings Phase Timeline Assumptions

—**Phase Start Date**
Start Month: 6
Start Quarter: 1
Start Year: 2024

—**Phase Duration**
Number of Month: 0
Number of Days: 5

26.4.2 Architectural Coatings Phase Assumptions

—**General Architectural Coatings Information**
Building Category: Non-Residential
Total Square Footage (ft^2): 8000
Number of Units: N/A

—**Architectural Coatings Default Settings**
Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

—**Worker Trips**
Average Worker Round Trip Commute (mile): 20 (default)

—**Worker Trips Vehicle Mixture (%)**

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

26.4.3 Architectural Coatings Phase Emission Factor(s)

—**Worker Trips Emission Factors (grams/mile)**

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.278	000.002	000.219	003.276	000.008	000.007		000.023	00320.329
LDGT	000.351	000.003	000.382	004.545	000.010	000.009		000.024	00414.211
HDGV	000.705	000.005	001.074	015.763	000.025	000.022		000.045	00763.488
LDDV	000.122	000.003	000.133	002.396	000.004	000.004		000.008	00309.634
LDDT	000.266	000.004	000.384	004.133	000.007	000.007		000.008	00440.653
HDDV	000.498	000.013	005.110	001.743	000.169	000.156		000.028	01479.227
MC	002.339	000.003	000.821	013.581	000.029	000.025		000.054	00399.711

26.4.4 Architectural Coatings Phase Formula(s)

—**Worker Trips Emissions per Phase**
$VMT_{WT} = (1 * WT * PA)/800$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
1: Conversion Factor person days to trips (1 trip/1 person * day)
WT: Average Worker Round Trip Commute (mile)
PA: Paint Area (ft^2)
800: Conversion Factor ft^2 to person days (1 ft^2/1 person * day)

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM)/2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

—Off-Gassing Emissions per Phase
VOC_{AC} = (AB * 2.0 * 0.0116)/2000.0

VOC_{AC}: Architectural Coating VOC Emissions (TONs)
BA: Area of Building (ft^2)
2.0: Conversion Factor total area to coated area (2.0 ft^2 coated area/total area)
0.0116: Emission Factor (lb/ft^2)
2000: Conversion Factor pounds to tons

26.5 Paving Phase

26.5.1 Paving Phase Timeline Assumptions

—Phase Start Date
Start Month: 6
Start Quarter: 1
Start Year: 2024

—Phase Duration
Number of Month: 0
Number of Days: 5

26.5.2 Paving Phase Assumptions

—General Paving Information
Paving Area (ft^2): 2025

—Paving Default Settings
Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

—Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Cement and Mortar Mixers Composite	4	6
Pavers Composite	1	7
Rollers Composite	1	7
Tractors/Loaders/Backhoes Composite	1	7

—Vehicle Exhaust
Average Hauling Truck Round Trip Commute (mile): 20 (default)

—Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

—Worker Trips
Average Worker Round Trip Commute (mile): 20 (default)

—Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

26.5.3 Paving Phase Emission Factor(s)

—Construction Exhaust Emission Factors (lb/hour) (default)

Graders Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0714	0.0014	0.3708	0.5706	0.0167	0.0167	0.0064	132.90
Other Construction Equipment Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0461	0.0012	0.2243	0.3477	0.0079	0.0079	0.0041	122.61
Rubber Tired Dozers Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.1747	0.0024	1.1695	0.6834	0.0454	0.0454	0.0157	239.47
Tractors/Loaders/Backhoes Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0348	0.0007	0.1980	0.3589	0.0068	0.0068	0.0031	66.875

—Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.278	000.002	000.219	003.276	000.008	000.007		000.023	00320.329
LDGT	000.351	000.003	000.382	004.545	000.010	000.009		000.024	00414.211
HDGV	000.705	000.005	001.074	015.763	000.025	000.022		000.045	00763.488
LDDV	000.122	000.003	000.133	002.396	000.004	000.004		000.008	00309.634
LDDT	000.266	000.004	000.384	004.133	000.007	000.007		000.008	00440.653
HDDV	000.498	000.013	005.110	001.743	000.169	000.156		000.028	01479.227
MC	002.339	000.003	000.821	013.581	000.029	000.025		000.054	00399.711

26.5.4 Paving Phase Formula(s)

—Construction Exhaust Emissions per Phase

$CEE_{POL} = (NE * WD * H * EF_{POL})/2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

—Vehicle Exhaust Emissions per Phase

$VMT_{VE} = PA * 0.25 * (1/27) * (1/HC) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
PA: Paving Area (ft^2)
0.25: Thickness of Paving Area (ft)
(1/27): Conversion Factor cubic feet to cubic yards (1 yd^3/27 ft^3)
HC: Average Hauling Truck Capacity (yd^3)
(1/HC): Conversion Factor cubic yards to trips (1 trip/HC yd^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM)/2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)

VM: Vehicle Exhaust On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

—**Worker Trips Emissions per Phase**
$VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM)/2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

—**Off-Gassing Emissions per Phase**
$VOC_P = (2.62 * PA)/43560$

VOC_P: Paving VOC Emissions (TONs)
2.62: Emission Factor (lb/acre)
PA: Paving Area (ft^2)
43560: Conversion Factor ft^2 to acre (43560 ft^2/acre)^2/acre)

27. Heating

27.1 General Information & Timeline Assumptions

—**Add or Remove Activity from Baseline?** Add

—**Activity Location**
County: Spokane
Regulatory Area(s): Not in a Regulatory Area

—**Activity Title:** SO07—Two-Story Office and Storage Building

—**Activity Description:**
Construct a two-story, 8,000 square foot office and storage building.

—**Activity Start Date**
Start Month: 7
Start Year: 2024

—**Activity End Date**
Indefinite: Yes
End Month: N/A
End Year: N/A

—**Activity Emissions:**

Pollutant	Emissions Per Year (TONs)
VOC	0.001902
SO_x	0.000208
NO_x	0.034590
CO	0.029056
PM 10	0.002629

Pollutant	Emissions Per Year (TONs)
PM 2.5	0.002629
Pb	0.000000
NH_3	0.000000
CO_2e	41.6

27.2 Heating Assumptions

—**Heating**
Heating Calculation Type: Heat Energy Requirement Method

—**Heat Energy Requirement Method**
Area of floorspace to be heated (ft^2): 8000
Type of fuel: Natural Gas
Type of boiler/furnace: Commercial/Institutional (0.3—9.9 MMBtu/hr)
Heat Value (MMBtu/ft^3): 0.00105
Energy Intensity (MMBtu/ft^2): 0.0908

—**Default Settings Used:** Yes

—**Boiler/Furnace Usage**
Operating Time Per Year (hours): 900 (default)

27.3 Heating Emission Factor(s)

—**Heating Emission Factors (lb/1000000 scf)**

VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
5.5	0.6	100	84	7.6	7.6			120390

27.4 Heating Formula(s)

—**Heating Fuel Consumption ft^3 per Year**
FC_{HER}= HA * EI/HV/1000000

FC_{HER}: Fuel Consumption for Heat Energy Requirement Method
HA: Area of floorspace to be heated (ft^2)
EI: Energy Intensity Requirement (MMBtu/ft^2)
HV: Heat Value (MMBTU/ft^3)
1000000: Conversion Factor

—**Heating Emissions per Year**
HE_{POL}= FC * EF_{POL}/2000

HE_{POL}: Heating Emission Emissions (TONs)
FC: Fuel Consumption
EF_{POL}: Emission Factor for Pollutant
2000: Conversion Factor pounds to tons

28. Emergency Generator

28.1 General Information & Timeline Assumptions

—Add or Remove Activity from Baseline? Add

—Activity Location
County: Spokane
Regulatory Area(s): Not in a Regulatory Area

—Activity Title: SO07—Two-Story Office and Storage Building

—Activity Description:
Construct a two-story, 8,000 square foot office and storage building.

—Activity Start Date
Start Month: 7
Start Year: 2024

—Activity End Date
Indefinite: Yes
End Month: N/A
End Year: N/A

—Activity Emissions:

Pollutant	Emissions Per Year (TONs)
VOC	0.005650
SO_x	0.004759
NO_x	0.023288
CO	0.015552
PM 10	0.005083

Pollutant	Emissions Per Year (TONs)
PM 2.5	0.005083
Pb	0.000000
NH_3	0.000000
CO_2e	2.7

28.2 Emergency Generator Assumptions

—Emergency Generator
Type of Fuel used in Emergency Generator: Diesel
Number of Emergency Generators: 1

—Default Settings Used: Yes

—Emergency Generators Consumption
Emergency Generator's Horsepower: 135 (default)
Average Operating Hours Per Year (hours): 30 (default)

28.3 Emergency Generator Emission Factor(s)

—Emergency Generators Emission Factor (lb/hp-hr)

VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
0.00279	0.00235	0.0115	0.00768	0.00251	0.00251			1.33

28.4 Emergency Generator Formula(s)

—Emergency Generator Emissions per Year

AE_{POL}= (NGEN * HP * OT * EF_{POL})/2000

AE_{POL}: Activity Emissions (TONs per Year)
NGEN: Number of Emergency Generators
HP: Emergency Generator's Horsepower (hp)
OT: Average Operating Hours Per Year (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hp-hr)

29. Construction/Demolition

29.1 General Information & Timeline Assumptions

—Activity Location
County: Spokane
Regulatory Area(s): Not in a Regulatory Area

—Activity Title: SO08—Septic Field Expansion

—Activity Description:
Expand the septic fields to increase the capacity to support planned future growth and development.

—Activity Start Date
Start Month: 1
Start Month: 2024

—Activity End Date
Indefinite: False
End Month: 5
End Month: 2024

—Activity Emissions:

Pollutant	Total Emissions (TONs)
VOC	0.037952
SO_x	0.000757
NO_x	0.193540
CO	0.312215
PM 10	0.012072

Pollutant	Total Emissions (TONs)
PM 2.5	0.006544
Pb	0.000000
NH_3	0.000218
CO_2e	73.0

29.1 Site Grading Phase

29.1.1 Site Grading Phase Timeline Assumptions

—Phase Start Date
Start Month: 1
Start Quarter: 1
Start Year: 2024

—Phase Duration
Number of Month: 0
Number of Days: 2

29.1.2 Site Grading Phase Assumptions

—General Site Grading Information
Area of Site to be Graded (ft^2): 3000
Amount of Material to be Hauled On-Site (yd^3): 0
Amount of Material to be Hauled Off-Site (yd^3): 222

—Site Grading Default Settings
Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

—Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Graders Composite	1	6
Other Construction Equipment Composite	1	8
Rubber Tired Dozers Composite	1	6
Tractors/Loaders/Backhoes Composite	1	7

—Vehicle Exhaust
Average Hauling Truck Capacity (yd^3): 20 (default)
Average Hauling Truck Round Trip Commute (mile): 20 (default)

—Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

—Worker Trips
Average Worker Round Trip Commute (mile): 20 (default)

—Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

29.1.3 Site Grading Phase Emission Factor(s)

—Construction Exhaust Emission Factors (lb/hour) (default)

Graders Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0714	0.0014	0.3708	0.5706	0.0167	0.0167	0.0064	132.90
Other Construction Equipment Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0461	0.0012	0.2243	0.3477	0.0079	0.0079	0.0041	122.61
Rubber Tired Dozers Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.1747	0.0024	1.1695	0.6834	0.0454	0.0454	0.0157	239.47
Tractors/Loaders/Backhoes Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0348	0.0007	0.1980	0.3589	0.0068	0.0068	0.0031	66.875

—Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.278	000.002	000.219	003.276	000.008	000.007		000.023	00320.329
LDGT	000.351	000.003	000.382	004.545	000.010	000.009		000.024	00414.211
HDGV	000.705	000.005	001.074	015.763	000.025	000.022		000.045	00763.488
LDDV	000.122	000.003	000.133	002.396	000.004	000.004		000.008	00309.634
LDDT	000.266	000.004	000.384	004.133	000.007	000.007		000.008	00440.653
HDDV	000.498	000.013	005.110	001.743	000.169	000.156		000.028	01479.227
MC	002.339	000.003	000.821	013.581	000.029	000.025		000.054	00399.711

29.1.4 Site Grading Phase Formula(s)

—Fugitive Dust Emissions per Phase
$PM10_{FD}$ = (20 * ACRE * WD)/2000

$PM10_{FD}$: Fugitive Dust PM 10 Emissions (TONs)
20: Conversion Factor Acre Day to pounds (20 lb/1 Acre Day)
ACRE: Total acres (acres)
WD: Number of Total Work Days (days)
2000: Conversion Factor pounds to tons

—Construction Exhaust Emissions per Phase
CEE_{POL} = (NE * WD * H * EF_{POL})/2000

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

—Vehicle Exhaust Emissions per Phase
VMT_{VE} = (HA_{OnSite} + $HA_{OffSite}$) * (1/HC) * HT

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
HA_{OnSite}: Amount of Material to be Hauled On-Site (yd^3)
$HA_{OffSite}$: Amount of Material to be Hauled Off-Site (yd^3)
HC: Average Hauling Truck Capacity (yd^3)
(1/HC): Conversion Factor cubic yards to trips (1 trip/HC yd^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM)/2000

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Vehicle Exhaust On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

—Worker Trips Emissions per Phase
$VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM)/2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

29.2 Trenching/Excavating Phase

29.2.1 Trenching/Excavating Phase Timeline Assumptions

—Phase Start Date
Start Month: 1
Start Quarter: 1
Start Year: 2024

—Phase Duration
Number of Month: 0
Number of Days: 2

29.2.2 Trenching/Excavating Phase Assumptions

—General Trenching/Excavating Information
Area of Site to be Trenched/Excavated (ft^2): 3000
Amount of Material to be Hauled On-Site (yd^3): 0
Amount of Material to be Hauled Off-Site (yd^3): 111

—Trenching Default Settings
Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

—Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Excavators Composite	2	8
Other General Industrial Equipment Composite	1	8
Tractors/Loaders/Backhoes Composite	1	8

—Vehicle Exhaust
Average Hauling Truck Capacity (yd^3): 20 (default)
Average Hauling Truck Round Trip Commute (mile): 20 (default)

—Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

—Worker Trips
Average Worker Round Trip Commute (mile): 20 (default)

—Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

29.2.3 Trenching/Excavating Phase Emission Factor(s)

—Construction Exhaust Emission Factors (lb/hour) (default)

Graders Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0714	0.0014	0.3708	0.5706	0.0167	0.0167	0.0064	132.90
Other Construction Equipment Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0461	0.0012	0.2243	0.3477	0.0079	0.0079	0.0041	122.61
Rubber Tired Dozers Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.1747	0.0024	1.1695	0.6834	0.0454	0.0454	0.0157	239.47
Tractors/Loaders/Backhoes Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0348	0.0007	0.1980	0.3589	0.0068	0.0068	0.0031	66.875

—Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.278	000.002	000.219	003.276	000.008	000.007		000.023	00320.329
LDGT	000.351	000.003	000.382	004.545	000.010	000.009		000.024	00414.211
HDGV	000.705	000.005	001.074	015.763	000.025	000.022		000.045	00763.488
LDDV	000.122	000.003	000.133	002.396	000.004	000.004		000.008	00309.634
LDDT	000.266	000.004	000.384	004.133	000.007	000.007		000.008	00440.653
HDDV	000.498	000.013	005.110	001.743	000.169	000.156		000.028	01479.227
MC	002.339	000.003	000.821	013.581	000.029	000.025		000.054	00399.711

29.2.4 Trenching/Excavating Phase Formula(s)

—Fugitive Dust Emissions per Phase
$PM10_{FD}$ = (20 * ACRE * WD)/2000

$PM10_{FD}$: Fugitive Dust PM 10 Emissions (TONs)
20: Conversion Factor Acre Day to pounds (20 lb/1 Acre Day)
ACRE: Total acres (acres)
WD: Number of Total Work Days (days)
2000: Conversion Factor pounds to tons

—**Construction Exhaust Emissions per Phase**
$CEE_{POL} = (NE * WD * H * EF_{POL})/2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

—**Vehicle Exhaust Emissions per Phase**
$VMT_{VE} = (HA_{OnSite} + HA_{OffSite}) * (1/HC) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
HA_{OnSite}: Amount of Material to be Hauled On-Site (yd^3)
$HA_{OffSite}$: Amount of Material to be Hauled Off-Site (yd^3)
HC: Average Hauling Truck Capacity (yd^3)
(1/HC): Conversion Factor cubic yards to trips (1 trip/HC yd^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM)/2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Vehicle Exhaust On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

—**Worker Trips Emissions per Phase**
$VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM)/2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

29.3 Building Construction Phase

29.3.1 Building Construction Phase Timeline Assumptions

—Phase Start Date
Start Month: 2
Start Quarter: 1
Start Year: 2024

—Phase Duration
Number of Month: 3
Number of Days: 10

29.3.2 Building Construction Phase Assumptions

—General Building Construction Information
Building Category: Office or Industrial
Area of Building (ft^2): 2200
Height of Building (ft): 10
Number of Units: N/A

—Building Construction Default Settings
Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

—Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Cranes Composite	1	4
Forklifts Composite	2	6
Tractors/Loaders/Backhoes Composite	1	8

—Vehicle Exhaust
Average Hauling Truck Round Trip Commute (mile): 20 (default)

—Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

—Worker Trips
Average Worker Round Trip Commute (mile): 20 (default)

—Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

—Vendor Trips
Average Vendor Round Trip Commute (mile): 40 (default)

—Vendor Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

29.3.3 Building Construction Phase Emission Factor(s)

—Construction Exhaust Emission Factors (lb/hour) (default)

Cranes Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0715	0.0013	0.4600	0.3758	0.0161	0.0161	0.0064	128.78
Forklifts Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0246	0.0006	0.0973	0.2146	0.0029	0.0029	0.0022	54.451
Tractors/Loaders/Backhoes Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0348	0.0007	0.1980	0.3589	0.0068	0.0068	0.0031	66.875

—Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.278	000.002	000.219	003.276	000.008	000.007		000.023	00320.329
LDGT	000.351	000.003	000.382	004.545	000.010	000.009		000.024	00414.211
HDGV	000.705	000.005	001.074	015.763	000.025	000.022		000.045	00763.488
LDDV	000.122	000.003	000.133	002.396	000.004	000.004		000.008	00309.634
LDDT	000.266	000.004	000.384	004.133	000.007	000.007		000.008	00440.653
HDDV	000.498	000.013	005.110	001.743	000.169	000.156		000.028	01479.227
MC	002.339	000.003	000.821	013.581	000.029	000.025		000.054	00399.711

29.3.4 Building Construction Phase Formula(s)

—Construction Exhaust Emissions per Phase
$CEE_{POL} = (NE * WD * H * EF_{POL})/2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

—Vehicle Exhaust Emissions per Phase
$VMT_{VE} = BA * BH * (0.42/1000) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
BA: Area of Building (ft^2)
BH: Height of Building (ft)
(0.42/1000): Conversion Factor ft^3 to trips (0.42 trip/1000 ft^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM)/2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

—Worker Trips Emissions per Phase
$VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM)/2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

—**Vender Trips Emissions per Phase**
$VMT_{VT} = BA * BH * (0.38/1000) * HT$

VMT_{VT}: Vender Trips Vehicle Miles Travel (miles)
BA: Area of Building (ft^2)
BH: Height of Building (ft)
(0.38/1000): Conversion Factor ft^3 to trips (0.38 trip/1000 ft^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VT} * 0.002205 * EF_{POL} * VM)/2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VT}: Vender Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

30. Construction/Demolition

30.1 General Information & Timeline Assumptions

—**Activity Location**
County: Spokane
Regulatory Area(s): Not in a Regulatory Area

—**Activity Title:** SO09—Building 101 Expansion

—**Activity Description:**
Provide an additional 1,500 ft^2 of building space for the training program conducted at Building 101.

—**Activity Start Date**
Start Month: 1
Start Month: 2021

—**Activity End Date**
Indefinite: False
End Month: 6
End Month: 2021

—**Activity Emissions:**

Pollutant	Total Emissions (TONs)
VOC	0.061729
SO_x	0.000757
NO_x	0.257172
CO	0.316551
PM 10	0.014559

Pollutant	Total Emissions (TONs)
PM 2.5	0.010317
Pb	0.000000
NH_3	0.000227
CO_2e	73.1

30.1 Site Grading Phase

30.1.1 Site Grading Phase Timeline Assumptions

—**Phase Start Date**
Start Month: 1
Start Quarter: 1
Start Year: 2021

—**Phase Duration**
Number of Month: 0
Number of Days: 2

30.1.2 Site Grading Phase Assumptions

—**General Site Grading Information**
Area of Site to be Graded (ft^2): 2300
Amount of Material to be Hauled On-Site (yd^3): 0
Amount of Material to be Hauled Off-Site (yd^3): 170

—**Site Grading Default Settings**
Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

—**Construction Exhaust (default)**

Equipment Name	Number Of Equipment	Hours Per Day
Graders Composite	1	6
Other Construction Equipment Composite	1	8
Rubber Tired Dozers Composite	1	6
Tractors/Loaders/Backhoes Composite	1	7

—**Vehicle Exhaust**
Average Hauling Truck Capacity (yd^3): 20 (default)
Average Hauling Truck Round Trip Commute (mile): 20 (default)

—**Vehicle Exhaust Vehicle Mixture (%)**

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

—**Worker Trips**
Average Worker Round Trip Commute (mile): 20 (default)

—**Worker Trips Vehicle Mixture (%)**

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

30.1.3 Site Grading Phase Emission Factor(s)

—**Construction Exhaust Emission Factors (lb/hour) (default)**

Graders Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0860	0.0014	0.5212	0.5747	0.0247	0.0247	0.0077	132.93
Other Construction Equipment Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0533	0.0012	0.3119	0.3497	0.0121	0.0121	0.0048	122.61
Rubber Tired Dozers Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.2015	0.0024	1.4660	0.7661	0.0581	0.0581	0.0181	239.53
Tractors/Loaders/Backhoes Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0407	0.0007	0.2505	0.3606	0.0112	0.0112	0.0036	66.890

—**Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)**

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.278	000.002	000.219	003.276	000.008	000.007		000.023	00320.329
LDGT	000.351	000.003	000.382	004.545	000.010	000.009		000.024	00414.211
HDGV	000.705	000.005	001.074	015.763	000.025	000.022		000.045	00763.488
LDDV	000.122	000.003	000.133	002.396	000.004	000.004		000.008	00309.634
LDDT	000.266	000.004	000.384	004.133	000.007	000.007		000.008	00440.653
HDDV	000.498	000.013	005.110	001.743	000.169	000.156		000.028	01479.227
MC	002.339	000.003	000.821	013.581	000.029	000.025		000.054	00399.711

30.1.4 Site Grading Phase Formula(s)

—**Fugitive Dust Emissions per Phase**
$PM10_{FD} = (20 * ACRE * WD)/2000$

$PM10_{FD}$: Fugitive Dust PM 10 Emissions (TONs)
20: Conversion Factor Acre Day to pounds (20 lb/1 Acre Day)
ACRE: Total acres (acres)
WD: Number of Total Work Days (days)
2000: Conversion Factor pounds to tons

—**Construction Exhaust Emissions per Phase**
$CEE_{POL} = (NE * WD * H * EF_{POL})/2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

—**Vehicle Exhaust Emissions per Phase**
$VMT_{VE} = (HA_{OnSite} + HA_{OffSite}) * (1/HC) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
HA_{OnSite}: Amount of Material to be Hauled On-Site (yd^3)
$HA_{OffSite}$: Amount of Material to be Hauled Off-Site (yd^3)
HC: Average Hauling Truck Capacity (yd^3)
(1/HC): Conversion Factor cubic yards to trips (1 trip/HC yd^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM)/2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Vehicle Exhaust On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

—**Worker Trips Emissions per Phase**
$VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM)/2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

30.2 Trenching/Excavating Phase

30.2.1 Trenching/Excavating Phase Timeline Assumptions

—**Phase Start Date**
Start Month: 1
Start Quarter: 1
Start Year: 2021

—**Phase Duration**
Number of Month: 0
Number of Days: 2

30.2.2 Trenching/Excavating Phase Assumptions

—**General Trenching/Excavating Information**
Area of Site to be Trenched/Excavated (ft^2): 2300
Amount of Material to be Hauled On-Site (yd^3): 0
Amount of Material to be Hauled Off-Site (yd^3): 85

—Trenching Default Settings
Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

—Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Excavators Composite	2	8
Other General Industrial Equipment Composite	1	8
Tractors/Loaders/Backhoes Composite	1	8

—Vehicle Exhaust
Average Hauling Truck Capacity (yd^3): 20 (default)
Average Hauling Truck Round Trip Commute (mile): 20 (default)

—Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

—Worker Trips
Average Worker Round Trip Commute (mile): 20 (default)

—Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

30.2.3 Trenching/Excavating Phase Emission Factor(s)

—Construction Exhaust Emission Factors (lb/hour) (default)

Graders Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0860	0.0014	0.5212	0.5747	0.0247	0.0247	0.0077	132.93
Other Construction Equipment Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0533	0.0012	0.3119	0.3497	0.0121	0.0121	0.0048	122.61
Rubber Tired Dozers Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.2015	0.0024	1.4660	0.7661	0.0581	0.0581	0.0181	239.53
Tractors/Loaders/Backhoes Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0407	0.0007	0.2505	0.3606	0.0112	0.0112	0.0036	66.890

—Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.278	000.002	000.219	003.276	000.008	000.007		000.023	00320.329
LDGT	000.351	000.003	000.382	004.545	000.010	000.009		000.024	00414.211
HDGV	000.705	000.005	001.074	015.763	000.025	000.022		000.045	00763.488
LDDV	000.122	000.003	000.133	002.396	000.004	000.004		000.008	00309.634
LDDT	000.266	000.004	000.384	004.133	000.007	000.007		000.008	00440.653
HDDV	000.498	000.013	005.110	001.743	000.169	000.156		000.028	01479.227
MC	002.339	000.003	000.821	013.581	000.029	000.025		000.054	00399.711

30.2.4 Trenching/Excavating Phase Formula(s)

—Fugitive Dust Emissions per Phase
$PM10_{FD} = (20 * ACRE * WD)/2000$

$PM10_{FD}$: Fugitive Dust PM 10 Emissions (TONs)
20: Conversion Factor Acre Day to pounds (20 lb/1 Acre Day)
ACRE: Total acres (acres)
WD: Number of Total Work Days (days)
2000: Conversion Factor pounds to tons

—Construction Exhaust Emissions per Phase
$CEE_{POL} = (NE * WD * H * EF_{POL})/2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

—Vehicle Exhaust Emissions per Phase
$VMT_{VE} = (HA_{OnSite} + HA_{OffSite}) * (1/HC) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
HA_{OnSite}: Amount of Material to be Hauled On-Site (yd^3)
$HA_{OffSite}$: Amount of Material to be Hauled Off-Site (yd^3)
HC: Average Hauling Truck Capacity (yd^3)
(1/HC): Conversion Factor cubic yards to trips (1 trip/HC yd^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM)/2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Vehicle Exhaust On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

—Worker Trips Emissions per Phase
$VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM)/2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

30.3 Building Construction Phase

30.3.1 Building Construction Phase Timeline Assumptions

—Phase Start Date
Start Month: 2
Start Quarter: 1
Start Year: 2021

—Phase Duration
Number of Month: 3
Number of Days: 10

30.3.2 Building Construction Phase Assumptions

—General Building Construction Information
Building Category: Office or Industrial
Area of Building (ft^2): 1500
Height of Building (ft): 15
Number of Units: N/A

—Building Construction Default Settings
Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

—Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Cranes Composite	1	4
Forklifts Composite	2	6
Tractors/Loaders/Backhoes Composite	1	8

—Vehicle Exhaust
Average Hauling Truck Round Trip Commute (mile): 20 (default)

—Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

—Worker Trips
Average Worker Round Trip Commute (mile): 20 (default)

—Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

—Vendor Trips

Average Vendor Round Trip Commute (mile): 40 (default)

—Vendor Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

30.3.3 Building Construction Phase Emission Factor(s)

—Construction Exhaust Emission Factors (lb/hour) (default)

Cranes Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0845	0.0013	0.6033	0.3865	0.0228	0.0228	0.0076	128.82
Forklifts Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0293	0.0006	0.1458	0.2148	0.0056	0.0056	0.0026	54.462
Tractors/Loaders/Backhoes Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0407	0.0007	0.2505	0.3606	0.0112	0.0112	0.0036	66.890

—Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.278	000.002	000.219	003.276	000.008	000.007		000.023	00320.329
LDGT	000.351	000.003	000.382	004.545	000.010	000.009		000.024	00414.211
HDGV	000.705	000.005	001.074	015.763	000.025	000.022		000.045	00763.488
LDDV	000.122	000.003	000.133	002.396	000.004	000.004		000.008	00309.634
LDDT	000.266	000.004	000.384	004.133	000.007	000.007		000.008	00440.653
HDDV	000.498	000.013	005.110	001.743	000.169	000.156		000.028	01479.227
MC	002.339	000.003	000.821	013.581	000.029	000.025		000.054	00399.711

30.3.4 Building Construction Phase Formula(s)

—Construction Exhaust Emissions per Phase

$CEE_{POL} = (NE * WD * H * EF_{POL})/2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

—Vehicle Exhaust Emissions per Phase

$VMT_{VE} = BA * BH * (0.42/1000) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
BA: Area of Building (ft^2)
BH: Height of Building (ft)
(0.42/1000): Conversion Factor ft^3 to trips (0.42 trip/1000 ft^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM)/2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

—**Worker Trips Emissions per Phase**
$VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM)/2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

—**Vender Trips Emissions per Phase**
$VMT_{VT} = BA * BH * (0.38/1000) * HT$

VMT_{VT}: Vender Trips Vehicle Miles Travel (miles)
BA: Area of Building (ft^2)
BH: Height of Building (ft)
(0.38/1000): Conversion Factor ft^3 to trips (0.38 trip/1000 ft^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VT} * 0.002205 * EF_{POL} * VM)/2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VT}: Vender Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

30.4 Architectural Coatings Phase

30.4.1 Architectural Coatings Phase Timeline Assumptions

—**Phase Start Date**
Start Month: 6
Start Quarter: 1
Start Year: 2021

—Phase Duration
Number of Month: 0
Number of Days: 5

30.4.2 Architectural Coatings Phase Assumptions

—General Architectural Coatings Information
Building Category: Non-Residential
Total Square Footage (ft^2): 1500
Number of Units: N/A

—Architectural Coatings Default Settings
Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

—Worker Trips
Average Worker Round Trip Commute (mile): 20 (default)

—Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

30.4.3 Architectural Coatings Phase Emission Factor(s)

—Worker Trips Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.278	000.002	000.219	003.276	000.008	000.007		000.023	00320.329
LDGT	000.351	000.003	000.382	004.545	000.010	000.009		000.024	00414.211
HDGV	000.705	000.005	001.074	015.763	000.025	000.022		000.045	00763.488
LDDV	000.122	000.003	000.133	002.396	000.004	000.004		000.008	00309.634
LDDT	000.266	000.004	000.384	004.133	000.007	000.007		000.008	00440.653
HDDV	000.498	000.013	005.110	001.743	000.169	000.156		000.028	01479.227
MC	002.339	000.003	000.821	013.581	000.029	000.025		000.054	00399.711

30.4.4 Architectural Coatings Phase Formula(s)

—Worker Trips Emissions per Phase
$VMT_{WT} = (1 * WT * PA)/800$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
1: Conversion Factor person days to trips (1 trip/1 person * day)
WT: Average Worker Round Trip Commute (mile)
PA: Paint Area (ft^2)
800: Conversion Factor ft^2 to person days (1 ft^2/1 person * day)

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM)/2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

—**Off-Gassing Emissions per Phase**
VOC_{AC} = (AB * 2.0 * 0.0116)/2000.0

VOC_{AC}: Architectural Coating VOC Emissions (TONs)
BA: Area of Building (ft^2)
2.0: Conversion Factor total area to coated area (2.0 ft^2 coated area/total area)
0.0116: Emission Factor (lb/ft^2)
2000: Conversion Factor pounds to tons

31. Heating

31.1 General Information & Timeline Assumptions

—**Add or Remove Activity from Baseline?** Add

—**Activity Location**
County: Spokane
Regulatory Area(s): Not in a Regulatory Area

—**Activity Title:** SO09—Building 101 Expansion

—**Activity Description:**
Provide an additional 1,500 ft^2 of building space for the training program conducted at Building 101.

—**Activity Start Date**
Start Month: 7
Start Year: 2021

—**Activity End Date**
Indefinite: Yes
End Month: N/A
End Year: N/A

—**Activity Emissions:**

Pollutant	Emissions Per Year (TONs)
VOC	0.000317
SO_x	0.000035
NO_x	0.005757
CO	0.004836
PM 10	0.000438

Pollutant	Emissions Per Year (TONs)
PM 2.5	0.000438
Pb	0.000000
NH_3	0.000000
CO_2e	6.9

31.2 Heating Assumptions

—**Heating**
Heating Calculation Type: Heat Energy Requirement Method

—**Heat Energy Requirement Method**
Area of floorspace to be heated (ft^2): 1500
Type of fuel: Natural Gas
Type of boiler/furnace: Commercial/Institutional (0.3—9.9 MMBtu/hr)
Heat Value ($MMBtu/ft^3$): 0.00105
Energy Intensity ($MMBtu/ft^2$): 0.0806

—**Default Settings Used:** Yes

—**Boiler/Furnace Usage**
Operating Time Per Year (hours): 900 (default)

31.3 Heating Emission Factor(s)

—**Heating Emission Factors (lb/1000000 scf)**

VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
5.5	0.6	100	84	7.6	7.6			120390

31.4 Heating Formula(s)

—**Heating Fuel Consumption ft^3 per Year**
FC_{HER}= HA * EI/HV/1000000

FC_{HER}: Fuel Consumption for Heat Energy Requirement Method
HA: Area of floorspace to be heated (ft^2)
EI: Energy Intensity Requirement (MMBtu/ft^2)
HV: Heat Value (MMBTU/ft^3)
1000000: Conversion Factor

—**Heating Emissions per Year**
HE_{POL}= FC * EF_{POL}/2000

HE_{POL}: Heating Emission Emissions (TONs)
FC: Fuel Consumption
EF_{POL}: Emission Factor for Pollutant
2000: Conversion Factor pounds to tons

32. Construction/Demolition

32.1 General Information & Timeline Assumptions

—**Activity Location**
County: Spokane
Regulatory Area(s): Not in a Regulatory Area

—**Activity Title:** C01—Indoor Firing Range

—**Activity Description:**
Construct a 12,000 square foot building to house indoor firing range/simulation training.

—**Activity Start Date**
Start Month: 1
Start Month: 2025

—**Activity End Date**
Indefinite: False
End Month: 6
End Month: 2025

—**Activity Emissions:**

Pollutant	Total Emissions (TONs)
VOC	0.181263
SO_x	0.000859
NO_x	0.217521
CO	0.346600
PM 10	0.034844

Pollutant	Total Emissions (TONs)
PM 2.5	0.007221
Pb	0.000000
NH_3	0.000361
CO_2e	83.8

32.1 Site Grading Phase

32.1.1 Site Grading Phase Timeline Assumptions

—Phase Start Date
- **Start Month:** 1
- **Start Quarter:** 1
- **Start Year:** 2025

—Phase Duration
- **Number of Month:** 0
- **Number of Days:** 2

32.1.2 Site Grading Phase Assumptions

—General Site Grading Information
- **Area of Site to be Graded (ft^2):** 15000
- **Amount of Material to be Hauled On-Site (yd^3):** 0
- **Amount of Material to be Hauled Off-Site (yd^3):** 1111

—Site Grading Default Settings
- **Default Settings Used:** Yes
- **Average Day(s) worked per week:** 5 (default)

—Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Graders Composite	1	6
Other Construction Equipment Composite	1	8
Rubber Tired Dozers Composite	1	6
Tractors/Loaders/Backhoes Composite	1	7

—Vehicle Exhaust
- **Average Hauling Truck Capacity (yd^3):** 20 (default)
- **Average Hauling Truck Round Trip Commute (mile):** 20 (default)

—Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

—Worker Trips
- **Average Worker Round Trip Commute (mile):** 20 (default)

—Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

32.1.3 Site Grading Phase Emission Factor(s)

—Construction Exhaust Emission Factors (lb/hour) (default)

Graders Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0676	0.0014	0.3314	0.5695	0.0147	0.0147	0.0061	132.89
Other Construction Equipment Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0442	0.0012	0.2021	0.3473	0.0068	0.0068	0.0039	122.60
Rubber Tired Dozers Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.1671	0.0024	1.0824	0.6620	0.0418	0.0418	0.0150	239.45
Tractors/Loaders/Backhoes Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0335	0.0007	0.1857	0.3586	0.0058	0.0058	0.0030	66.872

—Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.278	000.002	000.219	003.276	000.008	000.007		000.023	00320.329
LDGT	000.351	000.003	000.382	004.545	000.010	000.009		000.024	00414.211
HDGV	000.705	000.005	001.074	015.763	000.025	000.022		000.045	00763.488
LDDV	000.122	000.003	000.133	002.396	000.004	000.004		000.008	00309.634
LDDT	000.266	000.004	000.384	004.133	000.007	000.007		000.008	00440.653
HDDV	000.498	000.013	005.110	001.743	000.169	000.156		000.028	01479.227
MC	002.339	000.003	000.821	013.581	000.029	000.025		000.054	00399.711

32.1.4 Site Grading Phase Formula(s)

—Fugitive Dust Emissions per Phase

$PM10_{FD}$ = (20 * ACRE * WD)/2000

$PM10_{FD}$: Fugitive Dust PM 10 Emissions (TONs)
20: Conversion Factor Acre Day to pounds (20 lb/1 Acre Day)
ACRE: Total acres (acres)
WD: Number of Total Work Days (days)
2000: Conversion Factor pounds to tons

—Construction Exhaust Emissions per Phase

CEE_{POL} = (NE * WD * H * EF_{POL})/2000

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

—**Vehicle Exhaust Emissions per Phase**
$VMT_{VE} = (HA_{OnSite} + HA_{OffSite}) * (1/HC) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
HA_{OnSite}: Amount of Material to be Hauled On-Site (yd^3)
$HA_{OffSite}$: Amount of Material to be Hauled Off-Site (yd^3)
HC: Average Hauling Truck Capacity (yd^3)
(1/HC): Conversion Factor cubic yards to trips (1 trip/HC yd^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM)/2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Vehicle Exhaust On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

—**Worker Trips Emissions per Phase**
$VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM)/2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

32.2 Trenching/Excavating Phase

32.2.1 Trenching/Excavating Phase Timeline Assumptions

—**Phase Start Date**
Start Month: 1
Start Quarter: 1
Start Year: 2025

—**Phase Duration**
Number of Month: 0
Number of Days: 2

32.2.2 Trenching/Excavating Phase Assumptions

—**General Trenching/Excavating Information**
Area of Site to be Trenched/Excavated (ft^2): 15000
Amount of Material to be Hauled On-Site (yd^3): 0
Amount of Material to be Hauled Off-Site (yd^3): 556

—Trenching Default Settings
Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

—Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Excavators Composite	2	8
Other General Industrial Equipment Composite	1	8
Tractors/Loaders/Backhoes Composite	1	8

—Vehicle Exhaust
Average Hauling Truck Capacity (yd^3): 20 (default)
Average Hauling Truck Round Trip Commute (mile): 20 (default)

—Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

—Worker Trips
Average Worker Round Trip Commute (mile): 20 (default)

—Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

32.2.3 Trenching/Excavating Phase Emission Factor(s)

—Construction Exhaust Emission Factors (lb/hour) (default)

Graders Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0676	0.0014	0.3314	0.5695	0.0147	0.0147	0.0061	132.89
Other Construction Equipment Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0442	0.0012	0.2021	0.3473	0.0068	0.0068	0.0039	122.60
Rubber Tired Dozers Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.1671	0.0024	1.0824	0.6620	0.0418	0.0418	0.0150	239.45
Tractors/Loaders/Backhoes Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0335	0.0007	0.1857	0.3586	0.0058	0.0058	0.0030	66.872

—Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.278	000.002	000.219	003.276	000.008	000.007		000.023	00320.329
LDGT	000.351	000.003	000.382	004.545	000.010	000.009		000.024	00414.211
HDGV	000.705	000.005	001.074	015.763	000.025	000.022		000.045	00763.488
LDDV	000.122	000.003	000.133	002.396	000.004	000.004		000.008	00309.634
LDDT	000.266	000.004	000.384	004.133	000.007	000.007		000.008	00440.653
HDDV	000.498	000.013	005.110	001.743	000.169	000.156		000.028	01479.227
MC	002.339	000.003	000.821	013.581	000.029	000.025		000.054	00399.711

32.2.4 Trenching/Excavating Phase Formula(s)

—Fugitive Dust Emissions per Phase
$PM10_{FD} = (20 * ACRE * WD)/2000$

$PM10_{FD}$: Fugitive Dust PM 10 Emissions (TONs)
20: Conversion Factor Acre Day to pounds (20 lb/1 Acre Day)
ACRE: Total acres (acres)
WD: Number of Total Work Days (days)
2000: Conversion Factor pounds to tons

—Construction Exhaust Emissions per Phase
$CEE_{POL} = (NE * WD * H * EF_{POL})/2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

—Vehicle Exhaust Emissions per Phase
$VMT_{VE} = (HA_{OnSite} + HA_{OffSite}) * (1/HC) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
HA_{OnSite}: Amount of Material to be Hauled On-Site (yd^3)
$HA_{OffSite}$: Amount of Material to be Hauled Off-Site (yd^3)
HC: Average Hauling Truck Capacity (yd^3)
(1/HC): Conversion Factor cubic yards to trips (1 trip/HC yd^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM)/2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Vehicle Exhaust On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

—Worker Trips Emissions per Phase
$VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM)/2000

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

32.3 Building Construction Phase

32.3.1 Building Construction Phase Timeline Assumptions

—Phase Start Date
Start Month: 2
Start Quarter: 1
Start Year: 2025

—Phase Duration
Number of Month: 3
Number of Days: 10

32.3.2 Building Construction Phase Assumptions

—General Building Construction Information
Building Category: Office or Industrial
Area of Building (ft^2): 12000
Height of Building (ft): 15
Number of Units: N/A

—Building Construction Default Settings
Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

—Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Cranes Composite	1	4
Forklifts Composite	2	6
Tractors/Loaders/Backhoes Composite	1	8

—Vehicle Exhaust
Average Hauling Truck Round Trip Commute (mile): 20 (default)

—Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

—Worker Trips
Average Worker Round Trip Commute (mile): 20 (default)

—Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

—**Vendor Trips**
Average Vendor Round Trip Commute (mile): 40 (default)

—**Vendor Trips Vehicle Mixture (%)**

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

32.3.3 Building Construction Phase Emission Factor(s)

—**Construction Exhaust Emission Factors (lb/hour) (default)**

Cranes Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0680	0.0013	0.4222	0.3737	0.0143	0.0143	0.0061	128.77
Forklifts Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0236	0.0006	0.0859	0.2147	0.0025	0.0025	0.0021	54.449
Tractors/Loaders/Backhoes Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0335	0.0007	0.1857	0.3586	0.0058	0.0058	0.0030	66.872

—**Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)**

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.278	000.002	000.219	003.276	000.008	000.007		000.023	00320.329
LDGT	000.351	000.003	000.382	004.545	000.010	000.009		000.024	00414.211
HDGV	000.705	000.005	001.074	015.763	000.025	000.022		000.045	00763.488
LDDV	000.122	000.003	000.133	002.396	000.004	000.004		000.008	00309.634
LDDT	000.266	000.004	000.384	004.133	000.007	000.007		000.008	00440.653
HDDV	000.498	000.013	005.110	001.743	000.169	000.156		000.028	01479.227
MC	002.339	000.003	000.821	013.581	000.029	000.025		000.054	00399.711

32.3.4 Building Construction Phase Formula(s)

—**Construction Exhaust Emissions per Phase**
$CEE_{POL} = (NE * WD * H * EF_{POL})/2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

—**Vehicle Exhaust Emissions per Phase**
$VMT_{VE} = BA * BH * (0.42/1000) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
BA: Area of Building (ft^2)
BH: Height of Building (ft)
(0.42/1000): Conversion Factor ft^3 to trips (0.42 trip/1000 ft^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM)/2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

—**Worker Trips Emissions per Phase**
$VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM)/2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

—**Vender Trips Emissions per Phase**
$VMT_{VT} = BA * BH * (0.38/1000) * HT$

VMT_{VT}: Vender Trips Vehicle Miles Travel (miles)
BA: Area of Building (ft^2)
BH: Height of Building (ft)
(0.38/1000): Conversion Factor ft^3 to trips (0.38 trip/1000 ft^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VT} * 0.002205 * EF_{POL} * VM)/2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VT}: Vender Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

32.4 Architectural Coatings Phase

32.4.1 Architectural Coatings Phase Timeline Assumptions

—**Phase Start Date**
Start Month: 6
Start Quarter: 1
Start Year: 2025

—Phase Duration
Number of Month: 0
Number of Days: 5

32.4.2 Architectural Coatings Phase Assumptions

—General Architectural Coatings Information
Building Category: Non-Residential
Total Square Footage (ft^2): 12000
Number of Units: N/A

—Architectural Coatings Default Settings
Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

—Worker Trips
Average Worker Round Trip Commute (mile): 20 (default)

—Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

32.4.3 Architectural Coatings Phase Emission Factor(s)

—Worker Trips Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.278	000.002	000.219	003.276	000.008	000.007		000.023	00320.329
LDGT	000.351	000.003	000.382	004.545	000.010	000.009		000.024	00414.211
HDGV	000.705	000.005	001.074	015.763	000.025	000.022		000.045	00763.488
LDDV	000.122	000.003	000.133	002.396	000.004	000.004		000.008	00309.634
LDDT	000.266	000.004	000.384	004.133	000.007	000.007		000.008	00440.653
HDDV	000.498	000.013	005.110	001.743	000.169	000.156		000.028	01479.227
MC	002.339	000.003	000.821	013.581	000.029	000.025		000.054	00399.711

32.4.4 Architectural Coatings Phase Formula(s)

—Worker Trips Emissions per Phase
$VMT_{WT} = (1 * WT * PA)/800$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
1: Conversion Factor person days to trips (1 trip/1 person * day)
WT: Average Worker Round Trip Commute (mile)
PA: Paint Area (ft^2)
800: Conversion Factor ft^2 to person days (1 ft^2/1 person * day)

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM)/2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

—Off-Gassing Emissions per Phase
VOC_{AC} = (AB * 2.0 * 0.0116)/2000.0

VOC_{AC}: Architectural Coating VOC Emissions (TONs)
BA: Area of Building (ft^2)
2.0: Conversion Factor total area to coated area (2.0 ft^2 coated area/total area)
0.0116: Emission Factor (lb/ft^2)
2000: Conversion Factor pounds to tons

32.5 Paving Phase

32.5.1 Paving Phase Timeline Assumptions

—Phase Start Date
Start Month: 6
Start Quarter: 1
Start Year: 2025

—Phase Duration
Number of Month: 0
Number of Days: 5

32.5.2 Paving Phase Assumptions

—General Paving Information
Paving Area (ft^2): 3000

—Paving Default Settings
Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

—Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Cement and Mortar Mixers Composite	4	6
Pavers Composite	1	7
Rollers Composite	1	7
Tractors/Loaders/Backhoes Composite	1	7

—Vehicle Exhaust
Average Hauling Truck Round Trip Commute (mile): 20 (default)

—Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

—Worker Trips
Average Worker Round Trip Commute (mile): 20 (default)

—Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

32.5.3 Paving Phase Emission Factor(s)

—Construction Exhaust Emission Factors (lb/hour) (default)

Graders Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0676	0.0014	0.3314	0.5695	0.0147	0.0147	0.0061	132.89
Other Construction Equipment Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0442	0.0012	0.2021	0.3473	0.0068	0.0068	0.0039	122.60
Rubber Tired Dozers Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.1671	0.0024	1.0824	0.6620	0.0418	0.0418	0.0150	239.45
Tractors/Loaders/Backhoes Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0335	0.0007	0.1857	0.3586	0.0058	0.0058	0.0030	66.872

—Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**Pb**	**NH_3**	**CO_2e**
LDGV	000.278	000.002	000.219	003.276	000.008	000.007		000.023	00320.329
LDGT	000.351	000.003	000.382	004.545	000.010	000.009		000.024	00414.211
HDGV	000.705	000.005	001.074	015.763	000.025	000.022		000.045	00763.488
LDDV	000.122	000.003	000.133	002.396	000.004	000.004		000.008	00309.634
LDDT	000.266	000.004	000.384	004.133	000.007	000.007		000.008	00440.653
HDDV	000.498	000.013	005.110	001.743	000.169	000.156		000.028	01479.227
MC	002.339	000.003	000.821	013.581	000.029	000.025		000.054	00399.711

32.5.4 Paving Phase Formula(s)

—Construction Exhaust Emissions per Phase

$CEE_{POL} = (NE * WD * H * EF_{POL})/2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

—Vehicle Exhaust Emissions per Phase

$VMT_{VE} = PA * 0.25 * (1/27) * (1/HC) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
PA: Paving Area (ft^2)
0.25: Thickness of Paving Area (ft)
(1/27): Conversion Factor cubic feet to cubic yards (1 yd^3/27 ft^3)
HC: Average Hauling Truck Capacity (yd^3)
(1/HC): Conversion Factor cubic yards to trips (1 trip/HC yd^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM)/2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)

VM: Vehicle Exhaust On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

—**Worker Trips Emissions per Phase**
$VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM)/2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

—**Off-Gassing Emissions per Phase**
$VOC_P = (2.62 * PA)/43560$

VOC_P: Paving VOC Emissions (TONs)
2.62: Emission Factor (lb/acre)
PA: Paving Area (ft^2)
43560: Conversion Factor ft^2 to acre (43560 ft^2/acre)^2/acre)

33. Heating

33.1 General Information & Timeline Assumptions

—**Add or Remove Activity from Baseline?** Add

—**Activity Location**
County: Spokane
Regulatory Area(s): Not in a Regulatory Area

—**Activity Title:** C01—Indoor Firing Range

—**Activity Description:**
Construct a 12,000 square foot building to house indoor firing range/simulation training.

—**Activity Start Date**
Start Month: 7
Start Year: 2025

—**Activity End Date**
Indefinite: Yes
End Month: N/A
End Year: N/A

—**Activity Emissions:**

Pollutant	Emissions Per Year (TONs)
VOC	0.002253
SO_x	0.000246
NO_x	0.040971
CO	0.034416
PM 10	0.003114

Pollutant	Emissions Per Year (TONs)
PM 2.5	0.003114
Pb	0.000000
NH_3	0.000000
CO_2e	49.3

33.2 Heating Assumptions

—**Heating**
Heating Calculation Type: Heat Energy Requirement Method

—**Heat Energy Requirement Method**
Area of floorspace to be heated (ft^2): 12000
Type of fuel: Natural Gas
Type of boiler/furnace: Commercial/Institutional (0.3—9.9 MMBtu/hr)
Heat Value (MMBtu/ft^3): 0.00105
Energy Intensity (MMBtu/ft^2): 0.0717

—**Default Settings Used:** Yes

—**Boiler/Furnace Usage**
Operating Time Per Year (hours): 900 (default)

33.3 Heating Emission Factor(s)

—**Heating Emission Factors (lb/1000000 scf)**

VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
5.5	0.6	100	84	7.6	7.6			120390

33.4 Heating Formula(s)

—**Heating Fuel Consumption ft^3 per Year**
FC_{HER}= HA * EI/HV/1000000

FC_{HER}: Fuel Consumption for Heat Energy Requirement Method
HA: Area of floorspace to be heated (ft^2)
EI: Energy Intensity Requirement (MMBtu/ft^2)
HV: Heat Value (MMBTU/ft^3)
1000000: Conversion Factor

—**Heating Emissions per Year**
HE_{POL}= FC * EF_{POL}/2000

HE_{POL}: Heating Emission Emissions (TONs)
FC: Fuel Consumption
EF_{POL}: Emission Factor for Pollutant
2000: Conversion Factor pounds to tons

34. Emergency Generator

34.1 General Information & Timeline Assumptions

—Add or Remove Activity from Baseline? Add

—Activity Location
County: Spokane
Regulatory Area(s): Not in a Regulatory Area

—Activity Title: C01—Indoor Firing Range

—Activity Description:
Construct a 12,000 square foot building to house indoor firing range/simulation training.

—Activity Start Date
Start Month: 7
Start Year: 2025

—Activity End Date
Indefinite: Yes
End Month: N/A
End Year: N/A

—Activity Emissions:

Pollutant	Emissions Per Year (TONs)
VOC	0.005650
SO_x	0.004759
NO_x	0.023288
CO	0.015552
PM 10	0.005083

Pollutant	Emissions Per Year (TONs)
PM 2.5	0.005083
Pb	0.000000
NH_3	0.000000
CO_2e	2.7

34.2 Emergency Generator Assumptions

—Emergency Generator
Type of Fuel used in Emergency Generator: Diesel
Number of Emergency Generators: 1

—Default Settings Used: Yes

—Emergency Generators Consumption
Emergency Generator's Horsepower: 135 (default)
Average Operating Hours Per Year (hours): 30 (default)

34.3 Emergency Generator Emission Factor(s)

—Emergency Generators Emission Factor (lb/hp-hr)

VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
0.00279	0.00235	0.0115	0.00768	0.00251	0.00251			1.33

34.4 Emergency Generator Formula(s)

—Emergency Generator Emissions per Year

AE_{POL}= (NGEN * HP * OT * EF_{POL})/2000

AE_{POL}: Activity Emissions (TONs per Year)
NGEN: Number of Emergency Generators
HP: Emergency Generator's Horsepower (hp)
OT: Average Operating Hours Per Year (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hp-hr)

35. Construction/Demolition

35.1 General Information & Timeline Assumptions

—Activity Location
County: Spokane
Regulatory Area(s): Not in a Regulatory Area

—Activity Title: C02—Addition to Fitness Center

—Activity Description:
Construct a 2,500 square foot addition to the existing fitness center.

—Activity Start Date
Start Month: 1
Start Month: 2025

—Activity End Date
Indefinite: False
End Month: 6
End Month: 2025

—Activity Emissions:

Pollutant	Total Emissions (TONs)	Pollutant	Total Emissions (TONs)
VOC	0.063831	PM 2.5	0.005457
SO_x	0.000719	Pb	0.000000
NO_x	0.170098	NH_3	0.000227
CO	0.298212	CO_2e	69.6
PM 10	0.007773		

35.1 Site Grading Phase

35.1.1 Site Grading Phase Timeline Assumptions

—Phase Start Date
Start Month: 1
Start Quarter: 1
Start Year: 2025

—Phase Duration
Number of Month: 0
Number of Days: 2

35.1.2 Site Grading Phase Assumptions

—General Site Grading Information
Area of Site to be Graded (ft^2): 2500
Amount of Material to be Hauled On-Site (yd^3): 0
Amount of Material to be Hauled Off-Site (yd^3): 185

—Site Grading Default Settings
Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

—Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Graders Composite	1	6
Other Construction Equipment Composite	1	8
Rubber Tired Dozers Composite	1	6
Tractors/Loaders/Backhoes Composite	1	7

—Vehicle Exhaust
Average Hauling Truck Capacity (yd^3): 20 (default)
Average Hauling Truck Round Trip Commute (mile): 20 (default)

—Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

—Worker Trips
Average Worker Round Trip Commute (mile): 20 (default)

—Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

35.1.3 Site Grading Phase Emission Factor(s)

—Construction Exhaust Emission Factors (lb/hour) (default)

Graders Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0676	0.0014	0.3314	0.5695	0.0147	0.0147	0.0061	132.89
Other Construction Equipment Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0442	0.0012	0.2021	0.3473	0.0068	0.0068	0.0039	122.60
Rubber Tired Dozers Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.1671	0.0024	1.0824	0.6620	0.0418	0.0418	0.0150	239.45
Tractors/Loaders/Backhoes Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0335	0.0007	0.1857	0.3586	0.0058	0.0058	0.0030	66.872

—Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.278	000.002	000.219	003.276	000.008	000.007		000.023	00320.329
LDGT	000.351	000.003	000.382	004.545	000.010	000.009		000.024	00414.211
HDGV	000.705	000.005	001.074	015.763	000.025	000.022		000.045	00763.488
LDDV	000.122	000.003	000.133	002.396	000.004	000.004		000.008	00309.634
LDDT	000.266	000.004	000.384	004.133	000.007	000.007		000.008	00440.653
HDDV	000.498	000.013	005.110	001.743	000.169	000.156		000.028	01479.227
MC	002.339	000.003	000.821	013.581	000.029	000.025		000.054	00399.711

35.1.4 Site Grading Phase Formula(s)

—Fugitive Dust Emissions per Phase
$PM10_{FD} = (20 * ACRE * WD)/2000$

$PM10_{FD}$: Fugitive Dust PM 10 Emissions (TONs)
20: Conversion Factor Acre Day to pounds (20 lb/1 Acre Day)
ACRE: Total acres (acres)
WD: Number of Total Work Days (days)
2000: Conversion Factor pounds to tons

—Construction Exhaust Emissions per Phase
$CEE_{POL} = (NE * WD * H * EF_{POL})/2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

—Vehicle Exhaust Emissions per Phase
$VMT_{VE} = (HA_{OnSite} + HA_{OffSite}) * (1/HC) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
HA_{OnSite}: Amount of Material to be Hauled On-Site (yd^3)
$HA_{OffSite}$: Amount of Material to be Hauled Off-Site (yd^3)
HC: Average Hauling Truck Capacity (yd^3)
(1/HC): Conversion Factor cubic yards to trips (1 trip/HC yd^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM)/2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Vehicle Exhaust On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

—Worker Trips Emissions per Phase
$VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM)/2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

35.2 Building Construction Phase

35.2.1 Building Construction Phase Timeline Assumptions

—Phase Start Date
Start Month: 2
Start Quarter: 1
Start Year: 2025

—Phase Duration
Number of Month: 3
Number of Days: 10

35.2.2 Building Construction Phase Assumptions

—General Building Construction Information
Building Category: Office or Industrial
Area of Building (ft^2): 2500
Height of Building (ft): 15
Number of Units: N/A

—Building Construction Default Settings
Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

—Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Cranes Composite	1	4
Forklifts Composite	2	6
Tractors/Loaders/Backhoes Composite	1	8

—Vehicle Exhaust
Average Hauling Truck Round Trip Commute (mile): 20 (default)

—Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

—Worker Trips
Average Worker Round Trip Commute (mile): 20 (default)

—Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

—Vendor Trips
Average Vendor Round Trip Commute (mile): 40 (default)

—Vendor Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

35.2.3 Building Construction Phase Emission Factor(s)

—Construction Exhaust Emission Factors (lb/hour) (default)

Cranes Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0680	0.0013	0.4222	0.3737	0.0143	0.0143	0.0061	128.77
Forklifts Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0236	0.0006	0.0859	0.2147	0.0025	0.0025	0.0021	54.449
Tractors/Loaders/Backhoes Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0335	0.0007	0.1857	0.3586	0.0058	0.0058	0.0030	66.872

—Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.278	000.002	000.219	003.276	000.008	000.007		000.023	00320.329
LDGT	000.351	000.003	000.382	004.545	000.010	000.009		000.024	00414.211
HDGV	000.705	000.005	001.074	015.763	000.025	000.022		000.045	00763.488
LDDV	000.122	000.003	000.133	002.396	000.004	000.004		000.008	00309.634
LDDT	000.266	000.004	000.384	004.133	000.007	000.007		000.008	00440.653
HDDV	000.498	000.013	005.110	001.743	000.169	000.156		000.028	01479.227
MC	002.339	000.003	000.821	013.581	000.029	000.025		000.054	00399.711

35.2.4 Building Construction Phase Formula(s)

—Construction Exhaust Emissions per Phase
$CEE_{POL} = (NE * WD * H * EF_{POL})/2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

—Vehicle Exhaust Emissions per Phase
VMT_{VE} = BA * BH * (0.42/1000) * HT

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
BA: Area of Building (ft^2)
BH: Height of Building (ft)
(0.42/1000): Conversion Factor ft^3 to trips (0.42 trip/1000 ft^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM)/2000

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

—Worker Trips Emissions per Phase
VMT_{WT} = WD * WT * 1.25 * NE

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM)/2000

V_{POL}: Vehicle Emissions (TONs)
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

—Vender Trips Emissions per Phase
VMT_{VT} = BA * BH * (0.38/1000) * HT

VMT_{VT}: Vender Trips Vehicle Miles Travel (miles)
BA: Area of Building (ft^2)
BH: Height of Building (ft)
(0.38/1000): Conversion Factor ft^3 to trips (0.38 trip/1000 ft^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

V_{POL} = (VMT_{VT} * 0.002205 * EF_{POL} * VM)/2000

V_{POL}: Vehicle Emissions (TONs)
VMT_{VT}: Vender Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

35.3 Architectural Coatings Phase

35.3.1 Architectural Coatings Phase Timeline Assumptions

—Phase Start Date
Start Month: 6
Start Quarter: 1
Start Year: 2025

—Phase Duration
Number of Month: 0
Number of Days: 5

35.3.2 Architectural Coatings Phase Assumptions

—General Architectural Coatings Information
Building Category: Non-Residential
Total Square Footage (ft^2): 2500
Number of Units: N/A

—Architectural Coatings Default Settings
Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

—Worker Trips
Average Worker Round Trip Commute (mile): 20 (default)

—Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

35.3.3 Architectural Coatings Phase Emission Factor(s)

—Worker Trips Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.278	000.002	000.219	003.276	000.008	000.007		000.023	00320.329
LDGT	000.351	000.003	000.382	004.545	000.010	000.009		000.024	00414.211
HDGV	000.705	000.005	001.074	015.763	000.025	000.022		000.045	00763.488
LDDV	000.122	000.003	000.133	002.396	000.004	000.004		000.008	00309.634
LDDT	000.266	000.004	000.384	004.133	000.007	000.007		000.008	00440.653
HDDV	000.498	000.013	005.110	001.743	000.169	000.156		000.028	01479.227
MC	002.339	000.003	000.821	013.581	000.029	000.025		000.054	00399.711

35.3.4 Architectural Coatings Phase Formula(s)

—Worker Trips Emissions per Phase
$VMT_{WT} = (1 * WT * PA)/800$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
1: Conversion Factor person days to trips (1 trip/1 person * day)
WT: Average Worker Round Trip Commute (mile)
PA: Paint Area (ft^2)
800: Conversion Factor ft^2 to person days (1 ft^2/1 person * day)

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM)/2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

—**Off-Gassing Emissions per Phase**
VOC_{AC} = (AB * 2.0 * 0.0116)/2000.0

VOC_{AC}: Architectural Coating VOC Emissions (TONs)
BA: Area of Building (ft^2)
2.0: Conversion Factor total area to coated area (2.0 ft^2 coated area/total area)
0.0116: Emission Factor (lb/ft^2)
2000: Conversion Factor pounds to tons

36. Heating

36.1 General Information & Timeline Assumptions

—**Add or Remove Activity from Baseline?** Add

—**Activity Location**
County: Spokane
Regulatory Area(s): Not in a Regulatory Area

—**Activity Title:** C02—Addition to Fitness Center

—**Activity Description:**
Construct a 2,500 square foot addition to the existing fitness center.

—**Activity Start Date**
Start Month: 7
Start Year: 2025

—**Activity End Date**
Indefinite: Yes
End Month: N/A
End Year: N/A

—**Activity Emissions:**

Pollutant	Emissions Per Year (TONs)
VOC	0.000528
SO_x	0.000058
NO_x	0.009595
CO	0.008060
PM 10	0.000729

Pollutant	Emissions Per Year (TONs)
PM 2.5	0.000729
Pb	0.000000
NH_3	0.000000
CO_2e	11.6

36.2 Heating Assumptions

—**Heating**
Heating Calculation Type: Heat Energy Requirement Method

—**Heat Energy Requirement Method**
Area of floorspace to be heated (ft^2): 2500
Type of fuel: Natural Gas
Type of boiler/furnace: Commercial/Institutional (0.3—9.9 MMBtu/hr)
Heat Value (MMBtu/ft^3): 0.00105
Energy Intensity (MMBtu/ft^2): 0.0806

—**Default Settings Used:** Yes

—**Boiler/Furnace Usage**
Operating Time Per Year (hours): 900 (default)

36.3 Heating Emission Factor(s)

—**Heating Emission Factors (lb/1000000 scf)**

VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
5.5	0.6	100	84	7.6	7.6			120390

36.4 Heating Formula(s)

—**Heating Fuel Consumption ft^3 per Year**
FC_{HER}= HA * EI/HV/1000000

FC_{HER}: Fuel Consumption for Heat Energy Requirement Method
HA: Area of floorspace to be heated (ft^2)
EI: Energy Intensity Requirement (MMBtu/ft^2)
HV: Heat Value (MMBTU/ft^3)
1000000: Conversion Factor

—**Heating Emissions per Year**
HE_{POL}= FC * EF_{POL}/2000

HE_{POL}: Heating Emission Emissions (TONs)
FC: Fuel Consumption
EF_{POL}: Emission Factor for Pollutant
2000: Conversion Factor pounds to tons

37. Construction/Demolition

37.1 General Information & Timeline Assumptions

—**Activity Location**
County: Spokane
Regulatory Area(s): Not in a Regulatory Area

—**Activity Title:** C03—Heritage Observation Center

—**Activity Description:**
Construct a 1,250 square foot observation center on the existing foundation of Building 5.

—Activity Start Date
Start Month: 1
Start Month: 2025

—Activity End Date
Indefinite: False
End Month: 6
End Month: 2025

—Activity Emissions:

Pollutant	Total Emissions (TONs)
VOC	0.054262
SO_x	0.000800
NO_x	0.193980
CO	0.339410
PM 10	0.007803

Pollutant	Total Emissions (TONs)
PM 2.5	0.006502
Pb	0.000000
NH_3	0.000237
CO_2e	77.1

37.1 Site Grading Phase

37.1.1 Site Grading Phase Timeline Assumptions

—Phase Start Date
Start Month: 1
Start Quarter: 1
Start Year: 2025

—Phase Duration
Number of Month: 0
Number of Days: 2

37.1.2 Site Grading Phase Assumptions

—General Site Grading Information
Area of Site to be Graded (ft^2): 700
Amount of Material to be Hauled On-Site (yd^3): 0
Amount of Material to be Hauled Off-Site (yd^3): 52

—Site Grading Default Settings
Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

—Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Graders Composite	1	6
Other Construction Equipment Composite	1	8
Rubber Tired Dozers Composite	1	6
Tractors/Loaders/Backhoes Composite	1	7

—Vehicle Exhaust
Average Hauling Truck Capacity (yd^3): 20 (default)
Average Hauling Truck Round Trip Commute (mile): 20 (default)

—Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

—Worker Trips
Average Worker Round Trip Commute (mile): 20 (default)

—Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

37.1.3 Site Grading Phase Emission Factor(s)

—Construction Exhaust Emission Factors (lb/hour) (default)

Graders Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0676	0.0014	0.3314	0.5695	0.0147	0.0147	0.0061	132.89
Other Construction Equipment Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0442	0.0012	0.2021	0.3473	0.0068	0.0068	0.0039	122.60
Rubber Tired Dozers Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.1671	0.0024	1.0824	0.6620	0.0418	0.0418	0.0150	239.45
Tractors/Loaders/Backhoes Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0335	0.0007	0.1857	0.3586	0.0058	0.0058	0.0030	66.872

—Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.278	000.002	000.219	003.276	000.008	000.007		000.023	00320.329
LDGT	000.351	000.003	000.382	004.545	000.010	000.009		000.024	00414.211
HDGV	000.705	000.005	001.074	015.763	000.025	000.022		000.045	00763.488
LDDV	000.122	000.003	000.133	002.396	000.004	000.004		000.008	00309.634
LDDT	000.266	000.004	000.384	004.133	000.007	000.007		000.008	00440.653
HDDV	000.498	000.013	005.110	001.743	000.169	000.156		000.028	01479.227
MC	002.339	000.003	000.821	013.581	000.029	000.025		000.054	00399.711

37.1.4 Site Grading Phase Formula(s)

—Fugitive Dust Emissions per Phase
$PM10_{FD}$ = (20 * ACRE * WD)/2000

$PM10_{FD}$: Fugitive Dust PM 10 Emissions (TONs)
20: Conversion Factor Acre Day to pounds (20 lb/1 Acre Day)
ACRE: Total acres (acres)
WD: Number of Total Work Days (days)
2000: Conversion Factor pounds to tons

—Construction Exhaust Emissions per Phase
$CEE_{POL} = (NE * WD * H * EF_{POL})/2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

—Vehicle Exhaust Emissions per Phase
$VMT_{VE} = (HA_{OnSite} + HA_{OffSite}) * (1/HC) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
HA_{OnSite}: Amount of Material to be Hauled On-Site (yd^3)
$HA_{OffSite}$: Amount of Material to be Hauled Off-Site (yd^3)
HC: Average Hauling Truck Capacity (yd^3)
(1/HC): Conversion Factor cubic yards to trips (1 trip/HC yd^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM)/2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Vehicle Exhaust On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

—Worker Trips Emissions per Phase
$VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM)/2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

37.2 Trenching/Excavating Phase

37.2.1 Trenching/Excavating Phase Timeline Assumptions

—Phase Start Date
Start Month: 1
Start Quarter: 1
Start Year: 2025

—Phase Duration
Number of Month: 0
Number of Days: 2

37.2.2 Trenching/Excavating Phase Assumptions

—General Trenching/Excavating Information
Area of Site to be Trenched/Excavated (ft^2): 700
Amount of Material to be Hauled On-Site (yd^3): 0
Amount of Material to be Hauled Off-Site (yd^3): 26

—Trenching Default Settings
Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

—Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Excavators Composite	2	8
Other General Industrial Equipment Composite	1	8
Tractors/Loaders/Backhoes Composite	1	8

—Vehicle Exhaust
Average Hauling Truck Capacity (yd^3): 20 (default)
Average Hauling Truck Round Trip Commute (mile): 20 (default)

—Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

—Worker Trips
Average Worker Round Trip Commute (mile): 20 (default)

—Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

37.2.3 Trenching/Excavating Phase Emission Factor(s)

—Construction Exhaust Emission Factors (lb/hour) (default)

Graders Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0676	0.0014	0.3314	0.5695	0.0147	0.0147	0.0061	132.89
Other Construction Equipment Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0442	0.0012	0.2021	0.3473	0.0068	0.0068	0.0039	122.60
Rubber Tired Dozers Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.1671	0.0024	1.0824	0.6620	0.0418	0.0418	0.0150	239.45
Tractors/Loaders/Backhoes Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0335	0.0007	0.1857	0.3586	0.0058	0.0058	0.0030	66.872

—Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**Pb**	**NH_3**	**CO_2e**
LDGV	000.278	000.002	000.219	003.276	000.008	000.007		000.023	00320.329
LDGT	000.351	000.003	000.382	004.545	000.010	000.009		000.024	00414.211
HDGV	000.705	000.005	001.074	015.763	000.025	000.022		000.045	00763.488
LDDV	000.122	000.003	000.133	002.396	000.004	000.004		000.008	00309.634
LDDT	000.266	000.004	000.384	004.133	000.007	000.007		000.008	00440.653
HDDV	000.498	000.013	005.110	001.743	000.169	000.156		000.028	01479.227
MC	002.339	000.003	000.821	013.581	000.029	000.025		000.054	00399.711

37.2.4 Trenching/Excavating Phase Formula(s)

—Fugitive Dust Emissions per Phase
$PM10_{FD}$ = (20 * ACRE * WD)/2000

$PM10_{FD}$: Fugitive Dust PM 10 Emissions (TONs)
20: Conversion Factor Acre Day to pounds (20 lb/1 Acre Day)
ACRE: Total acres (acres)
WD: Number of Total Work Days (days)
2000: Conversion Factor pounds to tons

—Construction Exhaust Emissions per Phase
CEE_{POL} = (NE * WD * H * EF_{POL})/2000

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

—Vehicle Exhaust Emissions per Phase
$VMT_{VE} = (HA_{OnSite} + HA_{OffSite}) * (1/HC) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
HA_{OnSite}: Amount of Material to be Hauled On-Site (yd^3)
$HA_{OffSite}$: Amount of Material to be Hauled Off-Site (yd^3)
HC: Average Hauling Truck Capacity (yd^3)
(1/HC): Conversion Factor cubic yards to trips (1 trip/HC yd^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM)/2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Vehicle Exhaust On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

—Worker Trips Emissions per Phase
$VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM)/2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

37.3 Building Construction Phase

37.3.1 Building Construction Phase Timeline Assumptions

—Phase Start Date
Start Month: 2
Start Quarter: 1
Start Year: 2025

—Phase Duration
Number of Month: 3
Number of Days: 10

37.3.2 Building Construction Phase Assumptions

—General Building Construction Information
Building Category: Office or Industrial
Area of Building (ft^2): 1250
Height of Building (ft): 15
Number of Units: N/A

—Building Construction Default Settings
Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

—Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Cranes Composite	1	4
Forklifts Composite	2	6
Tractors/Loaders/Backhoes Composite	1	8

—Vehicle Exhaust
Average Hauling Truck Round Trip Commute (mile): 20 (default)

—Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

—Worker Trips
Average Worker Round Trip Commute (mile): 20 (default)

—Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

—Vendor Trips
Average Vendor Round Trip Commute (mile): 40 (default)

—Vendor Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

37.3.3 Building Construction Phase Emission Factor(s)

—Construction Exhaust Emission Factors (lb/hour) (default)

Cranes Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0680	0.0013	0.4222	0.3737	0.0143	0.0143	0.0061	128.77
Forklifts Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0236	0.0006	0.0859	0.2147	0.0025	0.0025	0.0021	54.449
Tractors/Loaders/Backhoes Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0335	0.0007	0.1857	0.3586	0.0058	0.0058	0.0030	66.872

—Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.278	000.002	000.219	003.276	000.008	000.007		000.023	00320.329
LDGT	000.351	000.003	000.382	004.545	000.010	000.009		000.024	00414.211
HDGV	000.705	000.005	001.074	015.763	000.025	000.022		000.045	00763.488
LDDV	000.122	000.003	000.133	002.396	000.004	000.004		000.008	00309.634
LDDT	000.266	000.004	000.384	004.133	000.007	000.007		000.008	00440.653
HDDV	000.498	000.013	005.110	001.743	000.169	000.156		000.028	01479.227
MC	002.339	000.003	000.821	013.581	000.029	000.025		000.054	00399.711

37.3.4 Building Construction Phase Formula(s)

—Construction Exhaust Emissions per Phase
$CEE_{POL} = (NE * WD * H * EF_{POL})/2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

—Vehicle Exhaust Emissions per Phase
$VMT_{VE} = BA * BH * (0.42/1000) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
BA: Area of Building (ft^2)
BH: Height of Building (ft)
(0.42/1000): Conversion Factor ft^3 to trips (0.42 trip/1000 ft^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM)/2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

—Worker Trips Emissions per Phase
$VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM)/2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

—Vender Trips Emissions per Phase
$VMT_{VT} = BA * BH * (0.38/1000) * HT$

VMT_{VT}: Vender Trips Vehicle Miles Travel (miles)
BA: Area of Building (ft^2)
BH: Height of Building (ft)
(0.38/1000): Conversion Factor ft^3 to trips (0.38 trip/1000 ft^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VT} * 0.002205 * EF_{POL} * VM)/2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VT}: Vender Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

37.4 Architectural Coatings Phase

37.4.1 Architectural Coatings Phase Timeline Assumptions

—Phase Start Date
Start Month: 6
Start Quarter: 1
Start Year: 2025

—Phase Duration
Number of Month: 0
Number of Days: 5

37.4.2 Architectural Coatings Phase Assumptions

—General Architectural Coatings Information
Building Category: Non-Residential
Total Square Footage (ft^2): 1250
Number of Units: N/A

—Architectural Coatings Default Settings
Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

—**Worker Trips**
Average Worker Round Trip Commute (mile): 20 (default)

—**Worker Trips Vehicle Mixture (%)**

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

37.4.3 Architectural Coatings Phase Emission Factor(s)

—**Worker Trips Emission Factors (grams/mile)**

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.278	000.002	000.219	003.276	000.008	000.007		000.023	00320.329
LDGT	000.351	000.003	000.382	004.545	000.010	000.009		000.024	00414.211
HDGV	000.705	000.005	001.074	015.763	000.025	000.022		000.045	00763.488
LDDV	000.122	000.003	000.133	002.396	000.004	000.004		000.008	00309.634
LDDT	000.266	000.004	000.384	004.133	000.007	000.007		000.008	00440.653
HDDV	000.498	000.013	005.110	001.743	000.169	000.156		000.028	01479.227
MC	002.339	000.003	000.821	013.581	000.029	000.025		000.054	00399.711

37.4.4 Architectural Coatings Phase Formula(s)

—**Worker Trips Emissions per Phase**
$VMT_{WT} = (1 * WT * PA)/800$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
1: Conversion Factor person days to trips (1 trip/1 person * day)
WT: Average Worker Round Trip Commute (mile)
PA: Paint Area (ft^2)
800: Conversion Factor ft^2 to person days (1 ft^2/1 person * day)

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM)/2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

—**Off-Gassing Emissions per Phase**
$VOC_{AC} = (AB * 2.0 * 0.0116)/2000.0$

VOC_{AC}: Architectural Coating VOC Emissions (TONs)
BA: Area of Building (ft^2)
2.0: Conversion Factor total area to coated area (2.0 ft^2 coated area/total area)
0.0116: Emission Factor (lb/ft^2)
2000: Conversion Factor pounds to tons

37.5 Paving Phase

37.5.1 Paving Phase Timeline Assumptions

—Phase Start Date
Start Month: 6
Start Quarter: 1
Start Year: 2025

—Phase Duration
Number of Month: 0
Number of Days: 5

37.5.2 Paving Phase Assumptions

—General Paving Information
Paving Area (ft^2): 700

—Paving Default Settings
Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

—Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Cement and Mortar Mixers Composite	4	6
Pavers Composite	1	7
Rollers Composite	1	7
Tractors/Loaders/Backhoes Composite	1	7

—Vehicle Exhaust
Average Hauling Truck Round Trip Commute (mile): 20 (default)

—Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

—Worker Trips
Average Worker Round Trip Commute (mile): 20 (default)

—Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

37.5.3 Paving Phase Emission Factor(s)

—Construction Exhaust Emission Factors (lb/hour) (default)

Graders Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0676	0.0014	0.3314	0.5695	0.0147	0.0147	0.0061	132.89
Other Construction Equipment Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0442	0.0012	0.2021	0.3473	0.0068	0.0068	0.0039	122.60
Rubber Tired Dozers Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.1671	0.0024	1.0824	0.6620	0.0418	0.0418	0.0150	239.45
Tractors/Loaders/Backhoes Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0335	0.0007	0.1857	0.3586	0.0058	0.0058	0.0030	66.872

—Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**Pb**	**NH_3**	**CO_2e**
LDGV	000.278	000.002	000.219	003.276	000.008	000.007		000.023	00320.329
LDGT	000.351	000.003	000.382	004.545	000.010	000.009		000.024	00414.211
HDGV	000.705	000.005	001.074	015.763	000.025	000.022		000.045	00763.488
LDDV	000.122	000.003	000.133	002.396	000.004	000.004		000.008	00309.634
LDDT	000.266	000.004	000.384	004.133	000.007	000.007		000.008	00440.653
HDDV	000.498	000.013	005.110	001.743	000.169	000.156		000.028	01479.227
MC	002.339	000.003	000.821	013.581	000.029	000.025		000.054	00399.711

37.5.4 Paving Phase Formula(s)

—Construction Exhaust Emissions per Phase

$CEE_{POL} = (NE * WD * H * EF_{POL})/2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

—Vehicle Exhaust Emissions per Phase

$VMT_{VE} = PA * 0.25 * (1/27) * (1/HC) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
PA: Paving Area (ft^2)
0.25: Thickness of Paving Area (ft)
(1/27): Conversion Factor cubic feet to cubic yards (1 yd^3/27 ft^3)
HC: Average Hauling Truck Capacity (yd^3)
(1/HC): Conversion Factor cubic yards to trips (1 trip/HC yd^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM)/2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Vehicle Exhaust On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

—**Worker Trips Emissions per Phase**
$VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM)/2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

—**Off-Gassing Emissions per Phase**
$VOC_P = (2.62 * PA)/43560$

VOC_P: Paving VOC Emissions (TONs)
2.62: Emission Factor (lb/acre)
PA: Paving Area (ft^2)
43560: Conversion Factor ft^2 to acre (43560 ft^2/acre)^2/acre)

38. Heating

38.1 General Information & Timeline Assumptions

—**Add or Remove Activity from Baseline?** Add

—**Activity Location**
County: Spokane
Regulatory Area(s): Not in a Regulatory Area

—**Activity Title:** C03—Heritage Observation Center

—**Activity Description:**
Construct a 1,250 square foot observation center on the existing foundation of Building 5.

—**Activity Start Date**
Start Month: 7
Start Year: 2025

—Activity End Date
Indefinite: Yes
End Month: N/A
End Year: N/A

—Activity Emissions:

Pollutant	Emissions Per Year (TONs)
VOC	0.000264
SO_x	0.000029
NO_x	0.004798
CO	0.004030
PM 10	0.000365

Pollutant	Emissions Per Year (TONs)
PM 2.5	0.000365
Pb	0.000000
NH_3	0.000000
CO_2e	5.8

38.2 Heating Assumptions

—Heating
Heating Calculation Type: Heat Energy Requirement Method

—Heat Energy Requirement Method
Area of floorspace to be heated (ft^2): 1250
Type of fuel: Natural Gas
Type of boiler/furnace: Commercial/Institutional (0.3—9.9 MMBtu/hr)
Heat Value (MMBtu/ft^3): 0.00105
Energy Intensity (MMBtu/ft^2): 0.0806

—Default Settings Used: Yes

—Boiler/Furnace Usage
Operating Time Per Year (hours): 900 (default)

38.3 Heating Emission Factor(s)

—Heating Emission Factors (lb/1000000 scf)

VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
5.5	0.6	100	84	7.6	7.6			120390

38.4 Heating Formula(s)

—Heating Fuel Consumption ft^3 per Year
FC_{HER}= HA * EI/HV/1000000

FC_{HER}: Fuel Consumption for Heat Energy Requirement Method
HA: Area of floorspace to be heated (ft^2)
EI: Energy Intensity Requirement (MMBtu/ft^2)
HV: Heat Value (MMBTU/ft^3)
1000000: Conversion Factor

—Heating Emissions per Year
HE_{POL}= FC * EF_{POL}/2000

HE_{POL}: Heating Emission Emissions (TONs)
FC: Fuel Consumption
EF_{POL}: Emission Factor for Pollutant
2000: Conversion Factor pounds to tons

39. Construction/Demolition

39.1 General Information & Timeline Assumptions

—Activity Location
County: Spokane
Regulatory Area(s): Not in a Regulatory Area

—Activity Title: C04—Upgrade Potable Water System

—Activity Description:
Upgrade the potable water system serving White Bluff, to include a new aboveground tank and pump/chlorination house.

—Activity Start Date
Start Month: 1
Start Month: 2024

—Activity End Date
Indefinite: False
End Month: 6
End Month: 2024

—Activity Emissions:

Pollutant	Total Emissions (TONs)
VOC	0.052517
SO_x	0.000773
NO_x	0.200154
CO	0.314471
PM 10	0.034329

Pollutant	Total Emissions (TONs)
PM 2.5	0.006746
Pb	0.000000
NH_3	0.000255
CO_2e	74.9

39.1 Site Grading Phase

39.1.1 Site Grading Phase Timeline Assumptions

—Phase Start Date
Start Month: 1
Start Quarter: 1
Start Year: 2024

—Phase Duration
Number of Month: 0
Number of Days: 2

39.1.2 Site Grading Phase Assumptions

—General Site Grading Information
Area of Site to be Graded (ft^2): 15000
Amount of Material to be Hauled On-Site (yd^3): 0
Amount of Material to be Hauled Off-Site (yd^3): 1111

—Site Grading Default Settings
Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

—Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Graders Composite	1	6
Other Construction Equipment Composite	1	8
Rubber Tired Dozers Composite	1	6
Tractors/Loaders/Backhoes Composite	1	7

—Vehicle Exhaust

Average Hauling Truck Capacity (yd^3): 20 (default)
Average Hauling Truck Round Trip Commute (mile): 20 (default)

—Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

—Worker Trips

Average Worker Round Trip Commute (mile): 20 (default)

—Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

39.1.3 Site Grading Phase Emission Factor(s)

—Construction Exhaust Emission Factors (lb/hour) (default)

Graders Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0714	0.0014	0.3708	0.5706	0.0167	0.0167	0.0064	132.90
Other Construction Equipment Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0461	0.0012	0.2243	0.3477	0.0079	0.0079	0.0041	122.61
Rubber Tired Dozers Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.1747	0.0024	1.1695	0.6834	0.0454	0.0454	0.0157	239.47
Tractors/Loaders/Backhoes Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0348	0.0007	0.1980	0.3589	0.0068	0.0068	0.0031	66.875

—Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.278	000.002	000.219	003.276	000.008	000.007		000.023	00320.329
LDGT	000.351	000.003	000.382	004.545	000.010	000.009		000.024	00414.211
HDGV	000.705	000.005	001.074	015.763	000.025	000.022		000.045	00763.488
LDDV	000.122	000.003	000.133	002.396	000.004	000.004		000.008	00309.634
LDDT	000.266	000.004	000.384	004.133	000.007	000.007		000.008	00440.653
HDDV	000.498	000.013	005.110	001.743	000.169	000.156		000.028	01479.227
MC	002.339	000.003	000.821	013.581	000.029	000.025		000.054	00399.711

39.1.4 Site Grading Phase Formula(s)

—Fugitive Dust Emissions per Phase
$PM10_{FD}$ = (20 * ACRE * WD)/2000

$PM10_{FD}$: Fugitive Dust PM 10 Emissions (TONs)
20: Conversion Factor Acre Day to pounds (20 lb/1 Acre Day)
ACRE: Total acres (acres)
WD: Number of Total Work Days (days)
2000: Conversion Factor pounds to tons

—Construction Exhaust Emissions per Phase
CEE_{POL} = (NE * WD * H * EF_{POL})/2000

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

—Vehicle Exhaust Emissions per Phase
VMT_{VE} = (HA_{OnSite} + $HA_{OffSite}$) * (1/HC) * HT

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
HA_{OnSite}: Amount of Material to be Hauled On-Site (yd^3)
$HA_{OffSite}$: Amount of Material to be Hauled Off-Site (yd^3)
HC: Average Hauling Truck Capacity (yd^3)
(1/HC): Conversion Factor cubic yards to trips (1 trip/HC yd^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM)/2000

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Vehicle Exhaust On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

—Worker Trips Emissions per Phase
VMT_{WT} = WD * WT * 1.25 * NE

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM)/2000

V_{POL}: Vehicle Emissions (TONs)
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

39.2 Trenching/Excavating Phase

39.2.1 Trenching/Excavating Phase Timeline Assumptions

—Phase Start Date
Start Month: 1
Start Quarter: 1
Start Year: 2024

—Phase Duration
Number of Month: 0
Number of Days: 2

39.2.2 Trenching/Excavating Phase Assumptions

—General Trenching/Excavating Information
Area of Site to be Trenched/Excavated (ft^2): 15000
Amount of Material to be Hauled On-Site (yd^3): 0
Amount of Material to be Hauled Off-Site (yd^3): 556

—Trenching Default Settings
Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

—Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Excavators Composite	2	8
Other General Industrial Equipment Composite	1	8
Tractors/Loaders/Backhoes Composite	1	8

—Vehicle Exhaust
Average Hauling Truck Capacity (yd^3): 20 (default)
Average Hauling Truck Round Trip Commute (mile): 20 (default)

—Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

—Worker Trips
Average Worker Round Trip Commute (mile): 20 (default)

—Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

39.2.3 Trenching/Excavating Phase Emission Factor(s)

—Construction Exhaust Emission Factors (lb/hour) (default)

Graders Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0714	0.0014	0.3708	0.5706	0.0167	0.0167	0.0064	132.90
Other Construction Equipment Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0461	0.0012	0.2243	0.3477	0.0079	0.0079	0.0041	122.61
Rubber Tired Dozers Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.1747	0.0024	1.1695	0.6834	0.0454	0.0454	0.0157	239.47
Tractors/Loaders/Backhoes Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0348	0.0007	0.1980	0.3589	0.0068	0.0068	0.0031	66.875

—Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.278	000.002	000.219	003.276	000.008	000.007		000.023	00320.329
LDGT	000.351	000.003	000.382	004.545	000.010	000.009		000.024	00414.211
HDGV	000.705	000.005	001.074	015.763	000.025	000.022		000.045	00763.488
LDDV	000.122	000.003	000.133	002.396	000.004	000.004		000.008	00309.634
LDDT	000.266	000.004	000.384	004.133	000.007	000.007		000.008	00440.653
HDDV	000.498	000.013	005.110	001.743	000.169	000.156		000.028	01479.227
MC	002.339	000.003	000.821	013.581	000.029	000.025		000.054	00399.711

39.2.4 Trenching/Excavating Phase Formula(s)

—Fugitive Dust Emissions per Phase
$PM10_{FD}$ = (20 * ACRE * WD)/2000

$PM10_{FD}$: Fugitive Dust PM 10 Emissions (TONs)
20: Conversion Factor Acre Day to pounds (20 lb/1 Acre Day)
ACRE: Total acres (acres)
WD: Number of Total Work Days (days)
2000: Conversion Factor pounds to tons

—Construction Exhaust Emissions per Phase
CEE_{POL} = (NE * WD * H * EF_{POL})/2000

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

—**Vehicle Exhaust Emissions per Phase**
$VMT_{VE} = (HA_{OnSite} + HA_{OffSite}) * (1/HC) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
HA_{OnSite}: Amount of Material to be Hauled On-Site (yd^3)
$HA_{OffSite}$: Amount of Material to be Hauled Off-Site (yd^3)
HC: Average Hauling Truck Capacity (yd^3)
(1/HC): Conversion Factor cubic yards to trips (1 trip/HC yd^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM)/2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Vehicle Exhaust On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

—**Worker Trips Emissions per Phase**
$VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM)/2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

39.3 Building Construction Phase

39.3.1 Building Construction Phase Timeline Assumptions

—**Phase Start Date**
Start Month: 2
Start Quarter: 1
Start Year: 2024

—**Phase Duration**
Number of Month: 3
Number of Days: 10

39.3.2 Building Construction Phase Assumptions

—General Building Construction Information
Building Category: Office or Industrial
Area of Building (ft^2): 1200
Height of Building (ft): 10
Number of Units: N/A

—Building Construction Default Settings
Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

—Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Cranes Composite	1	4
Forklifts Composite	2	6
Tractors/Loaders/Backhoes Composite	1	8

—Vehicle Exhaust
Average Hauling Truck Round Trip Commute (mile): 20 (default)

—Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

—Worker Trips
Average Worker Round Trip Commute (mile): 20 (default)

—Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

—Vendor Trips
Average Vendor Round Trip Commute (mile): 40 (default)

—Vendor Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

39.3.3 Building Construction Phase Emission Factor(s)

—Construction Exhaust Emission Factors (lb/hour) (default)

Cranes Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0715	0.0013	0.4600	0.3758	0.0161	0.0161	0.0064	128.78
Forklifts Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0246	0.0006	0.0973	0.2146	0.0029	0.0029	0.0022	54.451
Tractors/Loaders/Backhoes Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0348	0.0007	0.1980	0.3589	0.0068	0.0068	0.0031	66.875

—Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.278	000.002	000.219	003.276	000.008	000.007		000.023	00320.329
LDGT	000.351	000.003	000.382	004.545	000.010	000.009		000.024	00414.211
HDGV	000.705	000.005	001.074	015.763	000.025	000.022		000.045	00763.488
LDDV	000.122	000.003	000.133	002.396	000.004	000.004		000.008	00309.634
LDDT	000.266	000.004	000.384	004.133	000.007	000.007		000.008	00440.653
HDDV	000.498	000.013	005.110	001.743	000.169	000.156		000.028	01479.227
MC	002.339	000.003	000.821	013.581	000.029	000.025		000.054	00399.711

39.3.4 Building Construction Phase Formula(s)

—Construction Exhaust Emissions per Phase
$CEE_{POL} = (NE * WD * H * EF_{POL})/2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

—Vehicle Exhaust Emissions per Phase
$VMT_{VE} = BA * BH * (0.42/1000) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
BA: Area of Building (ft^2)
BH: Height of Building (ft)
(0.42/1000): Conversion Factor ft^3 to trips (0.42 trip/1000 ft^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM)/2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

—Worker Trips Emissions per Phase
$VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM)/2000

V_{POL}: Vehicle Emissions (TONs)
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

—Vender Trips Emissions per Phase
VMT_{VT} = BA * BH * (0.38/1000) * HT

VMT_{VT}: Vender Trips Vehicle Miles Travel (miles)
BA: Area of Building (ft^2)
BH: Height of Building (ft)
(0.38/1000): Conversion Factor ft^3 to trips (0.38 trip/1000 ft^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

V_{POL} = (VMT_{VT} * 0.002205 * EF_{POL} * VM)/2000

V_{POL}: Vehicle Emissions (TONs)
VMT_{VT}: Vender Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

39.4 Architectural Coatings Phase

39.4.1 Architectural Coatings Phase Timeline Assumptions

—Phase Start Date
Start Month: 6
Start Quarter: 1
Start Year: 2024

—Phase Duration
Number of Month: 0
Number of Days: 5

39.4.2 Architectural Coatings Phase Assumptions

—General Architectural Coatings Information
Building Category: Non-Residential
Total Square Footage (ft^2): 1200
Number of Units: N/A

—Architectural Coatings Default Settings
Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

—Worker Trips
Average Worker Round Trip Commute (mile): 20 (default)

—Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

39.4.3 Architectural Coatings Phase Emission Factor(s)

—Worker Trips Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.278	000.002	000.219	003.276	000.008	000.007		000.023	00320.329
LDGT	000.351	000.003	000.382	004.545	000.010	000.009		000.024	00414.211
HDGV	000.705	000.005	001.074	015.763	000.025	000.022		000.045	00763.488
LDDV	000.122	000.003	000.133	002.396	000.004	000.004		000.008	00309.634
LDDT	000.266	000.004	000.384	004.133	000.007	000.007		000.008	00440.653
HDDV	000.498	000.013	005.110	001.743	000.169	000.156		000.028	01479.227
MC	002.339	000.003	000.821	013.581	000.029	000.025		000.054	00399.711

39.4.4 Architectural Coatings Phase Formula(s)

—Worker Trips Emissions per Phase
$VMT_{WT} = (1 * WT * PA)/800$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
1: Conversion Factor person days to trips (1 trip/1 person * day)
WT: Average Worker Round Trip Commute (mile)
PA: Paint Area (ft^2)
800: Conversion Factor ft^2 to person days (1 ft^2/1 person * day)

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM)/2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

—Off-Gassing Emissions per Phase
$VOC_{AC} = (AB * 2.0 * 0.0116)/2000.0$

VOC_{AC}: Architectural Coating VOC Emissions (TONs)
BA: Area of Building (ft^2)
2.0: Conversion Factor total area to coated area (2.0 ft^2 coated area/total area)
0.0116: Emission Factor (lb/ft^2)
2000: Conversion Factor pounds to tons

40. Emergency Generator

40.1 General Information & Timeline Assumptions

—Add or Remove Activity from Baseline? Add

—Activity Location
County: Spokane
Regulatory Area(s): Not in a Regulatory Area

—Activity Title: C04—Upgrade Potable Water System

—Activity Description:
Upgrade the potable water system serving White Bluff, to include a new aboveground tank and pump/chlorination house.

—Activity Start Date
Start Month: 7
Start Year: 2025

—Activity End Date
Indefinite: Yes
End Month: N/A
End Year: N/A

—Activity Emissions:

Pollutant	Emissions Per Year (TONs)
VOC	0.005650
SO_x	0.004759
NO_x	0.023288
CO	0.015552
PM 10	0.005083

Pollutant	Emissions Per Year (TONs)
PM 2.5	0.005083
Pb	0.000000
NH_3	0.000000
CO_2e	2.7

40.2 Emergency Generator Assumptions

—Emergency Generator
Type of Fuel used in Emergency Generator: Diesel
Number of Emergency Generators: 1

—Default Settings Used: Yes

—Emergency Generators Consumption
Emergency Generator's Horsepower: 135 (default)
Average Operating Hours Per Year (hours): 30 (default)

40.3 Emergency Generator Emission Factor(s)

—Emergency Generators Emission Factor (lb/hp-hr)

VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
0.00279	0.00235	0.0115	0.00768	0.00251	0.00251			1.33

40.4 Emergency Generator Formula(s)

—**Emergency Generator Emissions per Year**
AE_{POL}= (NGEN * HP * OT * EF_{POL})/2000

AE_{POL}: Activity Emissions (TONs per Year)
NGEN: Number of Emergency Generators
HP: Emergency Generator's Horsepower (hp)
OT: Average Operating Hours Per Year (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hp-hr)

41. Construction/Demolition

41.1 General Information & Timeline Assumptions

—**Activity Location**
County: Spokane
Regulatory Area(s): Not in a Regulatory Area

—**Activity Title:** C05—Helicopter Landing Pad

—**Activity Description:**
Construct a 9,000 square foot paved helicopter landing pad.

—**Activity Start Date**
Start Month: 1
Start Month: 2025

—**Activity End Date**
Indefinite: False
End Month: 2
End Month: 2025

—**Activity Emissions:**

Pollutant	Total Emissions (TONs)
VOC	0.006159
SO_x	0.000097
NO_x	0.033974
CO	0.042535
PM 10	0.010599

Pollutant	Total Emissions (TONs)
PM 2.5	0.001404
Pb	0.000000
NH_3	0.000053
CO_2e	9.6

41.1 Site Grading Phase

41.1.1 Site Grading Phase Timeline Assumptions

—**Phase Start Date**
Start Month: 1
Start Quarter: 1
Start Year: 2025

—**Phase Duration**
Number of Month: 0
Number of Days: 2

41.1.2 Site Grading Phase Assumptions

—General Site Grading Information
Area of Site to be Graded (ft^2): 10000
Amount of Material to be Hauled On-Site (yd^3): 0
Amount of Material to be Hauled Off-Site (yd^3): 741

—Site Grading Default Settings
Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

—Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Graders Composite	1	6
Other Construction Equipment Composite	1	8
Rubber Tired Dozers Composite	1	6
Tractors/Loaders/Backhoes Composite	1	7

—Vehicle Exhaust
Average Hauling Truck Capacity (yd^3): 20 (default)
Average Hauling Truck Round Trip Commute (mile): 20 (default)

—Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

—Worker Trips
Average Worker Round Trip Commute (mile): 20 (default)

—Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

41.1.3 Site Grading Phase Emission Factor(s)

—Construction Exhaust Emission Factors (lb/hour) (default)

Graders Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0676	0.0014	0.3314	0.5695	0.0147	0.0147	0.0061	132.89
Other Construction Equipment Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0442	0.0012	0.2021	0.3473	0.0068	0.0068	0.0039	122.60
Rubber Tired Dozers Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.1671	0.0024	1.0824	0.6620	0.0418	0.0418	0.0150	239.45
Tractors/Loaders/Backhoes Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0335	0.0007	0.1857	0.3586	0.0058	0.0058	0.0030	66.872

—Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.278	000.002	000.219	003.276	000.008	000.007		000.023	00320.329
LDGT	000.351	000.003	000.382	004.545	000.010	000.009		000.024	00414.211
HDGV	000.705	000.005	001.074	015.763	000.025	000.022		000.045	00763.488
LDDV	000.122	000.003	000.133	002.396	000.004	000.004		000.008	00309.634
LDDT	000.266	000.004	000.384	004.133	000.007	000.007		000.008	00440.653
HDDV	000.498	000.013	005.110	001.743	000.169	000.156		000.028	01479.227
MC	002.339	000.003	000.821	013.581	000.029	000.025		000.054	00399.711

41.1.4 Site Grading Phase Formula(s)

—Fugitive Dust Emissions per Phase
$PM10_{FD}$ = (20 * ACRE * WD)/2000

$PM10_{FD}$: Fugitive Dust PM 10 Emissions (TONs)
20: Conversion Factor Acre Day to pounds (20 lb/1 Acre Day)
ACRE: Total acres (acres)
WD: Number of Total Work Days (days)
2000: Conversion Factor pounds to tons

—Construction Exhaust Emissions per Phase
CEE_{POL} = (NE * WD * H * EF_{POL})/2000

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

—Vehicle Exhaust Emissions per Phase
VMT_{VE} = (HA_{OnSite} + $HA_{OffSite}$) * (1/HC) * HT

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
HA_{OnSite}: Amount of Material to be Hauled On-Site (yd^3)
$HA_{OffSite}$: Amount of Material to be Hauled Off-Site (yd^3)
HC: Average Hauling Truck Capacity (yd^3)
(1/HC): Conversion Factor cubic yards to trips (1 trip/HC yd^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM)/2000

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Vehicle Exhaust On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

—Worker Trips Emissions per Phase

VMT_{WT} = WD * WT * 1.25 * NE

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM)/2000

V_{POL}: Vehicle Emissions (TONs)
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

41.2 Paving Phase

41.2.1 Paving Phase Timeline Assumptions

—Phase Start Date
Start Month: 2
Start Quarter: 1
Start Year: 2025

—Phase Duration
Number of Month: 0
Number of Days: 5

41.2.2 Paving Phase Assumptions

—General Paving Information
Paving Area (ft^2): 9000

—Paving Default Settings
Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

—Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Cement and Mortar Mixers Composite	4	6
Pavers Composite	1	7
Rollers Composite	1	7
Tractors/Loaders/Backhoes Composite	1	7

—Vehicle Exhaust
Average Hauling Truck Round Trip Commute (mile): 20 (default)

—Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

—Worker Trips
Average Worker Round Trip Commute (mile): 20 (default)

—Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

41.2.3 Paving Phase Emission Factor(s)

—Construction Exhaust Emission Factors (lb/hour) (default)

Graders Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0676	0.0014	0.3314	0.5695	0.0147	0.0147	0.0061	132.89
Other Construction Equipment Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0442	0.0012	0.2021	0.3473	0.0068	0.0068	0.0039	122.60
Rubber Tired Dozers Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.1671	0.0024	1.0824	0.6620	0.0418	0.0418	0.0150	239.45
Tractors/Loaders/Backhoes Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0335	0.0007	0.1857	0.3586	0.0058	0.0058	0.0030	66.872

—Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.278	000.002	000.219	003.276	000.008	000.007		000.023	00320.329
LDGT	000.351	000.003	000.382	004.545	000.010	000.009		000.024	00414.211
HDGV	000.705	000.005	001.074	015.763	000.025	000.022		000.045	00763.488
LDDV	000.122	000.003	000.133	002.396	000.004	000.004		000.008	00309.634
LDDT	000.266	000.004	000.384	004.133	000.007	000.007		000.008	00440.653
HDDV	000.498	000.013	005.110	001.743	000.169	000.156		000.028	01479.227
MC	002.339	000.003	000.821	013.581	000.029	000.025		000.054	00399.711

41.2.4 Paving Phase Formula(s)

—Construction Exhaust Emissions per Phase
$CEE_{POL} = (NE * WD * H * EF_{POL})/2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

—Vehicle Exhaust Emissions per Phase
$VMT_{VE} = PA * 0.25 * (1/27) * (1/HC) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
PA: Paving Area (ft^2)
0.25: Thickness of Paving Area (ft)
(1/27): Conversion Factor cubic feet to cubic yards (1 yd^3/27 ft^3)
HC: Average Hauling Truck Capacity (yd^3)
(1/HC): Conversion Factor cubic yards to trips (1 trip/HC yd^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM)/2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Vehicle Exhaust On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

—**Worker Trips Emissions per Phase**
$VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM)/2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

—**Off-Gassing Emissions per Phase**
$VOC_P = (2.62 * PA)/43560$

VOC_P: Paving VOC Emissions (TONs)
2.62: Emission Factor (lb/acre)
PA: Paving Area (ft^2)
43560: Conversion Factor ft^2 to acre (43560 ft^2/acre)^2/acre)

42. Construction/Demolition

42.1 General Information & Timeline Assumptions

—**Activity Location**
County: Spokane
Regulatory Area(s): Not in a Regulatory Area

—**Activity Title:** SM01—Non-Secure Visitor and Training Facility

—**Activity Description:**
Construct a 2,500 square foot building that can be used for non-secure activities.

—**Activity Start Date**
Start Month: 1
Start Month: 2021

—Activity End Date
Indefinite: False
End Month: 6
End Month: 2021

—Activity Emissions:

Pollutant	Total Emissions (TONs)
VOC	0.073534
SO_x	0.000762
NO_x	0.259279
CO	0.317270
PM 10	0.016833

Pollutant	Total Emissions (TONs)
PM 2.5	0.010382
Pb	0.000000
NH_3	0.000238
CO_2e	73.7

42.1 Site Grading Phase

42.1.1 Site Grading Phase Timeline Assumptions

—Phase Start Date
Start Month: 1
Start Quarter: 1
Start Year: 2021

—Phase Duration
Number of Month: 0
Number of Days: 2

42.1.2 Site Grading Phase Assumptions

—General Site Grading Information
Area of Site to be Graded (ft^2): 3500
Amount of Material to be Hauled On-Site (yd^3): 0
Amount of Material to be Hauled Off-Site (yd^3): 259

—Site Grading Default Settings
Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

—Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Graders Composite	1	6
Other Construction Equipment Composite	1	8
Rubber Tired Dozers Composite	1	6
Tractors/Loaders/Backhoes Composite	1	7

—Vehicle Exhaust
Average Hauling Truck Capacity (yd^3): 20 (default)
Average Hauling Truck Round Trip Commute (mile): 20 (default)

—Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

—**Worker Trips**
Average Worker Round Trip Commute (mile): 20 (default)

—**Worker Trips Vehicle Mixture (%)**

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

42.1.3 Site Grading Phase Emission Factor(s)

—**Construction Exhaust Emission Factors (lb/hour) (default)**

Graders Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0860	0.0014	0.5212	0.5747	0.0247	0.0247	0.0077	132.93
Other Construction Equipment Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0533	0.0012	0.3119	0.3497	0.0121	0.0121	0.0048	122.61
Rubber Tired Dozers Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.2015	0.0024	1.4660	0.7661	0.0581	0.0581	0.0181	239.53
Tractors/Loaders/Backhoes Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0407	0.0007	0.2505	0.3606	0.0112	0.0112	0.0036	66.890

—**Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)**

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.278	000.002	000.219	003.276	000.008	000.007		000.023	00320.329
LDGT	000.351	000.003	000.382	004.545	000.010	000.009		000.024	00414.211
HDGV	000.705	000.005	001.074	015.763	000.025	000.022		000.045	00763.488
LDDV	000.122	000.003	000.133	002.396	000.004	000.004		000.008	00309.634
LDDT	000.266	000.004	000.384	004.133	000.007	000.007		000.008	00440.653
HDDV	000.498	000.013	005.110	001.743	000.169	000.156		000.028	01479.227
MC	002.339	000.003	000.821	013.581	000.029	000.025		000.054	00399.711

42.1.4 Site Grading Phase Formula(s)

—**Fugitive Dust Emissions per Phase**
$PM10_{FD}$ = (20 * ACRE * WD)/2000

$PM10_{FD}$: Fugitive Dust PM 10 Emissions (TONs)
20: Conversion Factor Acre Day to pounds (20 lb/1 Acre Day)
ACRE: Total acres (acres)
WD: Number of Total Work Days (days)
2000: Conversion Factor pounds to tons

—**Construction Exhaust Emissions per Phase**
CEE_{POL} = (NE * WD * H * EF_{POL})/2000

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

—**Vehicle Exhaust Emissions per Phase**
$VMT_{VE} = (HA_{OnSite} + HA_{OffSite}) * (1/HC) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
HA_{OnSite}: Amount of Material to be Hauled On-Site (yd^3)
$HA_{OffSite}$: Amount of Material to be Hauled Off-Site (yd^3)
HC: Average Hauling Truck Capacity (yd^3)
(1/HC): Conversion Factor cubic yards to trips (1 trip/HC yd^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM)/2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Vehicle Exhaust On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

—**Worker Trips Emissions per Phase**
$VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM)/2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

42.2 Trenching/Excavating Phase

42.2.1 Trenching/Excavating Phase Timeline Assumptions

—**Phase Start Date**
Start Month: 1
Start Quarter: 1
Start Year: 2021

—**Phase Duration**
Number of Month: 0
Number of Days: 2

42.2.2 Trenching/Excavating Phase Assumptions

—**General Trenching/Excavating Information**
Area of Site to be Trenched/Excavated (ft^2): 3500
Amount of Material to be Hauled On-Site (yd^3): 0
Amount of Material to be Hauled Off-Site (yd^3): 130

—Trenching Default Settings
Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

—Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Excavators Composite	2	8
Other General Industrial Equipment Composite	1	8
Tractors/Loaders/Backhoes Composite	1	8

—Vehicle Exhaust
Average Hauling Truck Capacity (yd^3): 20 (default)
Average Hauling Truck Round Trip Commute (mile): 20 (default)

—Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

—Worker Trips
Average Worker Round Trip Commute (mile): 20 (default)

—Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

42.2.3 Trenching/Excavating Phase Emission Factor(s)

—Construction Exhaust Emission Factors (lb/hour) (default)

Graders Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0860	0.0014	0.5212	0.5747	0.0247	0.0247	0.0077	132.93
Other Construction Equipment Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0533	0.0012	0.3119	0.3497	0.0121	0.0121	0.0048	122.61
Rubber Tired Dozers Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.2015	0.0024	1.4660	0.7661	0.0581	0.0581	0.0181	239.53
Tractors/Loaders/Backhoes Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0407	0.0007	0.2505	0.3606	0.0112	0.0112	0.0036	66.890

—Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.278	000.002	000.219	003.276	000.008	000.007		000.023	00320.329
LDGT	000.351	000.003	000.382	004.545	000.010	000.009		000.024	00414.211
HDGV	000.705	000.005	001.074	015.763	000.025	000.022		000.045	00763.488
LDDV	000.122	000.003	000.133	002.396	000.004	000.004		000.008	00309.634
LDDT	000.266	000.004	000.384	004.133	000.007	000.007		000.008	00440.653
HDDV	000.498	000.013	005.110	001.743	000.169	000.156		000.028	01479.227
MC	002.339	000.003	000.821	013.581	000.029	000.025		000.054	00399.711

42.2.4 Trenching/Excavating Phase Formula(s)

—Fugitive Dust Emissions per Phase
$PM10_{FD}$ = (20 * ACRE * WD)/2000

$PM10_{FD}$: Fugitive Dust PM 10 Emissions (TONs)
20: Conversion Factor Acre Day to pounds (20 lb/1 Acre Day)
ACRE: Total acres (acres)
WD: Number of Total Work Days (days)
2000: Conversion Factor pounds to tons

—Construction Exhaust Emissions per Phase
CEE_{POL} = (NE * WD * H * EF_{POL})/2000

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

—Vehicle Exhaust Emissions per Phase
VMT_{VE} = (HA_{OnSite} + $HA_{OffSite}$) * (1/HC) * HT

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
HA_{OnSite}: Amount of Material to be Hauled On-Site (yd^3)
$HA_{OffSite}$: Amount of Material to be Hauled Off-Site (yd^3)
HC: Average Hauling Truck Capacity (yd^3)
(1/HC): Conversion Factor cubic yards to trips (1 trip/HC yd^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM)/2000

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Vehicle Exhaust On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

—Worker Trips Emissions per Phase
VMT_{WT} = WD * WT * 1.25 * NE

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM)/2000

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

42.3 Building Construction Phase

42.3.1 Building Construction Phase Timeline Assumptions

—Phase Start Date
Start Month: 2
Start Quarter: 1
Start Year: 2021

—Phase Duration
Number of Month: 3
Number of Days: 10

42.3.2 Building Construction Phase Assumptions

—General Building Construction Information
Building Category: Office or Industrial
Area of Building (ft^2): 2500
Height of Building (ft): 15
Number of Units: N/A

—Building Construction Default Settings
Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

—Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Cranes Composite	1	4
Forklifts Composite	2	6
Tractors/Loaders/Backhoes Composite	1	8

—Vehicle Exhaust
Average Hauling Truck Round Trip Commute (mile): 20 (default)

—Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

—Worker Trips
Average Worker Round Trip Commute (mile): 20 (default)

—Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

—Vendor Trips
Average Vendor Round Trip Commute (mile): 40 (default)

—Vendor Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

42.3.3 Building Construction Phase Emission Factor(s)

—Construction Exhaust Emission Factors (lb/hour) (default)

Cranes Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0845	0.0013	0.6033	0.3865	0.0228	0.0228	0.0076	128.82
Forklifts Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0293	0.0006	0.1458	0.2148	0.0056	0.0056	0.0026	54.462
Tractors/Loaders/Backhoes Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0407	0.0007	0.2505	0.3606	0.0112	0.0112	0.0036	66.890

—Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.278	000.002	000.219	003.276	000.008	000.007		000.023	00320.329
LDGT	000.351	000.003	000.382	004.545	000.010	000.009		000.024	00414.211
HDGV	000.705	000.005	001.074	015.763	000.025	000.022		000.045	00763.488
LDDV	000.122	000.003	000.133	002.396	000.004	000.004		000.008	00309.634
LDDT	000.266	000.004	000.384	004.133	000.007	000.007		000.008	00440.653
HDDV	000.498	000.013	005.110	001.743	000.169	000.156		000.028	01479.227
MC	002.339	000.003	000.821	013.581	000.029	000.025		000.054	00399.711

42.3.4 Building Construction Phase Formula(s)

—Construction Exhaust Emissions per Phase
$CEE_{POL} = (NE * WD * H * EF_{POL})/2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

—Vehicle Exhaust Emissions per Phase
VMT_{VE} = BA * BH * (0.42/1000) * HT

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
BA: Area of Building (ft^2)
BH: Height of Building (ft)
(0.42/1000): Conversion Factor ft^3 to trips (0.42 trip/1000 ft^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM)/2000

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

—Worker Trips Emissions per Phase
VMT_{WT} = WD * WT * 1.25 * NE

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM)/2000

V_{POL}: Vehicle Emissions (TONs)
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

—Vender Trips Emissions per Phase
VMT_{VT} = BA * BH * (0.38/1000) * HT

VMT_{VT}: Vender Trips Vehicle Miles Travel (miles)
BA: Area of Building (ft^2)
BH: Height of Building (ft)
(0.38/1000): Conversion Factor ft^3 to trips (0.38 trip/1000 ft^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

V_{POL} = (VMT_{VT} * 0.002205 * EF_{POL} * VM)/2000

V_{POL}: Vehicle Emissions (TONs)
VMT_{VT}: Vender Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

42.4 Architectural Coatings Phase

42.4.1 Architectural Coatings Phase Timeline Assumptions

—Phase Start Date
Start Month: 6
Start Quarter: 1
Start Year: 2021

—Phase Duration
Number of Month: 0
Number of Days: 5

42.4.2 Architectural Coatings Phase Assumptions

—General Architectural Coatings Information
Building Category: Non-Residential
Total Square Footage (ft^2): 2500
Number of Units: N/A

—Architectural Coatings Default Settings
Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

—Worker Trips
Average Worker Round Trip Commute (mile): 20 (default)

—Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

42.4.3 Architectural Coatings Phase Emission Factor(s)

—Worker Trips Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.278	000.002	000.219	003.276	000.008	000.007		000.023	00320.329
LDGT	000.351	000.003	000.382	004.545	000.010	000.009		000.024	00414.211
HDGV	000.705	000.005	001.074	015.763	000.025	000.022		000.045	00763.488
LDDV	000.122	000.003	000.133	002.396	000.004	000.004		000.008	00309.634
LDDT	000.266	000.004	000.384	004.133	000.007	000.007		000.008	00440.653
HDDV	000.498	000.013	005.110	001.743	000.169	000.156		000.028	01479.227
MC	002.339	000.003	000.821	013.581	000.029	000.025		000.054	00399.711

42.4.4 Architectural Coatings Phase Formula(s)

—Worker Trips Emissions per Phase
$VMT_{WT} = (1 * WT * PA)/800$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
1: Conversion Factor person days to trips (1 trip/1 person * day)
WT: Average Worker Round Trip Commute (mile)
PA: Paint Area (ft^2)
800: Conversion Factor ft^2 to person days (1 ft^2/1 person * day)

V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM)/2000

V_{POL}: Vehicle Emissions (TONs)
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

—**Off-Gassing Emissions per Phase**
VOC_{AC} = (AB * 2.0 * 0.0116)/2000.0

VOC_{AC}: Architectural Coating VOC Emissions (TONs)
BA: Area of Building (ft^2)
2.0: Conversion Factor total area to coated area (2.0 ft^2 coated area/total area)
0.0116: Emission Factor (lb/ft^2)
2000: Conversion Factor pounds to tons

43. Heating

43.1 General Information & Timeline Assumptions

—**Add or Remove Activity from Baseline?** Add

—**Activity Location**
County: Spokane
Regulatory Area(s): Not in a Regulatory Area

—**Activity Title:** SM01—Non-Secure Visitor and Training Facility

—**Activity Description:**
Construct a 2,500 square foot building that can be used for non-secure activities.

—**Activity Start Date**
Start Month: 7
Start Year: 2021

—**Activity End Date**
Indefinite: Yes
End Month: N/A
End Year: N/A

—**Activity Emissions:**

Pollutant	Emissions Per Year (TONs)
VOC	0.000528
SO_x	0.000058
NO_x	0.009595
CO	0.008060
PM 10	0.000729

Pollutant	Emissions Per Year (TONs)
PM 2.5	0.000729
Pb	0.000000
NH_3	0.000000
CO_2e	11.6

43.2 Heating Assumptions

—Heating
Heating Calculation Type: Heat Energy Requirement Method

—Heat Energy Requirement Method
Area of floorspace to be heated (ft^2): 2500
Type of fuel: Natural Gas
Type of boiler/furnace: Commercial/Institutional (0.3—9.9 MMBtu/hr)
Heat Value (MMBtu/ft^3): 0.00105
Energy Intensity (MMBtu/ft^2): 0.0806

—Default Settings Used: Yes

—Boiler/Furnace Usage
Operating Time Per Year (hours): 900 (default)

43.3 Heating Emission Factor(s)

—Heating Emission Factors (lb/1000000 scf)

VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
5.5	0.6	100	84	7.6	7.6			120390

43.4 Heating Formula(s)

—Heating Fuel Consumption ft^3 per Year
FC_{HER}= HA * EI/HV/1000000

FC_{HER}: Fuel Consumption for Heat Energy Requirement Method
HA: Area of floorspace to be heated (ft^2)
EI: Energy Intensity Requirement (MMBtu/ft^2)
HV: Heat Value (MMBTU/ft^3)
1000000: Conversion Factor

—Heating Emissions per Year
HE_{POL}= FC * EF_{POL}/2000

HE_{POL}: Heating Emission Emissions (TONs)
FC: Fuel Consumption
EF_{POL}: Emission Factor for Pollutant
2000: Conversion Factor pounds to tons

44. Emergency Generator

44.1 General Information & Timeline Assumptions

—Add or Remove Activity from Baseline? Add

—Activity Location
County: Spokane
Regulatory Area(s): Not in a Regulatory Area

—Activity Title: SM01—Non-Secure Visitor and Training Facility

—Activity Description:
Construct a 2,500 square foot building that can be used for non-secure activities.

—Activity Start Date
Start Month: 7
Start Year: 2021

—Activity End Date
Indefinite: Yes
End Month: N/A
End Year: N/A

—Activity Emissions:

Pollutant	Emissions Per Year (TONs)
VOC	0.005650
SO_x	0.004759
NO_x	0.023288
CO	0.015552
PM 10	0.005083

Pollutant	Emissions Per Year (TONs)
PM 2.5	0.005083
Pb	0.000000
NH_3	0.000000
CO_2e	2.7

44.2 Emergency Generator Assumptions

—Emergency Generator
Type of Fuel used in Emergency Generator: Diesel
Number of Emergency Generators: 1

—Default Settings Used: Yes

—Emergency Generators Consumption
Emergency Generator's Horsepower: 135 (default)
Average Operating Hours Per Year (hours): 30 (default)

44.3 Emergency Generator Emission Factor(s)

—Emergency Generators Emission Factor (lb/hp-hr)

VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
0.00279	0.00235	0.0115	0.00768	0.00251	0.00251			1.33

44.4 Emergency Generator Formula(s)

—Emergency Generator Emissions per Year
AE_{POL}= (NGEN * HP * OT * EF_{POL})/2000

AE_{POL}: Activity Emissions (TONs per Year)
NGEN: Number of Emergency Generators
HP: Emergency Generator's Horsepower (hp)
OT: Average Operating Hours Per Year (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hp-hr)

45. Construction/Demolition

45.1 General Information & Timeline Assumptions

—Activity Location
County: Spokane
Regulatory Area(s): Not in a Regulatory Area

—Activity Title: SM02—Office, Administration, Research, Development, Testing, and Lab Facility

—Activity Description:
Construct a 12,000 square foot building to house development and testing related to operations in Building 15.

—Activity Start Date
Start Month: 1
Start Month: 2021

—Activity End Date
Indefinite: False
End Month: 6
End Month: 2021

—Activity Emissions:

Pollutant	Total Emissions (TONs)
VOC	0.189949
SO_x	0.000866
NO_x	0.304937
CO	0.351139
PM 10	0.048227

Pollutant	Total Emissions (TONs)
PM 2.5	0.012333
Pb	0.000000
NH_3	0.000376
CO_2e	84.6

45.1 Site Grading Phase

45.1.1 Site Grading Phase Timeline Assumptions

—Phase Start Date
Start Month: 1
Start Quarter: 1
Start Year: 2021

—Phase Duration
Number of Month: 0
Number of Days: 2

45.1.2 Site Grading Phase Assumptions

—General Site Grading Information
Area of Site to be Graded (ft^2): 19500
Amount of Material to be Hauled On-Site (yd^3): 0
Amount of Material to be Hauled Off-Site (yd^3): 1444

—Site Grading Default Settings
Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

—Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Graders Composite	1	6
Other Construction Equipment Composite	1	8
Rubber Tired Dozers Composite	1	6
Tractors/Loaders/Backhoes Composite	1	7

—Vehicle Exhaust

Average Hauling Truck Capacity (yd^3): 20 (default)
Average Hauling Truck Round Trip Commute (mile): 20 (default)

—Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

—Worker Trips

Average Worker Round Trip Commute (mile): 20 (default)

—Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

45.1.3 Site Grading Phase Emission Factor(s)

—Construction Exhaust Emission Factors (lb/hour) (default)

Graders Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0860	0.0014	0.5212	0.5747	0.0247	0.0247	0.0077	132.93
Other Construction Equipment Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0533	0.0012	0.3119	0.3497	0.0121	0.0121	0.0048	122.61
Rubber Tired Dozers Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.2015	0.0024	1.4660	0.7661	0.0581	0.0581	0.0181	239.53
Tractors/Loaders/Backhoes Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0407	0.0007	0.2505	0.3606	0.0112	0.0112	0.0036	66.890

—Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.278	000.002	000.219	003.276	000.008	000.007		000.023	00320.329
LDGT	000.351	000.003	000.382	004.545	000.010	000.009		000.024	00414.211
HDGV	000.705	000.005	001.074	015.763	000.025	000.022		000.045	00763.488
LDDV	000.122	000.003	000.133	002.396	000.004	000.004		000.008	00309.634
LDDT	000.266	000.004	000.384	004.133	000.007	000.007		000.008	00440.653
HDDV	000.498	000.013	005.110	001.743	000.169	000.156		000.028	01479.227
MC	002.339	000.003	000.821	013.581	000.029	000.025		000.054	00399.711

45.1.4 Site Grading Phase Formula(s)

—Fugitive Dust Emissions per Phase
$PM10_{FD} = (20 * ACRE * WD)/2000$

$PM10_{FD}$: Fugitive Dust PM 10 Emissions (TONs)
20: Conversion Factor Acre Day to pounds (20 lb/1 Acre Day)
ACRE: Total acres (acres)
WD: Number of Total Work Days (days)
2000: Conversion Factor pounds to tons

—Construction Exhaust Emissions per Phase
$CEE_{POL} = (NE * WD * H * EF_{POL})/2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

—Vehicle Exhaust Emissions per Phase
$VMT_{VE} = (HA_{OnSite} + HA_{OffSite}) * (1/HC) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
HA_{OnSite}: Amount of Material to be Hauled On-Site (yd^3)
$HA_{OffSite}$: Amount of Material to be Hauled Off-Site (yd^3)
HC: Average Hauling Truck Capacity (yd^3)
(1/HC): Conversion Factor cubic yards to trips (1 trip/HC yd^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM)/2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Vehicle Exhaust On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

—Worker Trips Emissions per Phase
$VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM)/2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)

VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

45.2 Trenching/Excavating Phase

45.2.1 Trenching/Excavating Phase Timeline Assumptions

—Phase Start Date
Start Month: 1
Start Quarter: 1
Start Year: 2021

—Phase Duration
Number of Month: 0
Number of Days: 2

45.2.2 Trenching/Excavating Phase Assumptions

—General Trenching/Excavating Information
Area of Site to be Trenched/Excavated (ft^2): 19500
Amount of Material to be Hauled On-Site (yd^3): 0
Amount of Material to be Hauled Off-Site (yd^3): 722

—Trenching Default Settings
Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

—Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Excavators Composite	2	8
Other General Industrial Equipment Composite	1	8
Tractors/Loaders/Backhoes Composite	1	8

—Vehicle Exhaust
Average Hauling Truck Capacity (yd^3): 20 (default)
Average Hauling Truck Round Trip Commute (mile): 20 (default)

—Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

—Worker Trips
Average Worker Round Trip Commute (mile): 20 (default)

—Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

45.2.3 Trenching/Excavating Phase Emission Factor(s)

—Construction Exhaust Emission Factors (lb/hour) (default)

Graders Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0860	0.0014	0.5212	0.5747	0.0247	0.0247	0.0077	132.93
Other Construction Equipment Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0533	0.0012	0.3119	0.3497	0.0121	0.0121	0.0048	122.61
Rubber Tired Dozers Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.2015	0.0024	1.4660	0.7661	0.0581	0.0581	0.0181	239.53
Tractors/Loaders/Backhoes Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0407	0.0007	0.2505	0.3606	0.0112	0.0112	0.0036	66.890

—Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**Pb**	**NH_3**	**CO_2e**
LDGV	000.278	000.002	000.219	003.276	000.008	000.007		000.023	00320.329
LDGT	000.351	000.003	000.382	004.545	000.010	000.009		000.024	00414.211
HDGV	000.705	000.005	001.074	015.763	000.025	000.022		000.045	00763.488
LDDV	000.122	000.003	000.133	002.396	000.004	000.004		000.008	00309.634
LDDT	000.266	000.004	000.384	004.133	000.007	000.007		000.008	00440.653
HDDV	000.498	000.013	005.110	001.743	000.169	000.156		000.028	01479.227
MC	002.339	000.003	000.821	013.581	000.029	000.025		000.054	00399.711

45.2.4 Trenching/Excavating Phase Formula(s)

—Fugitive Dust Emissions per Phase
$PM10_{FD} = (20 * ACRE * WD)/2000$

$PM10_{FD}$: Fugitive Dust PM 10 Emissions (TONs)
20: Conversion Factor Acre Day to pounds (20 lb/1 Acre Day)
ACRE: Total acres (acres)
WD: Number of Total Work Days (days)
2000: Conversion Factor pounds to tons

—Construction Exhaust Emissions per Phase
$CEE_{POL} = (NE * WD * H * EF_{POL})/2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

—**Vehicle Exhaust Emissions per Phase**
$VMT_{VE} = (HA_{OnSite} + HA_{OffSite}) * (1/HC) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
HA_{OnSite}: Amount of Material to be Hauled On-Site (yd^3)
$HA_{OffSite}$: Amount of Material to be Hauled Off-Site (yd^3)
HC: Average Hauling Truck Capacity (yd^3)
(1/HC): Conversion Factor cubic yards to trips (1 trip/HC yd^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM)/2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Vehicle Exhaust On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

—**Worker Trips Emissions per Phase**
$VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM)/2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

45.3 Building Construction Phase

45.3.1 Building Construction Phase Timeline Assumptions

—**Phase Start Date**
Start Month: 2
Start Quarter: 1
Start Year: 2021

—**Phase Duration**
Number of Month: 3
Number of Days: 10

45.3.2 Building Construction Phase Assumptions

—General Building Construction Information

Building Category: Office or Industrial
Area of Building (ft^2): 12000
Height of Building (ft): 15
Number of Units: N/A

—Building Construction Default Settings

Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

—Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Cranes Composite	1	4
Forklifts Composite	2	6
Tractors/Loaders/Backhoes Composite	1	8

—Vehicle Exhaust

Average Hauling Truck Round Trip Commute (mile): 20 (default)

—Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

—Worker Trips

Average Worker Round Trip Commute (mile): 20 (default)

—Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

—Vendor Trips

Average Vendor Round Trip Commute (mile): 40 (default)

—Vendor Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

45.3.3 Building Construction Phase Emission Factor(s)

—Construction Exhaust Emission Factors (lb/hour) (default)

Cranes Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0845	0.0013	0.6033	0.3865	0.0228	0.0228	0.0076	128.82
Forklifts Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0293	0.0006	0.1458	0.2148	0.0056	0.0056	0.0026	54.462
Tractors/Loaders/Backhoes Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0407	0.0007	0.2505	0.3606	0.0112	0.0112	0.0036	66.890

—Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.278	000.002	000.219	003.276	000.008	000.007		000.023	00320.329
LDGT	000.351	000.003	000.382	004.545	000.010	000.009		000.024	00414.211
HDGV	000.705	000.005	001.074	015.763	000.025	000.022		000.045	00763.488
LDDV	000.122	000.003	000.133	002.396	000.004	000.004		000.008	00309.634
LDDT	000.266	000.004	000.384	004.133	000.007	000.007		000.008	00440.653
HDDV	000.498	000.013	005.110	001.743	000.169	000.156		000.028	01479.227
MC	002.339	000.003	000.821	013.581	000.029	000.025		000.054	00399.711

45.3.4 Building Construction Phase Formula(s)

—Construction Exhaust Emissions per Phase
$CEE_{POL} = (NE * WD * H * EF_{POL})/2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

—Vehicle Exhaust Emissions per Phase
$VMT_{VE} = BA * BH * (0.42/1000) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
BA: Area of Building (ft^2)
BH: Height of Building (ft)
(0.42/1000): Conversion Factor ft^3 to trips (0.42 trip/1000 ft^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM)/2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

—Worker Trips Emissions per Phase
$VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM)/2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

—**Vender Trips Emissions per Phase**
$VMT_{VT} = BA * BH * (0.38/1000) * HT$

VMT_{VT}: Vender Trips Vehicle Miles Travel (miles)
BA: Area of Building (ft^2)
BH: Height of Building (ft)
(0.38/1000): Conversion Factor ft^3 to trips (0.38 trip/1000 ft^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VT} * 0.002205 * EF_{POL} * VM)/2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VT}: Vender Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

45.4 Architectural Coatings Phase

45.4.1 Architectural Coatings Phase Timeline Assumptions

—**Phase Start Date**
Start Month: 6
Start Quarter: 1
Start Year: 2021

—**Phase Duration**
Number of Month: 0
Number of Days: 5

45.4.2 Architectural Coatings Phase Assumptions

—**General Architectural Coatings Information**
Building Category: Non-Residential
Total Square Footage (ft^2): 12000
Number of Units: N/A

—**Architectural Coatings Default Settings**
Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

—Worker Trips
Average Worker Round Trip Commute (mile): 20 (default)

—Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

45.4.3 Architectural Coatings Phase Emission Factor(s)

—Worker Trips Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.278	000.002	000.219	003.276	000.008	000.007		000.023	00320.329
LDGT	000.351	000.003	000.382	004.545	000.010	000.009		000.024	00414.211
HDGV	000.705	000.005	001.074	015.763	000.025	000.022		000.045	00763.488
LDDV	000.122	000.003	000.133	002.396	000.004	000.004		000.008	00309.634
LDDT	000.266	000.004	000.384	004.133	000.007	000.007		000.008	00440.653
HDDV	000.498	000.013	005.110	001.743	000.169	000.156		000.028	01479.227
MC	002.339	000.003	000.821	013.581	000.029	000.025		000.054	00399.711

45.4.4 Architectural Coatings Phase Formula(s)

—Worker Trips Emissions per Phase
$VMT_{WT} = (1 * WT * PA)/800$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
1: Conversion Factor person days to trips (1 trip/1 person * day)
WT: Average Worker Round Trip Commute (mile)
PA: Paint Area (ft^2)
800: Conversion Factor ft^2 to person days (1 ft^2/1 person * day)

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM)/2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

—Off-Gassing Emissions per Phase
$VOC_{AC} = (AB * 2.0 * 0.0116)/2000.0$

VOC_{AC}: Architectural Coating VOC Emissions (TONs)
BA: Area of Building (ft^2)
2.0: Conversion Factor total area to coated area (2.0 ft^2 coated area/total area)
0.0116: Emission Factor (lb/ft^2)
2000: Conversion Factor pounds to tons

45.5 Paving Phase

45.5.1 Paving Phase Timeline Assumptions

—Phase Start Date
Start Month: 6
Start Quarter: 1
Start Year: 2021

—Phase Duration
Number of Month: 0
Number of Days: 5

45.5.2 Paving Phase Assumptions

—General Paving Information
Paving Area (ft^2): 1000

—Paving Default Settings
Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

—Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Cement and Mortar Mixers Composite	4	6
Pavers Composite	1	7
Rollers Composite	1	7
Tractors/Loaders/Backhoes Composite	1	7

—Vehicle Exhaust
Average Hauling Truck Round Trip Commute (mile): 20 (default)

—Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

—Worker Trips
Average Worker Round Trip Commute (mile): 20 (default)

—Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

45.5.3 Paving Phase Emission Factor(s)

—Construction Exhaust Emission Factors (lb/hour) (default)

Graders Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0860	0.0014	0.5212	0.5747	0.0247	0.0247	0.0077	132.93
Other Construction Equipment Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0533	0.0012	0.3119	0.3497	0.0121	0.0121	0.0048	122.61
Rubber Tired Dozers Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.2015	0.0024	1.4660	0.7661	0.0581	0.0581	0.0181	239.53
Tractors/Loaders/Backhoes Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0407	0.0007	0.2505	0.3606	0.0112	0.0112	0.0036	66.890

—Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**Pb**	**NH_3**	**CO_2e**
LDGV	000.278	000.002	000.219	003.276	000.008	000.007		000.023	00320.329
LDGT	000.351	000.003	000.382	004.545	000.010	000.009		000.024	00414.211
HDGV	000.705	000.005	001.074	015.763	000.025	000.022		000.045	00763.488
LDDV	000.122	000.003	000.133	002.396	000.004	000.004		000.008	00309.634
LDDT	000.266	000.004	000.384	004.133	000.007	000.007		000.008	00440.653
HDDV	000.498	000.013	005.110	001.743	000.169	000.156		000.028	01479.227
MC	002.339	000.003	000.821	013.581	000.029	000.025		000.054	00399.711

45.5.4 Paving Phase Formula(s)

—Construction Exhaust Emissions per Phase

$CEE_{POL} = (NE * WD * H * EF_{POL})/2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

—Vehicle Exhaust Emissions per Phase

$VMT_{VE} = PA * 0.25 * (1/27) * (1/HC) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
PA: Paving Area (ft^2)
0.25: Thickness of Paving Area (ft)
(1/27): Conversion Factor cubic feet to cubic yards (1 yd^3/27 ft^3)
HC: Average Hauling Truck Capacity (yd^3)
(1/HC): Conversion Factor cubic yards to trips (1 trip/HC yd^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM)/2000

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Vehicle Exhaust On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

—**Worker Trips Emissions per Phase**
VMT_{WT} = WD * WT * 1.25 * NE

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM)/2000

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

—**Off-Gassing Emissions per Phase**
VOC_P = (2.62 * PA)/43560

VOC_P: Paving VOC Emissions (TONs)
2.62: Emission Factor (lb/acre)
PA: Paving Area (ft^2)
43560: Conversion Factor ft^2 to acre (43560 ft^2/acre)^2/acre)

46. Heating

46.1 General Information & Timeline Assumptions

—**Add or Remove Activity from Baseline?** Add

—**Activity Location**
County: Spokane
Regulatory Area(s): Not in a Regulatory Area

—**Activity Title:** SM02—Office, Administration, Research, Development, Testing, and Lab Facility

—**Activity Description:**
Construct a 12,000 square foot building to house development and testing related to operations in Building 15.

—**Activity Start Date**
Start Month: 7
Start Year: 2021

—Activity End Date
Indefinite: Yes
End Month: N/A
End Year: N/A

—Activity Emissions:

Pollutant	Emissions Per Year (TONs)
VOC	0.002253
SO_x	0.000246
NO_x	0.040971
CO	0.034416
PM 10	0.003114

Pollutant	Emissions Per Year (TONs)
PM 2.5	0.003114
Pb	0.000000
NH_3	0.000000
CO_2e	49.3

46.2 Heating Assumptions

—Heating
Heating Calculation Type: Heat Energy Requirement Method

—Heat Energy Requirement Method
Area of floorspace to be heated (ft^2): 12000
Type of fuel: Natural Gas
Type of boiler/furnace: Commercial/Institutional (0.3—9.9 MMBtu/hr)
Heat Value (MMBtu/ft^3): 0.00105
Energy Intensity (MMBtu/ft^2): 0.0717

—Default Settings Used: Yes

—Boiler/Furnace Usage
Operating Time Per Year (hours): 900 (default)

46.3 Heating Emission Factor(s)

—Heating Emission Factors (lb/1000000 scf)

VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
5.5	0.6	100	84	7.6	7.6			120390

46.4 Heating Formula(s)

—Heating Fuel Consumption ft^3 per Year
FC_{HER}= HA * EI/HV/1000000

FC_{HER}: Fuel Consumption for Heat Energy Requirement Method
HA: Area of floorspace to be heated (ft^2)
EI: Energy Intensity Requirement (MMBtu/ft^2)
HV: Heat Value (MMBTU/ft^3)
1000000: Conversion Factor

—Heating Emissions per Year
HE_{POL}= FC * EF_{POL}/2000

HE_{POL}: Heating Emission Emissions (TONs)
FC: Fuel Consumption
EF_{POL}: Emission Factor for Pollutant
2000: Conversion Factor pounds to tons

47. Emergency Generator

47.1 General Information & Timeline Assumptions

—Add or Remove Activity from Baseline? Add

—Activity Location
County: Spokane
Regulatory Area(s): Not in a Regulatory Area

—Activity Title: SM02—Office, Administration, Research, Development, Testing, and Lab Facility

—Activity Description:
Construct a 12,000 square foot building to house development and testing related to operations in Building 15.

—Activity Start Date
Start Month: 7
Start Year: 2021

—Activity End Date
Indefinite: Yes
End Month: N/A
End Year: N/A

—Activity Emissions:

Pollutant	Emissions Per Year (TONs)
VOC	0.005650
SO_x	0.004759
NO_x	0.023288
CO	0.015552
PM 10	0.005083

Pollutant	Emissions Per Year (TONs)
PM 2.5	0.005083
Pb	0.000000
NH_3	0.000000
CO_2e	2.7

47.2 Emergency Generator Assumptions

—Emergency Generator
Type of Fuel used in Emergency Generator: Diesel
Number of Emergency Generators: 1

—Default Settings Used: Yes

—Emergency Generators Consumption
Emergency Generator's Horsepower: 135 (default)
Average Operating Hours Per Year (hours): 30 (default)

47.3 Emergency Generator Emission Factor(s)

—Emergency Generators Emission Factor (lb/hp-hr)

VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
0.00279	0.00235	0.0115	0.00768	0.00251	0.00251			1.33

47.4 Emergency Generator Formula(s)

—**Emergency Generator Emissions per Year**
AE_{POL}= (NGEN * HP * OT * EF_{POL})/2000

AE_{POL}: Activity Emissions (TONs per Year)
NGEN: Number of Emergency Generators
HP: Emergency Generator's Horsepower (hp)
OT: Average Operating Hours Per Year (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hp-hr)

General Assumptions

1	Assumptions prepared for Preferred Alternative
2	Projects with generators as identified in Section 2 of EA
3	Used building square footage from EA
4	Individual project footprints (grading and trenching) = "area of site where earthwork occurs" on data request spreadsheet provided by USAF (unless otherwise noted)
5	Paving areas determined from EA Section 2 "increase in impervious surface", minus building footprints. USAF-supplied data used as needed to supplement EA information, with annotation as such.
6	Assume no fill material hauled onto site
7	Assume 2 foot excavation across all grading areas (project footprint), with 100% haul-off
8	Assume 1 foot excavation across all trenching areas (project footprint), with 100% haul-off
9	Activity times from California Emissions Estimator Model (CalEEMod) User Guide - Appendix D - Table 3.1
10	No individual project will increase number of personnel on base
11	Emissions from use of ammunition on a live ammo firing range (C01) would be negligible compared to other emissions (pounds, compared to tons)

EC01 - Training Aid Development Shop

Construct a new 2,000 square foot structure to house the training aid development shop.

Site Grading	Assumption	Notes
Start Month	January	
Starting within (quarter of month)	1	
Start Year	2025	
Number of Months	0	
And Number of Days	2	
Area of Site to be Graded (ft^2)	3,500	Area provided by USAF
Amount of Material to be Hauled Onsite (yd^3)	0	
Amount of Material to be Hauled Offsite (yd^3)	259	

Trenching	Assumption	Notes
Start Month	January	
Starting within (quarter of month)	1	
Start Year	2025	
Number of Months	0	
And Number of Days	2	
Area of Site to be Trenched (ft^2)	3,500	Area provided by USAF
Amount of Material to be Hauled Onsite (yd^3)	0	
Amount of Material to be Hauled Offsite (yd^3)	130	

Building Construction	Assumption	Notes
Start Month	February	
Starting within (quarter of month)	1	
Start Year	2025	
Number of Months	3	
And Number of Days	10	
Building Category	Office or Industrial	
Area of Building (ft^2)	2,000	
Height of Building (ft)	15	
Number of Units	N/A	

Architectural Coatings	Assumption	Notes
Start Month	June	
Starting within (quarter of month)	1	
Start Year	2025	
Number of Months	0	
And Number of Days	5	
Building Category	Non-residential	
Total Square Footage of Building (ft^2)	2,000	
Number of Units	N/A	

Paving (Asphalt)	Assumption	Notes
Start Month	June	
Starting within (quarter of month)	1	
Start Year	2025	
Number of Months	0	
And Number of Days	5	
Paving Area (ft^2)	500	2500 SF new imperv surface

HEATING ACTIVITY

Heating Activity	Assumption	Notes
Add or Remove from Baseline?	Add	
Alternative to Add/Remove Activity to	1	
Is Activity Indefinite?	Yes	
Start Month	July	
Start Year	2025	
Heat Energy Requirement Method? (Yes/No)	Yes	
Area of Floorspace to be Heated (ft^2)	2,000	
Type of Fuel	Natural Gas	
Type of boiler/furnace	Commercial/Institutional	
Use Default Settings?	Yes	

EC02 - Replacement Fire Pump House and Pump
Replace existing fire pump house and pump at Building 82 with a newer model.

No entry in ACAM
No new structures or ground disturbance

EC03 - Simulated Training Facility

Demolish an existing tennis court and construct a 4,500 square foot training facility and associated access road.

CONSTRUCTION/DEMOLITION

Demolition	Assumption	Note
Start Month	January	
Starting within (quarter of month)	1	
Start Year	2022	
Number of Months	0	
And Number of Days	10	
Area of Building to be Demolished (ft^2)	2,808	https://www.perfect-tennis.com/tennis-court-dimensions/
Height of Building to be Demolished (ft)	.5	Tennis Court Demo

Site Grading	Assumption	Notes
Start Month	January	
Starting within (quarter of month)	2	
Start Year	2022	
Number of Months	0	
And Number of Days	2	
Area of Site to be Graded (ft^2)	5,500	Area provided by USAF
Amount of Material to be Hauled Onsite (yd^3)	0	
Amount of Material to be Hauled Offsite (yd^3)	407	

Trenching	Assumption	Notes
Start Month	January	
Starting within (quarter of month)	2	
Start Year	2022	
Number of Months	0	
And Number of Days	2	
Area of Site to be Trenched (ft^2)	5,500	Area provided by USAF
Amount of Material to be Hauled Onsite (yd^3)	0	
Amount of Material to be Hauled Offsite (yd^3)	204	

Building Construction	Assumption	Notes
Start Month	February	
Starting within (quarter of month)	1	
Start Year	2022	
Number of Months	3	
And Number of Days	10	
Building Category	Office or Industrial	
Area of Building (ft^2)	4,500	
Height of Building (ft)	15	
Number of Units	N/A	

Architectural Coatings	Assumption	Notes
Start Month	June	
Starting within (quarter of month)	1	
Start Year	2022	
Number of Months	0	
And Number of Days	5	
Building Category	Non-Residential	
Total Square Footage of Building (ft^2)	4,500	
Number of Units	N/A	

Paving (Asphalt)	Assumption	Notes
Start Month	June	
Starting within (quarter of month)	1	
Start Year	2022	
Number of Months	0	
And Number of Days	5	
Paving Area (ft^2)	1,350	Area provided by USAF (150 SY)

HEATING ACTIVITY

Heating Activity	Assumption	Notes
Add or Remove from Baseline?	Add	
Alternative to Add/Remove Activity to	1	
Is Activity Indefinite?	Yes	
Start Month	July	
Start Year	2022	
Heat Energy Requirement Method? (Yes/No)	Yes	
Area of Floorspace to be Heated (ft^2)	4,500	
Type of Fuel	Natural Gas	
Type of boiler/furnace	Commercial/Institutional	
Use Default Settings?	Yes	

EMERGENCY GENERATOR ACTIVITY

Emergency Generator Activity	Assumption	Notes
Add or Remove from Baseline?	Add	
Alternative to Add/Remove Activity to	1	
Is Activity Indefinite?	Yes	
Activity Start Month	July	
Activity Start Year	2022	
Type of Fuel Used in Emergency Generator	Diesel	
Number of Emergency Generators	1	
Use Default Settings?	Yes	

EC04 - Maintenance Equipment Shed

Demolish an existing Mylar tent and replace with a storage shed for maintenance equipment.

CONSTRUCTION/DEMOLITION

Demolition	Assumption	Note
Start Month	January	
Starting within (quarter of month)	1	
Start Year	2021	
Number of Months	0	
And Number of Days	10	
Area of Building to be Demolished (ft^2)	5,000	
Height of Building to be Demolished (ft)	10	

Site Grading	Assumption	Notes
Start Month	January	
Starting within (quarter of month)	2	
Start Year	2021	
Number of Months	0	
And Number of Days	2	
Area of Site to be Graded (ft^2)	5,500	Area provided by USAF
Amount of Material to be Hauled Onsite (yd^3)	0	
Amount of Material to be Hauled Offsite (yd^3)	407	

Trenching	Assumption	Notes
Start Month	January	
Starting within (quarter of month)	3	
Start Year	2021	
Number of Months	0	
And Number of Days	2	
Area of Site to be Trenched (ft^2)	5,500	Area provided by USAF
Amount of Material to be Hauled Onsite (yd^3)	0	
Amount of Material to be Hauled Offsite (yd^3)	204	

Building Construction	Assumption	Notes
Start Month	February	
Starting within (quarter of month)	1	
Start Year	2021	
Number of Months	3	
And Number of Days	10	
Building Category	Office or Industrial	
Area of Building (ft^2)	5,000	
Height of Building (ft)	15	
Number of Units	N/A	

Architectural Coatings	Assumption	Notes
Start Month	June	
Starting within (quarter of month)	1	
Start Year	2021	
Number of Months	0	
And Number of Days	5	
Building Category	Non-Residential	
Total Square Footage of Building (ft^2)	5,000	
Number of Units	N/A	

Paving (Asphalt)	Assumption	Notes
Start Month	June	
Starting within (quarter of month)	1	
Start Year	2021	
Number of Months	0	
And Number of Days	5	
Paving Area (ft^2)	1,000	Increase in impervious surface identified in EA. Part of site already paved.

EC05 - Administration Processing Facility

Construct an 800 square foot building to house administrative tasks.

CONSTRUCTION/DEMOLITION

Site Grading	Assumption	Notes
Start Month	January	
Starting within (quarter of month)	1	
Start Year	2022	
Number of Months	0	
And Number of Days	2	
Area of Site to be Graded (ft^2)	2,000	Area provided by USAF
Amount of Material to be Hauled Onsite (yd^3)	0	
Amount of Material to be Hauled Offsite (yd^3)	148	

Trenching	Assumption	Notes
Start Month	January	
Starting within (quarter of month)	1	
Start Year	2022	
Number of Months	0	
And Number of Days	2	
Area of Site to be Trenched (ft^2)	2,000	Area provided by USAF
Amount of Material to be Hauled Onsite (yd^3)	0	
Amount of Material to be Hauled Offsite (yd^3)	74	

Building Construction	Assumption	Notes
Start Month	February	
Starting within (quarter of month)	1	
Start Year	2022	
Number of Months	3	
And Number of Days	10	
Building Category	Office or Industrial	
Area of Building (ft^2)	800	
Height of Building (ft)	15	
Number of Units	N/A	

Architectural Coatings	Assumption	Notes
Start Month	June	
Starting within (quarter of month)	1	
Start Year	2022	
Number of Months	0	
And Number of Days	5	
Building Category	Non-Residential	
Total Square Footage of Building (ft^2)	800	
Number of Units	N/A	

Paving (Asphalt)	Assumption	Notes
Start Month	June	
Starting within (quarter of month)	1	
Start Year	2022	
Number of Months	0	
And Number of Days	5	
Paving Area (ft^2)	1,200	2,000 SF new imperv surface

HEATING ACTIVITY

Heating Activity	Assumption	Notes
Add or Remove from Baseline?	Add	
Alternative to Add/Remove Activity to	1	
Is Activity Indefinite?	Yes	
Start Month	July	
Start Year	2022	
Heat Energy Requirement Method? (Yes/No)	Yes	
Area of Floorspace to be Heated (ft^2)	800	
Type of Fuel	Natural Gas	
Type of boiler/furnace	Commercial/Institutional	
Use Default Settings?	Yes	

SO01 - Training Support Storage

Add 1,500 square feet of storage space to support the training program conducted at Building 24.

CONSTRUCTION/DEMOLITION

Site Grading	Assumption	Notes
Start Month	April	
Starting within (quarter of month)	1	
Start Year	2020	
Number of Months	0	
And Number of Days	2	
Area of Site to be Graded (ft^2)	4,000	Area provided by USAF
Amount of Material to be Hauled Onsite (yd^3)	0	
Amount of Material to be Hauled Offsite (yd^3)	296	

Trenching	Assumption	Notes
Start Month	April	
Starting within (quarter of month)	1	
Start Year	2020	
Number of Months	0	
And Number of Days	2	
Area of Site to be Trenched (ft^2)	4,000	Area provided by USAF
Amount of Material to be Hauled Onsite (yd^3)	0	
Amount of Material to be Hauled Offsite (yd^3)	148	

Building Construction	Assumption	Notes
Start Month	May	
Starting within (quarter of month)	1	
Start Year	2020	
Number of Months	3	
And Number of Days	10	
Building Category	Office or Industrial	
Area of Building (ft^2)	1,500	
Height of Building (ft)	15	
Number of Units	N/A	

Architectural Coatings	Assumption	Notes
Start Month	August	
Starting within (quarter of month)	1	
Start Year	2020	
Number of Months	0	
And Number of Days	5	
Building Category	Non-Residential	
Total Square Footage of Building (ft^2)	1,500	
Number of Units	N/A	

Paving (Asphalt)	Assumption	Notes
Start Month	N/A	
Starting within (quarter of month)	N/A	
Start Year	N/A	
Number of Months	N/A	
And Number of Days	N/A	
Paving Area (ft^2)	N/A	New imperv surface area = new building area

HEATING ACTIVITY

Heating Activity	Assumption	Notes
Add or Remove from Baseline?	Add	
Alternative to Add/Remove Activity to	1	
Is Activity Indefinite?	Yes	
Start Month	September	
Start Year	2020	
Heat Energy Requirement Method? (Yes/No)	Yes	
Area of Floorspace to be Heated (ft^2)	1,500	
Type of Fuel	Natural Gas	
Type of boiler/furnace	Commercial/Institutional	
Use Default Settings?	Yes	

SO02 - Building 24 Training Expansion

Provide an additional 8,400 square feet of building space for the training program conducted at Building 24

Site Grading	Assumption	Notes
Start Month	January	
Starting within (quarter of month)	1	
Start Year	2022	
Number of Months	0	
And Number of Days	2	
Area of Site to be Graded (ft^2)	10,000	Area provided by USAF
Amount of Material to be Hauled Onsite (yd^3)	0	
Amount of Material to be Hauled Offsite (yd^3)	741	

Trenching	Assumption	Notes
Start Month	January	
Starting within (quarter of month)	1	
Start Year	2022	
Number of Months	0	
And Number of Days	2	
Area of Site to be Trenched (ft^2)	10,000	Area provided by USAF
Amount of Material to be Hauled Onsite (yd^3)	0	
Amount of Material to be Hauled Offsite (yd^3)	370	

Building Construction	Assumption	Notes
Start Month	February	
Starting within (quarter of month)	1	
Start Year	2022	
Number of Months	3	
And Number of Days	10	
Building Category	Office or Industrial	
Area of Building (ft^2)	8,400	
Height of Building (ft)	15	
Number of Units	N/A	

Architectural Coatings	Assumption	Notes
Start Month	June	
Starting within (quarter of month)	1	
Start Year	2022	
Number of Months	0	
And Number of Days	5	
Building Category	Non-Residential	
Total Square Footage of Building (ft^2)	8,400	
Number of Units	N/A	

Paving (Asphalt)	Assumption	Notes
Start Month	N/A	
Starting within (quarter of month)	N/A	
Start Year	N/A	
Number of Months	N/A	
And Number of Days	N/A	
Paving Area (ft^2)	N/A	New imperv surface area = new building area

HEATING ACTIVITY

Heating Activity	Assumption	Notes
Add or Remove from Baseline?	Add	
Alternative to Add/Remove Activity to	1	
Is Activity Indefinite?	Yes	
Start Month	July	
Start Year	2022	
Heat Energy Requirement Method? (Yes/No)	Yes	
Area of Floorspace to be Heated (ft^2)	8,400	
Type of Fuel	Natural Gas	
Type of boiler/furnace	Commercial/Institutional	
Use Default Settings?	Yes	

SO03 - Training Planning

Decommission an existing trailer and replace it with a permanent building for specific training uses.

CONSTRUCTION/DEMOLITION

Site Grading	Assumption	Notes
Start Month	January	
Starting within (quarter of month)	1	
Start Year	2021	
Number of Months	0	
And Number of Days	2	
Area of Site to be Graded (ft^2)	3,500	Area provided by USAF
Amount of Material to be Hauled Onsite (yd^3)	0	
Amount of Material to be Hauled Offsite (yd^3)	259	

Trenching	Assumption	Notes
Start Month	January	
Starting within (quarter of month)	1	
Start Year	2021	
Number of Months	0	
And Number of Days	2	
Area of Site to be Trenched (ft^2)	3,500	Area provided by USAF
Amount of Material to be Hauled Onsite (yd^3)	0	
Amount of Material to be Hauled Offsite (yd^3)	130	

Building Construction	Assumption	Notes
Start Month	February	
Starting within (quarter of month)	1	
Start Year	2021	
Number of Months	3	
And Number of Days	10	
Building Category	Office or Industrial	
Area of Building (ft^2)	2,500	
Height of Building (ft)	15	
Number of Units	N/A	

Architectural Coatings	Assumption	Notes
Start Month	June	
Starting within (quarter of month)	1	
Start Year	2021	
Number of Months	0	
And Number of Days	5	
Building Category	Non-Residential	
Total Square Footage of Building (ft^2)	2,500	
Number of Units	N/A	

Paving (Asphalt)	Assumption	Notes
Start Month	June	
Starting within (quarter of month)	1	
Start Year	2021	
Number of Months	0	
And Number of Days	5	
Paving Area (ft^2)	1,800	Area provided by USAF (200 SY)

HEATING ACTIVITY

Heating Activity	Assumption	Notes
Add or Remove from Baseline?	Add	
Alternative to Add/Remove Activity to	1	
Is Activity Indefinite?	Yes	
Start Month	July	
Start Year	2021	
Heat Energy Requirement Method? (Yes/No)	Yes	
Area of Floorspace to be Heated (ft^2)	2,500	
Type of Fuel	Natural Gas	
Type of boiler/furnace	Commercial/Institutional	
Use Default Settings?	Yes	

EMERGENCY GENERATOR ACTIVITY

Emergency Generator Activity	Assumption	Notes
Add or Remove from Baseline?	Add	
Alternative to Add/Remove Activity to	1	
Is Activity Indefinite?	Yes	
Activity Start Month	July	
Activity Start Year	2021	
Type of Fuel Used in Emergency Generator	Diesel	
Number of Emergency Generators	1	
Use Default Settings?	Yes	

SO04 - Special Project Training Facility

Construct a 2,000 square foot structure to house special training activities.

CONSTRUCTION/DEMOLITION

Site Grading	Assumption	Notes
Start Month	January	
Starting within (quarter of month)	1	
Start Year	2021	
Number of Months	0	
And Number of Days	2	
Area of Site to be Graded (ft^2)	3,500	Area provided by USAF
Amount of Material to be Hauled Onsite (yd^3)	0	
Amount of Material to be Hauled Offsite (yd^3)	259	

Trenching	Assumption	Notes
Start Month	January	
Starting within (quarter of month)	1	
Start Year	2021	
Number of Months	0	
And Number of Days	2	
Area of Site to be Trenched (ft^2)	3,500	Area provided by USAF
Amount of Material to be Hauled Onsite (yd^3)	0	
Amount of Material to be Hauled Offsite (yd^3)	130	

Building Construction	Assumption	Notes
Start Month	February	
Starting within (quarter of month)	1	
Start Year	2021	
Number of Months	3	
And Number of Days	10	
Building Category	Office or Industrial	
Area of Building (ft^2)	2,000	
Height of Building (ft)	15	
Number of Units	N/A	

Architectural Coatings	Assumption	Notes
Start Month	June	
Starting within (quarter of month)	1	
Start Year	2021	
Number of Months	0	
And Number of Days	5	
Building Category	Non-Residential	
Total Square Footage of Building (ft^2)	2,000	
Number of Units	N/A	

Paving (Asphalt)	Assumption	Notes
Start Month	June	
Starting within (quarter of month)	1	
Start Year	2021	
Number of Months	0	
And Number of Days	5	
Paving Area (ft^2)	1,125	Area provided by USAF (125 SY)

HEATING ACTIVITY

Heating Activity	Assumption	Notes
Add or Remove from Baseline?	Add	
Alternative to Add/Remove Activity to	1	
Is Activity Indefinite?	Yes	
Start Month	July	
Start Year	2021	
Heat Energy Requirement Method? (Yes/No)	Yes	
Area of Floorspace to be Heated (ft^2)	2,000	
Type of Fuel	Natural Gas	
Type of boiler/furnace	Commercial/Institutional	
Use Default Settings?	Yes	

EMERGENCY GENERATOR ACTIVITY

Emergency Generator Activity	Assumption	Notes
Add or Remove from Baseline?	Add	
Alternative to Add/Remove Activity to	1	
Is Activity Indefinite?	Yes	
Activity Start Month	July	
Activity Start Year	2021	
Type of Fuel Used in Emergency Generator	Diesel	
Number of Emergency Generators	1	
Use Default Settings?	Yes	

SO05 - Urban Training Building

Construct an 11,000 square foot warehouse that can be configured for different training activities.

Site Grading	Assumption	Notes
Start Month	January	
Starting within (quarter of month)	1	
Start Year	2024	
Number of Months	0	
And Number of Days	2	
Area of Site to be Graded (ft^2)	16,000	Area provided by USAF
Amount of Material to be Hauled Onsite (yd^3)	0	
Amount of Material to be Hauled Offsite (yd^3)	1,185	

Trenching	Assumption	Notes
Start Month	January	
Starting within (quarter of month)	1	
Start Year	2024	
Number of Months	0	
And Number of Days	2	
Area of Site to be Trenched (ft^2)	16,000	Area provided by USAF
Amount of Material to be Hauled Onsite (yd^3)	0	
Amount of Material to be Hauled Offsite (yd^3)	593	

Building Construction	Assumption	Notes
Start Month	Febraury	
Starting within (quarter of month)	1	
Start Year	2024	
Number of Months	3	
And Number of Days	10	
Building Category	Office or Industrial	
Area of Building (ft^2)	11,000	
Height of Building (ft)	15	
Number of Units	N/A	

Architectural Coatings	Assumption	Notes
Start Month	June	
Starting within (quarter of month)	1	
Start Year	2024	
Number of Months	0	
And Number of Days	5	
Building Category	Non-Residential	
Total Square Footage of Building (ft^2)	11,000	
Number of Units	N/A	

Paving (Asphalt)	Assumption	Notes
Start Month	June	
Starting within (quarter of month)	1	
Start Year	2024	
Number of Months	0	
And Number of Days	5	
Paving Area (ft^2)	1,125	Area provided by USAF (125 SY)

HEATING ACTIVITY

Heating Activity	Assumption	Notes
Add or Remove from Baseline?	Add	
Alternative to Add/Remove Activity to	1	
Is Activity Indefinite?	Yes	
Start Month	July	
Start Year	2024	
Heat Energy Requirement Method? (Yes/No)	Yes	
Area of Floorspace to be Heated (ft^2)	11,000	
Type of Fuel	Natural Gas	
Type of boiler/furnace	Commercial/Institutional	
Use Default Settings?	Yes	

EMERGENCY GENERATOR ACTIVITY

Emergency Generator Activity	Assumption	Notes
Add or Remove from Baseline?	Add	
Alternative to Add/Remove Activity to	1	
Is Activity Indefinite?	Yes	
Activity Start Month	July	
Activity Start Year	2024	
Type of Fuel Used in Emergency Generator	Diesel	
Number of Emergency Generators	1	
Use Default Settings?	Yes	

SO06 - Secure Holding Facility

Construct a 1,200 square foot building in an isolated area for use as a secure holding facility.

CONSTRUCTION/DEMOLITION

Site Grading	Assumption	Notes
Start Month	January	
Starting within (quarter of month)	1	
Start Year	2022	
Number of Months	0	
And Number of Days	2	
Area of Site to be Graded (ft^2)	2,500	Area provided by USAF
Amount of Material to be Hauled Onsite (yd^3)	0	
Amount of Material to be Hauled Offsite (yd^3)	185	

Trenching	Assumption	Notes
Start Month	January	
Starting within (quarter of month)	1	
Start Year	2022	
Number of Months	0	
And Number of Days	2	
Area of Site to be Trenched (ft^2)	2,500	Area provided by USAF
Amount of Material to be Hauled Onsite (yd^3)	0	
Amount of Material to be Hauled Offsite (yd^3)	93	

Building Construction	Assumption	Notes
Start Month	February	
Starting within (quarter of month)	1	
Start Year	2022	
Number of Months	3	
And Number of Days	10	
Building Category	Office or Industrial	
Area of Building (ft^2)	1,200	
Height of Building (ft)	15	
Number of Units	N/A	

Architectural Coatings	Assumption	Notes
Start Month	June	
Starting within (quarter of month)	1	
Start Year	2022	
Number of Months	0	
And Number of Days	5	
Building Category	Non-Residential	
Total Square Footage of Building (ft^2)	1,200	
Number of Units	N/A	

Paving (Asphalt)	Assumption	Notes
Start Month	June	
Starting within (quarter of month)	1	
Start Year	2022	
Number of Months	0	
And Number of Days	5	
Paving Area (ft^2)	1,575	Area Provided by USAF (175 SY)

HEATING ACTIVITY

Heating Activity	Assumption	Notes
Add or Remove from Baseline?	Add	
Alternative to Add/Remove Activity to	1	
Is Activity Indefinite?	Yes	
Start Month	July	
Start Year	2022	
Heat Energy Requirement Method? (Yes/No)	Yes	
Area of Floorspace to be Heated (ft^2)	1,200	
Type of Fuel	Natural Gas	
Type of boiler/furnace	Commercial/Institutional	
Use Default Settings?	Yes	

EMERGENCY GENERATOR ACTIVITY

Emergency Generator Activity	Assumption	Notes
Add or Remove from Baseline?	Add	
Alternative to Add/Remove Activity to	1	
Is Activity Indefinite?	Yes	
Activity Start Month	July	
Activity Start Year	2024	
Type of Fuel Used in Emergency Generator	Diesel	
Number of Emergency Generators	1	
Use Default Settings?	Yes	

SO07 - Two-Story Office and Storage Building

Construct a two-story, 8,000 square foot office and storage building.

CONSTRUCTION/DEMOLITION

Site Grading	Assumption	Notes
Start Month	January	
Starting within (quarter of month)	1	
Start Year	2024	
Number of Months	0	
And Number of Days	2	
Area of Site to be Graded (ft^2)	5,500	Area provided by USAF
Amount of Material to be Hauled Onsite (yd^3)	0	
Amount of Material to be Hauled Offsite (yd^3)	407	

Trenching	Assumption	Notes
Start Month	January	
Starting within (quarter of month)	1	
Start Year	2024	
Number of Months	0	
And Number of Days	2	
Area of Site to be Trenched (ft^2)	5,500	Area provided by USAF
Amount of Material to be Hauled Onsite (yd^3)	0	
Amount of Material to be Hauled Offsite (yd^3)	204	

Building Construction	Assumption	Notes
Start Month	February	
Starting within (quarter of month)	1	
Start Year	2024	
Number of Months	3	
And Number of Days	10	
Building Category	Office or Industrial	
Area of Building (ft^2)	4,000	
Height of Building (ft)	25	
Number of Units	N/A	

Architectural Coatings	Assumption	Notes
Start Month	June	
Starting within (quarter of month)	1	
Start Year	2024	
Number of Months	0	
And Number of Days	5	
Building Category	Non-Residential	
Total Square Footage of Building (ft^2)	8,000	
Number of Units	N/A	

Paving (Asphalt)	Assumption	Notes
Start Month	June	
Starting within (quarter of month)	1	
Start Year	2024	
Number of Months	0	
And Number of Days	5	
Paving Area (ft^2)	2,025	Area provided by USAF (225 SY)

HEATING ACTIVITY

Heating Activity	Assumption	Notes
Add or Remove from Baseline?	Add	
Alternative to Add/Remove Activity to	1	
Is Activity Indefinite?	Yes	
Start Month	July	
Start Year	2024	
Heat Energy Requirement Method? (Yes/No)	Yes	
Area of Floorspace to be Heated (ft^2)	8,000	
Type of Fuel	Natural Gas	
Type of boiler/furnace	Commercial/Institutional	
Use Default Settings?	Yes	

EMERGENCY GENERATOR ACTIVITY

Emergency Generator Activity	Assumption	Notes
Add or Remove from Baseline?	Add	
Alternative to Add/Remove Activity to	1	
Is Activity Indefinite?	Yes	
Activity Start Month	July	
Activity Start Year	2024	
Type of Fuel Used in Emergency Generator	Diesel	
Number of Emergency Generators	1	
Use Default Settings?	Yes	

SO08 - Spetic Field Expansion

Expand the septic fields to increase the capacity to support planned future growth and development.

CONSTRUCTION/DEMOLITION

Site Grading	Assumption	Notes
Start Month	January	
Starting within (quarter of month)	1	
Start Year	2024	
Number of Months	0	
And Number of Days	2	
Area of Site to be Graded (ft^2)	3,000	Area provided by USAF
Amount of Material to be Hauled Onsite (yd^3)	0	
Amount of Material to be Hauled Offsite (yd^3)	222	

Trenching	Assumption	Notes
Start Month	January	
Starting within (quarter of month)	1	
Start Year	2024	
Number of Months	0	
And Number of Days	2	
Area of Site to be Trenched (ft^2)	3,000	Area provided by USAF
Amount of Material to be Hauled Onsite (yd^3)	0	
Amount of Material to be Hauled Offsite (yd^3)	111	

Building Construction	Assumption	Notes
Start Month	February	
Starting within (quarter of month)	1	
Start Year	2024	
Number of Months	3	
And Number of Days	10	
Building Category	Office or Industrial	
Area of Building (ft^2)	2,200	Proxy for septic tank and piping installation
Height of Building (ft)	10	
Number of Units	N/A	

Note: https://inspectapedia.com/septic/Septic_Tank_Size_Tables.php

4501-5000 gallons per day requires 5800 gallon commercial facility septic tank

5800 gallons / 201.974 = 28.7 cubic yards excavation per tank

SO09 - Building 101 Expansion

Provide an additional 1,500 square feet of building space for the training program conducted at Building 101.

CONSTRUCTION/DEMOLITION

Site Grading	Assumption	Notes
Start Month	January	
Starting within (quarter of month)	1	
Start Year	2021	
Number of Months	0	
And Number of Days	2	
Area of Site to be Graded (ft^2)	2,300	Area provided by USAF
Amount of Material to be Hauled Onsite (yd^3)	0	
Amount of Material to be Hauled Offsite (yd^3)	170	

Trenching	Assumption	Notes
Start Month	January	
Starting within (quarter of month)	1	
Start Year	2021	
Number of Months	0	
And Number of Days	2	
Area of Site to be Trenched (ft^2)	2,300	Area provided by USAF
Amount of Material to be Hauled Onsite (yd^3)	0	
Amount of Material to be Hauled Offsite (yd^3)	85	

Building Construction	Assumption	Notes
Start Month	February	
Starting within (quarter of month)	1	
Start Year	2021	
Number of Months	3	
And Number of Days	10	
Building Category	Office or Industrial	
Area of Building (ft^2)	1,500	
Height of Building (ft)	15	
Number of Units	N/A	

Architectural Coatings	Assumption	Notes
Start Month	June	
Starting within (quarter of month)	1	
Start Year	2021	
Number of Months	0	
And Number of Days	5	
Building Category	Non-Residential	
Total Square Footage of Building (ft^2)	1,500	
Number of Units	N/A	

HEATING ACTIVITY

Heating Activity	Assumption	Notes
Add or Remove from Baseline?	Add	
Alternative to Add/Remove Activity to	1	
Is Activity Indefinite?	Yes	
Start Month	July	
Start Year	2021	
Heat Energy Requirement Method? (Yes/No)	Yes	
Area of Floorspace to be Heated (ft^2)	1,500	
Type of Fuel	Natural Gas	
Type of boiler/furnace	Commercial/Institutional	
Use Default Settings?	Yes	

C01 - Indoor Firing Range

Construct a 12,000 square foot building to house indoor firing range/simulation training.

CONSTRUCTION/DEMOLITION

Site Grading	Assumption	Notes
Start Month	January	
Starting within (quarter of month)	1	
Start Year	2025	
Number of Months	0	
And Number of Days	2	
Area of Site to be Graded (ft^2)	15,000	Total imperv surface from EA
Amount of Material to be Hauled Onsite (yd^3)	0	
Amount of Material to be Hauled Offsite (yd^3)	1,111	

Trenching	Assumption	Notes
Start Month	January	
Starting within (quarter of month)	1	
Start Year	2025	
Number of Months	0	
And Number of Days	2	
Area of Site to be Trenched (ft^2)	15,000	Total imperv surface from EA
Amount of Material to be Hauled Onsite (yd^3)	0	
Amount of Material to be Hauled Offsite (yd^3)	556	

Building Construction	Assumption	Notes
Start Month	February	
Starting within (quarter of month)	1	
Start Year	2025	
Number of Months	3	
And Number of Days	10	
Building Category	Office or Industrial	
Area of Building (ft^2)	12,000	
Height of Building (ft)	15	
Number of Units	N/A	

Architectural Coatings	Assumption	Notes
Start Month	June	
Starting within (quarter of month)	1	
Start Year	2025	
Number of Months	0	
And Number of Days	5	
Building Category	Non-Residential	
Total Square Footage of Building (ft^2)	12,000	
Number of Units	N/A	

Paving (Asphalt)	Assumption	Notes
Start Month	June	
Starting within (quarter of month)	1	
Start Year	2025	
Number of Months	0	
And Number of Days	5	
Paving Area (ft^2)	3,000	15,000 SF new imperv surface

HEATING ACTIVITY

Heating Activity	Assumption	Notes
Add or Remove from Baseline?	Add	
Alternative to Add/Remove Activity to	1	
Is Activity Indefinite?	Yes	
Start Month	July	
Start Year	2025	
Heat Energy Requirement Method? (Yes/No)	Yes	
Area of Floorspace to be Heated (ft^2)	12,000	
Type of Fuel	Natural Gas	
Type of boiler/furnace	Commercial/Institutional	
Use Default Settings?	Yes	

EMERGENCY GENERATOR ACTIVITY

Emergency Generator Activity	Assumption	Notes
Add or Remove from Baseline?	Add	
Alternative to Add/Remove Activity to	1	
Is Activity Indefinite?	Yes	
Activity Start Month	July	
Activity Start Year	2025	
Type of Fuel Used in Emergency Generator	Diesel	
Number of Emergency Generators	1	
Use Default Settings?	Yes	

C02 - Addition to Fitness Center

Construct a 2,500 square foot addition to the existing fitness center.

CONSTRUCTION/DEMOLITION

Site Grading	Assumption	Notes
Start Month	January	
Starting within (quarter of month)	1	
Start Year	2025	
Number of Months	0	
And Number of Days	2	
Area of Site to be Graded (ft^2)	2,500	Data request spreadsheet says 2,300. Addition is 2,500, so using the larger number.
Amount of Material to be Hauled Onsite (yd^3)	0	
Amount of Material to be Hauled Offsite (yd^3)	185	

Building Construction	Assumption	Notes
Start Month	February	
Starting within (quarter of month)	1	
Start Year	2025	
Number of Months	3	
And Number of Days	10	
Building Category	Office or Industrial	
Area of Building (ft^2)	2,500	
Height of Building (ft)	15	
Number of Units	N/A	

Architectural Coatings	Assumption	Notes
Start Month	June	
Starting within (quarter of month)	1	
Start Year	2025	
Number of Months	0	
And Number of Days	5	
Building Category	Non-Residential	
Total Square Footage of Building (ft^2)	2,500	
Number of Units	N/A	

HEATING ACTIVITY

Heating Activity	Assumption	Notes
Add or Remove from Baseline?	Add	
Alternative to Add/Remove Activity to	1	
Is Activity Indefinite?	Yes	
Start Month	July	
Start Year	2025	
Heat Energy Requirement Method? (Yes/No)	Yes	
Area of Floorspace to be Heated (ft^2)	2,500	
Type of Fuel	Natural Gas	
Type of boiler/furnace	Commercial/Institutional	
Use Default Settings?	Yes	

C03 - Heritage Obervation Center

Construct a 1,250 square foot observation center on the existing foundation of Building 5.

CONSTRUCTION/DEMOLITION

Site Grading	Assumption	Notes
Start Month	January	
Starting within (quarter of month)	1	
Start Year	2025	
Number of Months	0	
And Number of Days	2	
Area of Site to be Graded (ft^2)	700	Build on existing foundation. Grading is for new impervious surfaces identified on pg 2-15 of EA
Amount of Material to be Hauled Onsite (yd^3)	0	
Amount of Material to be Hauled Offsite (yd^3)	52	

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Trenching	Assumption	Notes
Start Month	January	
Starting within (quarter of month)	1	
Start Year	2025	
Number of Months	0	
And Number of Days	2	
Area of Site to be Trenched (ft^2)	700	Build on existing foundation. Trenching is for new impervious surfaces identified on pg 2-15 of EA
Amount of Material to be Hauled Onsite (yd^3)	0	
Amount of Material to be Hauled Offsite (yd^3)	26	

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Building Construction	Assumption	Notes
Start Month	February	
Starting within (quarter of month)	1	
Start Year	2025	
Number of Months	3	
And Number of Days	10	
Building Category	Office or Industrial	
Area of Building (ft^2)	1,250	
Height of Building (ft)	15	
Number of Units	N/A	

Architectural Coatings	Assumption	Notes
Start Month	June	
Starting within (quarter of month)	1	
Start Year	2025	
Number of Months	0	
And Number of Days	5	
Building Category	Non-Residential	
Total Square Footage of Building (ft^2)	1,250	
Number of Units	N/A	

Paving (Asphalt)	Assumption	Notes
Start Month	June	
Starting within (quarter of month)	1	
Start Year	2025	
Number of Months	0	
And Number of Days	5	
Paving Area (ft^2)	700	Building constructed on existing foundation. New impervious surface = access road and sidewalk

HEATING ACTIVITY

Heating Activity	Assumption	Notes
Add or Remove from Baseline?	Add	
Alternative to Add/Remove Activity to	1	
Is Activity Indefinite?	Yes	
Start Month	July	
Start Year	2025	
Heat Energy Requirement Method? (Yes/No)	Yes	
Area of Floorspace to be Heated (ft^2)	1,250	
Type of Fuel	Natural Gas	
Type of boiler/furnace	Commercial/Institutional	
Use Default Settings?	Yes	

C04 - Upgrade Potable Water System

Upgrade the potable water system serving White Bluff, to include a new aboveground tank and pump/chlorination house.

CONSTRUCTION/DEMOLITION

Site Grading	Assumption	Notes
Start Month	January	
Starting within (quarter of month)	1	
Start Year	2024	
Number of Months	0	
And Number of Days	2	
Area of Site to be Graded (ft^2)	15,000	Area provided by USAF
Amount of Material to be Hauled Onsite (yd^3)	0	
Amount of Material to be Hauled Offsite (yd^3)	1,111	

Trenching	Assumption	Notes
Start Month	January	
Starting within (quarter of month)	1	
Start Year	2024	
Number of Months	0	
And Number of Days	2	
Area of Site to be Trenched (ft^2)	15,000	Area provided by USAF
Amount of Material to be Hauled Onsite (yd^3)	0	
Amount of Material to be Hauled Offsite (yd^3)	556	

Building Construction	Assumption	Notes
Start Month	February	
Starting within (quarter of month)	1	
Start Year	2024	
Number of Months	3	
And Number of Days	10	
Building Category	Office or Industrial	
Area of Building (ft^2)	1,200	Proxy for tank, etc. Assumed area = increase in impervious surface identified on pg 2-15 of EA. 110,000 gal = 14,703 cu ft.
Height of Building (ft)	12.25	
Number of Units	N/A	

Architectural Coatings	Assumption	Notes
Start Month	June	
Starting within (quarter of month)	1	
Start Year	2024	
Number of Months	0	
And Number of Days	5	
Building Category	Non-Residential	
Total Square Footage of Building (ft^2)	1,200	
Number of Units	N/A	

EMERGENCY GENERATOR ACTIVITY

Emergency Generator Activity	Assumption	Notes
Add or Remove from Baseline?	Add	
Alternative to Add/Remove Activity to	1	
Is Activity Indefinite?	Yes	
Activity Start Month	July	
Activity Start Year	2025	
Type of Fuel Used in Emergency Generator	Diesel	
Number of Emergency Generators	1	
Use Default Settings?	Yes	

C05 - Helicopter Landing Pad

Construct a 9,000 square foot paved helicopter landing pad.

CONSTRUCTION/DEMOLITION

Site Grading	Assumption	Notes
Start Month	January	
Starting within (quarter of month)	1	
Start Year	2025	
Number of Months	0	
And Number of Days	2	
Area of Site to be Graded (ft^2)	10,000	Area provided by USAF
Amount of Material to be Hauled Onsite (yd^3)	0	
Amount of Material to be Hauled Offsite (yd^3)	741	

Paving (Asphalt)	Assumption	Notes
Start Month	February	
Starting within (quarter of month)	1	
Start Year	2025	
Number of Months	0	
And Number of Days	5	
Paving Area (ft^2)	9,000	Helipad design dimensions

SM01 - Non-Sercure Visitor and Training Facility

Construct a 2,500 square foot building that can be used for non-secure activities.

CONSTRUCTION/DEMOLITION

Site Grading	Assumption	Notes
Start Month	January	
Starting within (quarter of month)	1	
Start Year	2021	
Number of Months	0	
And Number of Days	2	
Area of Site to be Graded (ft^2)	3,500	Area provided by USAF
Amount of Material to be Hauled Onsite (yd^3)	0	
Amount of Material to be Hauled Offsite (yd^3)	259	

Trenching	Assumption	Notes
Start Month	January	
Starting within (quarter of month)	1	
Start Year	2021	
Number of Months	0	
And Number of Days	2	
Area of Site to be Trenched (ft^2)	3,500	Area provided by USAF
Amount of Material to be Hauled Onsite (yd^3)	0	
Amount of Material to be Hauled Offsite (yd^3)	130	

Building Construction	Assumption	Notes
Start Month	February	
Starting within (quarter of month)	1	
Start Year	2021	
Number of Months	3	
And Number of Days	10	
Building Category	Office or Industrial	
Area of Building (ft^2)	2,500	
Height of Building (ft)	15	
Number of Units	N/A	

Architectural Coatings	Assumption	Notes
Start Month	June	
Starting within (quarter of month)	1	
Start Year	2021	
Number of Months	0	
And Number of Days	5	
Building Category	Non-Residential	
Total Square Footage of Building (ft^2)	2,500	
Number of Units	N/A	

Paving (Asphalt)	Assumption	Notes
Start Month	N/A	
Starting within (quarter of month)	N/A	
Start Year	N/A	
Number of Months	N/A	
And Number of Days	N/A	
Paving Area (ft^2)	N/A	New imperv surface = building footprint. No road or parking identified in EA.

HEATING ACTIVITY

Heating Activity	Assumption	Notes
Add or Remove from Baseline?	Add	
Alternative to Add/Remove Activity to	1	
Is Activity Indefinite?	Yes	
Start Month	July	
Start Year	2021	
Heat Energy Requirement Method? (Yes/No)	Yes	
Area of Floorspace to be Heated (ft^2)	2,500	
Type of Fuel	Natural Gas	
Type of boiler/furnace	Commercial/Institutional	
Use Default Settings?	Yes	

EMERGENCY GENERATOR ACTIVITY

Emergency Generator Activity	Assumption	Notes
Add or Remove from Baseline?	Add	
Alternative to Add/Remove Activity to	1	
Is Activity Indefinite?	Yes	
Activity Start Month	July	
Activity Start Year	2021	
Type of Fuel Used in Emergency Generator	Diesel	
Number of Emergency Generators	1	
Use Default Settings?	Yes	

SM02 - Office, Administration, Research, Development, Tresting, and Lab Facility

Construct a 12,000 square foot building to house development and testing related to operations in Building 15.

CONSTRUCTION/DEMOLITION

Site Grading	Assumption	Notes
Start Month	January	
Starting within (quarter of month)	1	
Start Year	2021	
Number of Months	0	
And Number of Days	2	
Area of Site to be Graded (ft^2)	19,500	Area provided by USAF
Amount of Material to be Hauled Onsite (yd^3)	0	
Amount of Material to be Hauled Offsite (yd^3)	1,444	

Trenching	Assumption	Notes
Start Month	January	
Starting within (quarter of month)	1	
Start Year	2021	
Number of Months	0	
And Number of Days	2	
Area of Site to be Trenched (ft^2)	19,500	Area provided by USAF
Amount of Material to be Hauled Onsite (yd^3)	0	
Amount of Material to be Hauled Offsite (yd^3)	722	

Building Construction	Assumption	Notes
Start Month	February	
Starting within (quarter of month)	1	
Start Year	2021	
Number of Months	3	
And Number of Days	10	
Building Category	Office or Industrial	
Area of Building (ft^2)	12,000	
Height of Building (ft)	15	
Number of Units	N/A	

Architectural Coatings	Assumption	Notes
Start Month	June	
Starting within (quarter of month)	1	
Start Year	2021	
Number of Months	0	
And Number of Days	5	
Building Category	Non-Residential	
Total Square Footage of Building (ft^2)	12,000	
Number of Units	N/A	

Paving (Asphalt)	Assumption	Notes
Start Month	June	
Starting within (quarter of month)	1	
Start Year	2021	
Number of Months	0	
And Number of Days	5	
Paving Area (ft^2)	1,000	13,000 SF new imperv surface

HEATING ACTIVITY

Heating Activity	Assumption	Notes
Add or Remove from Baseline?	Add	
Alternative to Add/Remove Activity to	1	
Is Activity Indefinite?	Yes	
Start Month	July	
Start Year	2021	
Heat Energy Requirement Method? (Yes/No)	Yes	
Area of Floorspace to be Heated (ft^2)	12,000	
Type of Fuel	Natural Gas	
Type of boiler/furnace	Commercial/Institutional	
Use Default Settings?	Yes	

EMERGENCY GENERATOR ACTIVITY

Emergency Generator Activity	Assumption	Notes
Add or Remove from Baseline?	Add	
Alternative to Add/Remove Activity to	1	
Is Activity Indefinite?	Yes	
Activity Start Month	July	
Activity Start Year	2021	
Type of Fuel Used in Emergency Generator	Diesel	
Number of Emergency Generators	1	
Use Default Settings?	Yes	