- 1 Draft
- 2 Environmental Assessment
- **3** Airfield and Access Control Points Improvements
- 4 Holloman Air Force Base, New Mexico

October 2022



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- 8
- 9 United States Air Force
- 10 **49th Wing**
- 11 Holloman Air Force Base, New Mexico
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Privacy Advisory

This Environmental Assessment (EA) is provided for public comment in accordance with the *National Environmental Policy Act* (NEPA), the President's Council on Environmental Quality (CEQ) NEPA Regulations (40 Code of Federal Regulations [CFR] Parts 1500 to 1508), and 32 CFR Part 989, Environmental Impact Analysis Process (EIAP). The EIAP provides an opportunity for public input on Air Force decision-making, allows the public to offer inputs on alternative ways for the Air Force to accomplish what it is proposing, and solicits comments on the Air Force's analysis of environmental effects.

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9 Public commenting allows the Air Force to make better informed decisions. Letters or other written or oral 10 comments provided may be published in the EA. As required by law, comments provided will be addressed 11 in the EA and made available to the public. Providing personal information is voluntary. Any personal 12 information provided will be used only to identify your desire to make a statement during the public comment 13 portion of any public meetings or hearings or to fulfill requests for copies of the EA or associated documents. 14 Private addresses will be compiled to develop a mailing list for those requesting copies of the EA; however, 15 only the names of the individuals making comments and specific comments will be disclosed. Personal

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- 25 information.
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COVER SHEET

DRAFT ENVIRONMENTAL ASSESSMENT (EA) FOR AIRFIELD AND ACCESS CONTROL POINTS IMPROVEMENTS, HOLLOMAN AIR FORCE BASE, NEW MEXICO

- 4 a. *Responsible Agency*: United States Air Force (Air Force)
- 5 b. *Cooperating Agency*: None

1 2

- 6 c. Proposals and Actions: This Environmental Assessment (EA) analyzes potential impacts associated with 7 implementation of the Proposed Action and alternatives - to improve the airfield on Holloman Air Force Base (AFB) by expanding the number of end of the runway (EOR) arm/dearm pads from 23 to 48; 8 9 increasing blast dissipation pavement; providing shelter for EOR crews; extending two taxiways; 10 demolishing excess buildings; and repositioning the Main Gate and La Luz Gate (also known as the North 11 Gate). The analysis considered the current (baseline) conditions of the affected environment and 12 compared those to conditions that might occur should the Air Force implement the Proposed Action, any of the alternatives, or the No Action Alternative. 13
- 14 d. For Additional Information: Mr. Spencer Robison at 49 CES/CEIE, 550 Tabosa Avenue, Holloman AFB,
 15 New Mexico 88330 or by email at spencer.robison@us.af.mil.
- 16 e. Designation: Draft EA
- f. *Abstract*: This EA was prepared pursuant to provisions of the National Environmental Policy Act, Title 42
 United States Code §§ 4321 to 4347, implemented by the Council on Environmental Quality Regulations,
 Title 40, Code of Federal Regulations Parts 1500 to 1508, and 32 Code of Federal Regulations Part 989,
 Environmental Impact Analysis Process (EIAP). Potentially affected environmental resources were
 identified in coordination with local, state, and federal agencies.
- The purpose of the Proposed Action and alternatives is to provide airfield and access control points and infrastructure that are adequate to meet the mission requirements of the 49th Wing and its tenant units. The proposed projects were identified as priorities for the installation for the improvement of the physical infrastructure and functionality of Holloman AFB, including current and future mission and facility requirements, development constraints and opportunities, and land use planning goals.
- Alternative 1 would expand the number of end of the runway (EOR) arm/dearm pads from 23 to 48 to increase stage, arm and launch volume; increase blast dissipation pavement; provide shelter for EOR crews; and extend two taxiways to improve airfield geometry. Excess buildings located within and adjacent to the planned routes for the taxiway extensions would be demolished. These improvements would enhance airfield efficiency to alleviate safety, operational and training shortfalls, as well as allow for improved F-16 recovery and taxiway circulation and overall airfield efficiency.
- 33 Alternative 1 would also include repositioning the Main Gate and La Luz Gate and adding additional access 34 control facilities. The changes would improve gate security, increase safety, and reduce traffic congestion. 35 Base access points in their existing configuration do not meet current Anti-Terrorism/Force Protection 36 standards and are not adequate for the volume of traffic entering Holloman AFB. The La Luz Gate is the 37 only access to Holloman AFB from the north side of the base. Due to its distance from the main base cantonment area, the response time for Security Forces and other first responders is not adequate. 38 Proposed improvements would increase and expand security infrastructure and decrease response time, 39 40 increase the capacity for vehicles awaiting base access, expand the number of identification check lanes 41 and the truck inspection capacity to facilitate entry, and improve overall visitor processing capacity. Under 42 Alternative 2, the facilities at the current La Luz Gate would be renovated, and additional traffic lanes would be added. Under Alternative 3, the La Luz Gate would be closed, and the current facilities would be 43 demolished. Under Alternatives 2 and 3, the airfield improvements and repositioning of the Main Gate 44 45 under Alternative 1 would still take place.
- The analysis of the affected environment and environmental consequences of implementing the Proposed Action and alternatives concluded that when standing environmental protection measures and best management practices are applied, there would be no significant impacts to noise, safety, air quality, biological resources, cultural resources, transportation, water resources, geological resources, and hazardous materials and wastes, contaminated sites, and toxic substances. No additional impacts would result from activities associated with the Proposed Action and alternatives when considered with reasonably foreseeable future actions at any of the locations.

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PROPOSED FINDING OF NO SIGNIFICANT IMPACT (FONSI) AIRFIELD AND ACCESS CONTROL POINTS IMPROVEMENTS HOLLOMAN AIR FORCE BASE, NEW MEXICO

Pursuant to provisions of the National Environmental Policy Act. 42 United States Code §§ 4321 to 4370h; 4 the Council on Environmental Quality Regulations, 40 Code of Federal Regulations (CFR) Parts 1500 to 5 1508; and 32 CFR Part 989, Environmental Impact Analysis Process (EIAP) (1999), the United States Air 6 7 Force (Air Force) prepared the attached Draft Environmental Assessment (EA) to address the potential 8 environmental consequences associated with expanding the number of end of the runway (EOR) 9 arm/dearm pads from 23 to 48; increasing blast dissipation pavement; providing shelter for EOR crews; 10 extending two taxiways; demolishing excess buildings; and repositioning the Main Gate and La Luz Gate 11 (also known as the North Gate) at Holloman Air Force Base (AFB), New Mexico.

12 **Purpose and Need**

The purpose of the Proposed Action is to enable Holloman AFB to support base- and Department of Defense (DOD)–wide efficiency by improving airfield efficiency and safety, access control points, and infrastructure.

- Holloman AFB needs to provide airfield and access control points and infrastructure that are adequate to
 meet the mission requirements of the 49th Wing and its tenant units in a manner that:
- Meets all applicable DOD installation master planning criteria, consistent with Unified Facilities Criteria (UFC) 2-100-01, *Installation Master Planning;* UFC 3-260-01, *Airfield and Heliport Planning* and Design, Department of the Air Force Manual (DAFMAN) 32-1084, *Facility Requirements;* Air Force Instruction (AFI) 32-1015, *Integrated Installation Planning;* and Air Force Policy Directive 32-10, *Installations and Facilities;*
- Meets applicable DOD antiterrorism and force protection criteria, consistent with UFC 4-010-01,
 DOD Minimum Antiterrorism Standards for Buildings, and the Air Force Installation Force Protection
 Guide;
- For access control points, meets the following: UFC 4-022-01, Entry Control Facilities Access Control Points; UFC 4-022-02, Selection and Application of Vehicle Barriers; Air Force Civil Engineer Center (AFCEC) document Facilities Dynamic Prototypes Design: Installation Access Control Points (ECF/IACP); and US Army Military Surface Deployment and Distribution Command Transportation Engineering Agency (SDDCTEA) Pamphlet 55-15, Traffic and Safety Engineering for Better Entry Control Facilities;
 - Supports and enhances the morale and welfare of personnel assigned to the installation, their families, and civilian staff, consistent with DOD Instruction 1015.10, *Military Morale, Welfare, and Recreation Programs*;
- Conforms to the Air Force and Major Command building design and construction guidance and the
 Holloman AFB Architectural Compatibility Guide to ensure a consistent and coherent architectural
 character throughout the base;
- Achieves the goals and objectives laid out in the Holloman AFB Installation Development Plan; and
- Is consistent with findings of the applicable Facility Sustainment, Restoration, and Modernization
 Planning Charrette Reports.

41 **Proposed Action (Alternative 1)**

The Proposed Action would expand the number of EOR arm/dearm pads from 23 to 48 to increase stage, arm and launch volume; increase blast dissipation pavement; provide shelter for EOR crews; and extend two taxiways to improve airfield geometry. Excess buildings located within and adjacent to the planned routes for the taxiway extensions would be demolished. These improvements would enhance airfield efficiency to alleviate safety, operational and training shortfalls, as well as allow for improved F-16 recovery and taxiway circulation and overall airfield efficiency.

The Proposed Action would also include repositioning the Main Gate and La Luz Gate and adding additional 1 2 access control facilities. The changes would improve gate security, increase safety, and reduce traffic 3 congestion. Base access points in their existing configuration do not meet current Anti-Terrorism/Force 4 Protection (AT/FP) standards and are not adequate for the volume of traffic entering Holloman AFB. The La Luz Gate is the only access to Holloman AFB from the north side of the base. Due to its distance from 5 the main base cantonment area, the response time for Security Forces and other first responders is not 6 adequate. Proposed improvements would increase and expand security infrastructure and decrease 7 8 response time, increase the capacity for vehicles awaiting base access, expand the number of identification 9 check lanes and the truck inspection capacity to facilitate entry, and improve overall visitor processing capacity. Upon completion of the Main Gate and La Luz Gate relocation, the existing facilities would be 10 demolished. 11

12 Alternative 2

Alternative 2 would renovate the current La Luz Gate facilities, reroute and add additional identification check lanes, and add additional security infrastructure (i.e., overwatch tower or pad). The airfield improvements and Main Gate repositioning actions under Alternative 1 would still occur.

16 Alternative 3

Under Alternative 3, the La Luz Gate would be permanently closed, and the current facilities would be demolished. A gate that could be used for emergency access or other uses that do not require entry control facilities would be added on La Luz Gate Road to close the installation boundary fence. The airfield

20 improvements and Main Gate repositioning actions under Alternative 1 would still occur.

21 No Action Alternative

Under the No Action Alternative, the airfield improvements would not occur, and the Main Gate and La Luz Gates would remain in their current configuration. Under the No Action Alternative, the airfield inefficiencies and operational and training shortfalls would remain. Additionally, the security and safety concerns

associated with the current configuration of the gates would not be resolved.

26 Summary of Findings

The Air Force has concluded that implementation of the Proposed Action and alternatives would result in no significant adverse impacts to the following resources: noise, safety, air quality, biological resources, cultural resources, transportation, water resources, geological resources, and hazardous materials and wastes, contaminated sites, and toxic substances. No significant impacts would result from activities associated with the Proposed Action and alternatives when considered with past, present, or reasonably foreseeable future actions at any of the locations included as part of the Proposed Action and alternatives. The Air Force would adhere to all established environmental protection measures, best management

34 practices (BMPs), regulations, plans, and programs in the execution of the Proposed Action or alternatives.

Potentially affected environmental resources were identified through communications with state and federal agencies and review of past environmental documentation.

37 <u>Noise</u>

Proposed construction and demolition activities at all locations associated with the Proposed Action or alternatives would be conducted during the daytime hours of 0700 to 1700. Use of heavy equipment may cause an increase in sound that is notably above the ambient level in the immediate region. Short-term minor increases in noise from construction and demolition are expected. Due to the repositioning of the Main Gate, the shift in the traffic pattern may result in a negligible long-term increase in noise to some areas

43 of base housing. Impacts would be intermittent and localized around the site and therefore insignificant

44 when considering the existing noise environment.

45 <u>Safety</u>

46 The proposed construction and demolition activities from the implementation of the Proposed Action or

47 alternatives would not impact health and safety. Companies and individuals contracted to perform

construction activities on Air Force installations are responsible for adhering to Occupational Safety and Health Administration (OSHA) requirements to mitigate hazards. Industrial hygiene programs address exposure to hazardous materials, use of personal protective equipment, and the availability and use of safety data sheets, the latter of which are also the responsibility of construction contractors to provide to workers. Individuals tasked to operate and maintain equipment, such as power generators, are responsible for following all applicable technical guidance, as well as adhering to established OSHA and Air Force safety guidelines.

8 Upon completion of airfield improvements, there would be long-term beneficial improvements to airfield 9 safety through improved efficiency and increased aircraft separation on arm/dearm pads.

During construction activities and rerouting of traffic lanes to the new Main Gate, traffic flow may be disrupted. This may create short-term adverse impacts on safety due to slowed traffic and increased congestion on Highway 70W. Upon completion of the Main Gate relocation under the three action alternatives, there would be a long-term beneficial impact on safety by improving the flow of traffic entering the base during peak hours.

15 Repositioning of the La Luz Gate under Alternative 1 or rerouting traffic and adding identification check lanes in Alternative 2 may temporarily disrupt traffic flow on La Luz Gate Road and create minor, short-term 16 adverse impacts to safety by increasing congestion at the gate. Upon completion of the La Luz Gate 17 18 relocation under Alternative 1, there would be long-term beneficial impacts on safety due to the reduction 19 in response time of first responders to the La Luz Gate in the event of an emergency. There would be no 20 impact to health and safety from closing and demolishing the existing La Luz Gate facilities under Alternative 3. The Proposed Action or alternatives would not impact explosive safety and would improve 21 airfield safety by enhancing efficiencies and decreasing the need to use Runway 07/25 for taxiing during 22 certain weather conditions. 23

24 Air Quality

25 The Proposed Action or alternatives would result in a short-term, minor adverse impact on air quality.

- Emissions of criteria pollutants and greenhouse gases would be produced from demolition activities. This one-time emission of criteria pollutants and greenhouse gases would not meaningfully contribute to the potential effects of global climate change or other environmental trends.
- The Proposed Action or alternatives would not interfere with the region's ability to maintain compliance with National Ambient Air Quality Standards for attainment area pollutants.

31 Biological Resources

The construction activities associated with the Proposed Action for the airfield and Main Gate would take place in areas previously disturbed and maintained, and the development of this land would not have significant impacts. During construction activities, soil surfaces, including existing vegetation, would be cleared, graded, trenched, and leveled. After demolition of obsolete structures, areas would be landscaped using xeriscaping techniques that are designed to eliminate or reduce the need for irrigation, as well as drought-tolerant native plants adapted to the region's climate that would provide long-term, beneficial impacts.

39 Construction of the La Luz Gate under Alternative 1 would take place on undisturbed land. Prior to the start 40 of construction, the contractor would be required to implement pre-construction BMPs and obtain permits to limit the displacement of native plants. The net loss of previously undisturbed native vegetation from the 41 42 construction of the La Luz Gate would be minor. As such, there would be long-term, minor adverse impacts to native vegetation. Under Alternative 2, the addition of traffic lanes at the current La Luz Gate location 43 may impact both disturbed land and previously disturbed lands; however, the amount of vegetation that 44 would be disturbed is small. As such, there may be long-term, minor impacts to native vegetation. Upon 45 completion of demolition of the existing La Luz Gate under Alternative 3, landscaping actions would provide 46 47 long-term, beneficial impacts to native vegetation.

Potential impacts to wildlife and habitat from implementation of the Proposed Action or alternatives are 1 2 expected to be short-term, adverse, and minor. Construction and demolition activities may cause minor. 3 short-term disturbances to wildlife that may inhabit the proposed locations or adjacent sites. Some mortality 4 of wildlife may occur, though it would not result in long-term adverse impacts to wildlife populations. Potential negligible long-term adverse impacts to the federal candidate monarch butterfly may occur from 5 the removal of native vegetation during the relocation of the La Luz Gate under Alternative 1. No adverse 6 impacts to other federal or state listed species from the Proposed Action or alternatives will occur. There 7 8 would be no impacts to federal or state listed species under the La Luz Gate Alternatives 2 or 3. Short-9 term, minor adverse impacts on burrowing owls, if they are present, may occur from the Proposed Action or alternatives. Revegetation after the demolition of the La Luz Gate facilities under Alternative 2 would 10 provide additional wildlife habitat, resulting in long-term minor beneficial impacts. There would be no 11 impacts on invasive species control under the Proposed Action and alternatives. 12

13 Cultural Resources

14 Under Alternative 1, there are no historic properties within, adjacent to, or in the general vicinity of the portion of the Area of Potential Effect (APE) associated with the airfield and Main Gate. As such, no historic 15 properties would be affected by proposed improvements to the airfield and Main Gate locations. There are 16 no historic properties within the portion of the APE associated with the proposed location of the new La Luz 17 Gate. Three recorded archaeological sites are located in the general vicinity of the proposed new La Luz 18 Gate location: however, construction activities under Alternative 1 would not diminish or otherwise impact 19 20 the integrity of these sites and therefore, per 36 CFR § 800.4, no historic properties would be affected by implementation of Alternative 1. 21

There are no significant archaeological sites, traditional cultural properties (TCPs), or architectural resources within, adjacent to, or in the general vicinity of the portion of the APE associated with the current and proposed La Luz Gate locations. Therefore, per 36 CFR § 800.4, no historic properties would be affected by implementation of Alternative 2 or Alternative 3.

Federally recognized Native American Tribes were contacted in the preparation of the EA, and responses will be included in the Final EA. No traditional cultural properties or sacred sites have been identified within the APE. The New Mexico State Historic Preservation Office has been contacted to ensure details regarding this project can be reviewed.

30 Transportation

The increased capacity for F-16 staging at EORs and the extension of taxiways L and J under the Proposed 31 Action and alternatives would have a major long-term beneficial impact on airfield efficiency. The 32 33 repositioning of the Main Gate and La Luz Gate under Alternative 1 would result in compliance with AT/FP 34 requirements, improved traffic flow, and increased efficiency in processing vehicles. The proposed improvements to the Main Gate would result in long-term beneficial impacts, and improvements associated 35 with La Luz Gate would result in a minor beneficial impact on transportation. The increase in traffic lanes 36 37 and renovation of facilities at the La Luz Gate under Alternative 2 would increase efficiency at peak use hours and result in minor long-term beneficial impacts. Closing the La Luz Gate under Alternative 3 would 38 increase the use of the Main and West Gates, resulting in a long-term minor impact to traffic flow at these 39 access points. 40

41 Water Resources

42 The Proposed Action and alternatives would have no appreciable effect on daily water use at Holloman AFB. While the aquifer underlying the installation is non-potable and not regulated, BMPs and planning 43 44 during construction and demolition activities would control runoff and ensure no direct access to groundwater recharge points. Therefore, there would be no impacts on groundwater resources. For the 45 proposed improvements, a Stormwater Pollution Prevention Plan would be implemented, and impacts from 46 erosion and offsite sedimentation would be negligible. There are no floodplains associated with any airfield 47 improvements so there would be no impacts. The proposed siting location for the La Luz Gate under 48 49 Alternative 1 falls between floodplains associated with the Rita and Malone Draws. However, the project area itself is flat and elevated relative to the draws and falls outside of these floodplains, so no impacts to 50

1 floodplains would result from the relocation of the La Luz Gate. No impacts to water resources would occur

- 2 from the renovation of the La Luz Gate under Alternative 2 or closure and demolition of the La Luz Gate
- 3 under Alternative 3.

4 Geological Resources

The construction and demolition activities associated with the Proposed Action and alternatives for airfield 5 improvements would result in no impacts to geology, potential long-term negligible adverse impacts to 6 topography, and short-term minor adverse impacts to soil resources. All airfield projects would occur on 7 previously disturbed land. The proposed repositioning of the Main Gate would result in long-term negligible 8 adverse impacts to geology and short-term minor adverse impacts to topography and soil resources. After 9 demolition of the existing Main Gate, the area would be graded to level and undergo soil stabilization 10 measures. As with the airfield projects, actions would occur on previously disturbed land and, after 11 demolition of degraded or excess pavement, the area would be graded to level and undergo soil 12 13 stabilization measures.

The proposed relocation of the La Luz Gate under Alternative 1 would result in potential long-term negligible adverse impacts to geology and topography and short-term minor adverse impacts to soil resources. Projects under this alternative would occur on undisturbed land, but the amount of change would be small. After demolition of the existing La Luz Gate, the area would be graded to level, undergo soil stabilization

18 measures, and be returned to a more natural topography.

19 Hazardous Materials and Wastes, Contaminated Sites, and Toxic Substances

Short-term minor adverse impacts on hazardous materials and wastes would occur during construction and demolition activities associated with the Proposed Action from the generation of negligible amounts of hazardous wastes. Additional hazardous wastes would be generated in the form of debris from demolition processes. Contractors would be required to adhere to all federal, state, and local regulations governing the storage, management, and disposal of hazardous materials and wastes. There would be no impacts from daily operation of the new facilities and structures.

Short-term minor adverse impacts from toxic hazards would occur during demolition and construction processes. Surveys would be performed by certified personnel to determine the presence and extent of any hazardous materials prior to demolition. Plans would be generated based on the results of the exploratory surveys to identify any areas where controls may be necessary to reduce the hazards to workers and prevent the release of toxic materials from the site.

31 Mitigation

32 The EA analysis concluded that the Proposed Action would not result in adverse environmental impacts;

therefore, no mitigation measures are required. BMPs are described and recommended in the EA where applicable.

1 Conclusion

2 Finding of No Significant Impact. After review of the EA prepared in accordance with the requirements 3 of the National Environmental Policy Act; the Council on Environmental Quality regulations; and 32 CFR 4 Part 989, Environmental Impact Analysis Process (EIAP) (1999), and which is hereby incorporated by 5 reference, I have determined that the Proposed Action (Alternative 1), Alternative 2, and Alternative 3 or 6 alternatives would not have a negative impact on the quality of the human or natural environment. 7 Accordingly, an Environmental Impact Statement will not be prepared. This decision has been made after considering all submitted information, including a review of agency comments submitted during the 30-day 8 9 public comment period, and considering a full range of practical alternatives that meet project requirements and are within the legal authority of the United States Air Force. 10 11 12 13 14

- 15 JUSTIN B. SPEARS, Colonel, USAF
- 16 Commander, 49th Wing

DATE

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LIST OF ACRONYMS AND ABBREVIATIONS

2	49 WG	49th Wing
3	49 SFS	49th Security Forces Squadron
4	ac	acre(s)
5	ACAM	Air Force Air Conformity Applicability Model
6	ACM	asbestos-containing material
7	AFB	Air Force Base
8	AFCEC	Air Force Civil Engineer Center
9	AFI	Air Force Instruction
10 11	AFOSH AFPD	Air Force Occupational Safety and Health Air Force Policy Directive
12	AFFD Air Force	United States Air Force
12	APE	Area of Potential Effect
14	APZ	Accident Potential Zone
15	AST	aboveground storage tank
16	AT/FP	Anti-Terrorism/Force Protection
17	Air Force	United States Air Force
18	BMP	best management practice(s)
19	CAA	Clean Air Act
20	CEQ	Council on Environmental Quality
21	CFR	Code of Federal Regulations
22	CO	carbon monoxide
23	CO ₂ e	carbon dioxide equivalent
24	CZ	Clear Zone(s)
25	DAFMAN	Department of the Air Force Manual
26	dB	decibels
27	dBA	A-weighted decibels
28	DNL	day/night sound level
29	DOD EA	Department of Defense Environmental Assessment
30 31	EIAP	
32	EIS	Environmental Impact Analysis Process Environmental Impact Statement
33	EMS	Environmental Management System
34	EO	Executive Order
35	EOR	End of the Runway
36	ERP	Environmental Restoration Program
37	ESA	Endangered Species Act
38	FONSI	Finding of No Significant Impact
39	ft	feet
40	FTU	Formal Training Unit
41	GHG	greenhouse gas(es)
42	HAZMAT	hazardous materials
43	HAR	Holloman Archeological Resource
44	IPaC	Information for Planning and Consultation
45	LA	New Mexico Laboratory of Anthropology
46		lead-based paint
47	MMRP	Military Munitions Response Program
48 49	NAAQS NM	National Ambient Air Quality Standards New Mexico
49 50	NEPA	National Environmental Policy Act
50 51	NH ₃	ammonia
52	NHPA	National Historic Preservation Act
53	NMDGF	New Mexico Department of Game and Fish
54	NMED	New Mexico Environment Department
55	NO ₂	nitrogen dioxide
		-

1	NOx	nitrogen oxide
2 3	NPDES NRHP	National Pollutant Discharge Elimination System National Register of Historic Places
3 4	03	ozone
4 5	OSHA	Occupational Safety and Health Administration
6	PCBs	polychlorinated biphenyls
7		
7 8	PM10	suspended particulate matter measured less than or equal to 10 microns in diameter
9	PM _{2.5}	suspended particulate matter measured less than or equal to 2.5 microns in
10		diameter
11	Q-D	Quantity-Distance
12	RCRA	Resource Conservation and Recovery Act
13	ROI	Region of Influence
14	SHPO	State Historic Preservation Officer
15	SO ₂	sulfur dioxide
16	SOx	sulfur oxide
17	SWPPP	Stormwater Pollution Prevention Plan
18	TCP	Traditional Cultural Properties
19	THPO	Tribal Historic Preservation Officers
20	UFC	Unified Facilities Criteria
21	U.S.C.	United States Code
22	US	United States
23	USEPA	United States Environmental Protection Agency
24	USFWS	United States Fish and Wildlife Service
25	VOC	volatile organic compounds
26	WSMR	White Sands Missile Range

1 **1.0 PURPOSE AND NEED FOR THE PROPOSED ACTION**

2 1.1 INTRODUCTION

3 The 49th Wing (49 WG) at Holloman Air Force Base (AFB), New Mexico, has identified construction, 4 renovation, infrastructure, and demolition projects that improve installation access and air operations safety. 5 The 49 WG proposes to implement these projects in a phased approach over a 3-year period beginning in 6 2025, with airfield improvements as the first priority. Projects are estimated to be completed in 2028. This 7 Environmental Assessment (EA) was prepared to evaluate the potential environmental impacts associated 8 with installation development activities in compliance with the National Environmental Policy Act (NEPA) 9 (42 United States Code [U.S.C.] § 4331 et seq.); regulations of the President's Council on Environmental Quality (CEQ) that implement NEPA procedures (40 Code of Federal Regulations [CFR] Parts 1500–1508); 10 and the United States (US) Air Force's (Air Force's) Environmental Impact Analysis Process (EIAP) 11 Regulations at 32 CFR Part 989. Environmental Impact Analysis Process. 12

The intent of the proposed projects is to provide improvements necessary to support the mission of the 49 WG and tenant units. The proposed projects were identified as priorities for the installation for the improvement of the physical infrastructure and functionality of Holloman AFB, including current and future mission and facility requirements, development constraints and opportunities, and land use planning goals.

17 1.2 LOCATION

18 The 49 WG supports the F-16 Fighting Falcon, T-38 Talon, and MQ-9 Reaper remotely piloted aircraft. The

19 54th Fighter Group is an F-16 Formal Training Unit (FTU) and a unit of the 49 WG. Holloman AFB is also

20 home to the 635th Material Maintenance Group and the 704th Test Group. Holloman AFB provides support

21 for the US Army's White Sands Missile Range (WSMR) military testing area as well as the White Sands

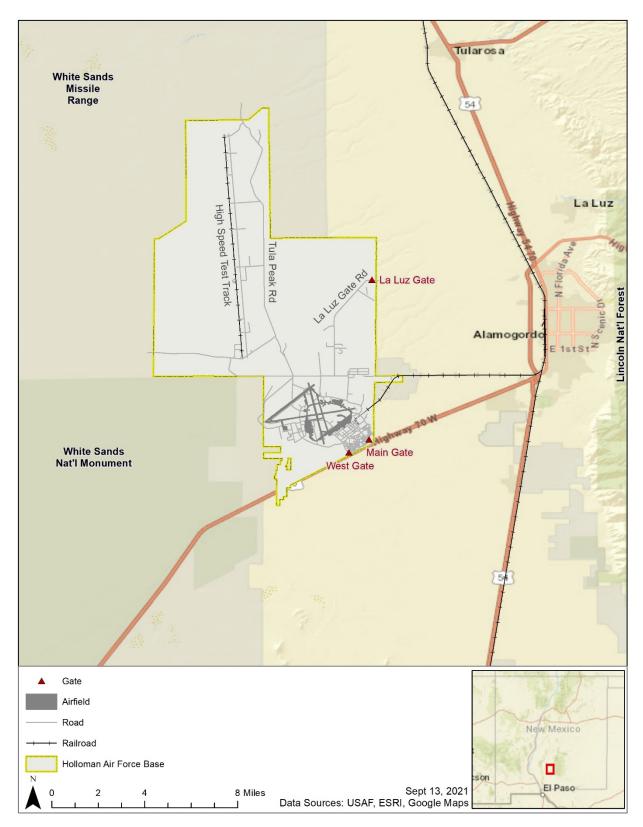
22 Space Harbor for National Aeronautical and Space Administration missions.

Holloman AFB is in southern New Mexico about 95 miles north of the Texas border (Figure 1-1). It is in
 Otero County, New Mexico, 6 miles southwest of Alamogordo. The main base encompasses 51,813 acres
 (ac), is bounded to the west by the White Sands National Monument and to the south by Highway 70, and
 supports about 21,000 active-duty Air Force, Air National Guard, Air Force Reserve, retirees, Department
 of Defense (DOD) civilians and their family members.

28 1.3 PURPOSE OF THE ACTION

The purpose of the Proposed Action is to allow the Air Force to make improvements to the airfield and 29 reposition the Main Gate and La Luz Gate (also known as the North Gate) on Holloman AFB. The airfield 30 improvements would consist of expanding the number of end of the runway (EOR) arm/dearm pads from 31 23 to 48 to increase stage, arm and launch volume; increasing blast dissipation pavement; providing shelter 32 for EOR crews; and extending two taxiways to improve airfield geometry. In addition, excess buildings 33 located within and adjacent to the planned routes for the taxiway extensions would be demolished. These 34 improvements would enhance airfield efficiency to alleviate safety, operational and training shortfalls, as 35 well as decrease the need to frequently use Runway 07/25 for taxiing during certain weather conditions. 36 37 Taxiway extensions would allow for improved F-16 recovery and taxiway circulation and overall airfield 38 efficiency.

The Proposed Action would also include repositioning the Main Gate and La Luz Gate and adding additional 39 access control facilities. The proposed changes would improve gate security, increase safety, and reduce 40 traffic congestion. These base access points in their existing configuration do not meet current Anti-41 Terrorism/Force Protection (AT/FP) standards and are not adequate for the volume of traffic entering 42 Holloman AFB at peak hours. At the Main Gate, traffic frequently backs up to the US 70 deceleration lane. 43 The La Luz Gate is located on private land and is the only access to Holloman AFB from the north side of 44 45 the base. Due to the distance of the La Luz Gate from the main base cantonment area, the response time 46 for Security Forces and other first responders is not adequate. Proposed improvements at these 47



1 2

Figure 1-1. Location of Holloman Air Force Base

- 1 access points would increase and expand security infrastructure and decrease response time, increase the
- 2 capacity for vehicles awaiting base access, expand the number of identification check lanes and the truck
- 3 inspection capacity to facilitate entry, and improve overall visitor processing capacity.

4 1.4 NEED FOR THE ACTION

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Holloman AFB needs to provide airfield and access control points and infrastructure that are adequate to
 meet the mission requirements of the 49 WG and its tenant units in a manner that:

- Meets all applicable DOD installation master planning criteria, consistent with Unified Facilities Criteria (UFC) 2-100-01, *Installation Master Planning;* UFC 3-260-01, *Airfield and Heliport Planning and Design*, Department of the Air Force Manual (DAFMAN) 32-1084, *Facility Requirements;* Air
 Force Instruction (AFI) 32-1015, *Integrated Installation Planning;* and Air Force Policy Directive (AFPD) 32-10, *Installations and Facilities;*
 - Meets applicable DOD antiterrorism and force protection criteria, consistent with UFC 4-010-01, DOD Minimum Antiterrorism Standards for Buildings, and the Air Force Installation Force Protection Guide;
- For access control points, meets the following: UFC 4-022-01, *Entry Control Facilities Access Control Points*; UFC 4-022-02, *Selection and Application of Vehicle Barriers*; Air Force Civil Engineer Center (AFCEC) document *Facilities Dynamic Prototypes Design: Installation Access Control Points* (ECF/IACP); and US Army Military Surface Deployment and Distribution Command Transportation Engineering Agency (SDDCTEA) Pamphlet 55-15, *Traffic and Safety Engineering for Better Entry Control Facilities*.
 - Supports and enhances the morale and welfare of personnel assigned to the installation, their families, and civilian staff, consistent with DOD Instruction 1015.10, *Military Morale, Welfare, and Recreation Programs*;
- Conforms to the Air Force and Major Command building design and construction guidance and the
 Holloman AFB Architectural Compatibility Guide to ensure a consistent and coherent architectural
 character throughout the base;
 - Achieves the goals and objectives laid out in the Holloman AFB Installation Development Plan; and
- Is consistent with findings of the applicable Facility Sustainment, Restoration, and Modernization
 Planning Charrette Reports.

30 1.5 INTERAGENCY AND INTERGOVERNMENTAL COORDINATION AND CONSULTATION

The environmental analysis process, in compliance with NEPA guidance, includes public and agency review of information pertinent to the Proposed Action and alternatives. Furthermore, compliance with Section 7 of the Endangered Species Act (ESA) and Section 106 of the National Historic Preservation Act (NHPA) requires consultation with the US Fish and Wildlife Service (USFWS) and the State Historic Preservation Office (SHPO), respectively. Tribal consultation is also required under the NHPA. Information about stakeholder coordination, public and agency review, as well as the letters and responses, are included in **Appendix A**.

38 1.6 APPLICABLE LAWS AND ENVIRONMENTAL REGULATIONS

Implementation of the Proposed Action would involve coordination with several organizations and agencies.
 Adherence to the requirements of specific laws, regulations, best management practices (BMPs), and
 necessary permits are described in detail in each resource section in **Chapter 3**.

42 1.6.1 National Environmental Policy Act

NEPA requires that federal agencies consider the potential environmental consequences of proposed actions. The law's intent is to protect, restore, or enhance the environment through well-informed federal decisions. The Council on Environmental Quality was established under NEPA to implement and oversee federal policies as they relate to this process. In 1978, the CEQ issued Regulations for Implementing the

- 1 Procedural Provisions of the National Environmental Policy Act (40 CFR Parts 1500 through 1508 [CEQ
- 1978]). On 14 September 2020, the CEQ updated NEPA rules, subject to congressional review (85 Federal
 Register 43304 through 43376), which are being followed for this EA. CEQ regulations specify that an EA
- 4 be prepared to
- briefly provide sufficient analysis and evidence for determining whether to prepare an
 Environmental Impact Statement (EIS) or a Finding of No Significant Impact (FONSI);
 - aid in an agency's compliance with NEPA when no EIS is necessary; and
 - facilitate preparation of an EIS when one is necessary.

9 Further, to comply with other relevant environmental requirements (e.g., the ESA and NHPA) in addition to NEPA and to assess potential environmental impacts, the EIAP and decision-making process for the Proposed Action and alternatives involves a thorough examination of environmental issues potentially affected by government actions subject to NEPA.

The EIAP is the process by which the Air Force facilitates compliance with environmental regulations (32 CFR Part 989), including NEPA, which is the primary legislation affecting the agency's decision-making process.

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1 2.0 DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVES

2 2.1 PROPOSED ACTION

This EA evaluates the potential environmental impacts that may arise from proposed airfield and access control point projects, which include the installation of additional pavement, the construction of new facilities, and subsequent demolition of degraded and excess facilities and pavement. Alternative 1 includes mediumand long-range airfield improvement projects and the repositioning of the Main Gate and La Luz Gate (**Table 2-1**). Alternative 2 would be limited to smaller scale airfield projects and the construction of fewer new facilities at the Main and La Luz Gates.

9 2.2 ALTERNATIVE SELECTION PROCESS

In accordance with 32 CFR § 989.8(c), selection standards were developed to establish a means for determining the reasonableness of an alternative and whether an alternative should be carried forward for further analysis in the EA. Consistent with 32 CFR § 989.8(c), the following selection standards meet the purpose of and need for the Proposed Action and were used to identify reasonable alternatives for analysis in the EA.

- 15 1) **Mission**: Compatible with the existing, ongoing military missions and activities at Holloman AFB.
- Land use: Consistent with land use requirements and planning concepts as defined in the 2016
 Installation Development Plan and other DOD and Air Force installation and facility planning guidance.
- 19 3) **Minimize inefficiencies**: Minimizes operational inefficiencies and promotes sustainable 20 development.
- 4) **Access Control Point Security**: Meets the criteria required for AT/FP and access control points.
- 22 5) **Safety**:
- a) Airfield: Improves safety and enhances the movement of aircraft traversing the airfield and does not increase the potential for accidents or damage to aircraft.
- b) Access Control Points: Reduces congestion and improves the movement of traffic through access control points.

27 2.2.1 Alternatives Considered

28 The NEPA and CEQ regulations mandate the consideration of reasonable alternatives to the Proposed Action. "Reasonable alternatives" are those that could also be used to meet the purpose of and need for 29 the Proposed Action. The NEPA process is intended to support flexible, informed decision-making; the 30 analysis provided in this EA and feedback from stakeholders will inform decisions made about whether. 31 when, and how to execute the Proposed Action. Among the alternatives considered is the No Action 32 Alternative, which evaluates the potential consequences of not undertaking the Proposed Action and serves 33 34 to establish a comparative baseline for analysis. This section presents reasonable alternatives for 35 evaluation and assesses them relative to the selection standards. Table 2-1 provides a comparison of the 36 alternatives considered. A description of the alternatives carried forward for detailed analysis are described 37 in Section 2.3, and those eliminated from detailed analysis are described in Section 2.4.

- 38 2.2.1.1 Airfield Improvements
- Alternative 1 Expand the number of F-16 arming positions at Taxiway A and EORs B, D and E, and replace markings on the Apron Parking. Extend Taxiway L and Taxiway J.

- Alternative 2 Expand the number of F-16 arming positions at Taxiway A and EORs B, D and E,
 and replace markings on the Apron Parking. Construct additional taxiways that are parallel to
 Runways 04-22 and 16-34.
- 4 2.2.1.2 Access Control Point Improvements
- 5 Main Gate

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- Alternative 1 Reposition the gate to increase the length of entry lanes and the number of identification check lanes, and construct a new Visitors Center, vehicle inspection bay, and security facilities.
- Alternative 2 Renovate existing Main Gate facilities and one additional traffic lane and identification check lane.
- 11 La Luz Gate
- Alternative 1 Relocate the gate approximately 3.0 miles south of the current location to include a guardhouse, identification check lanes, vehicle inspection station, and security facilities.
- 15 o Alternative 2 Renovate existing La Luz Gate facilities.
- 16 Alternative 3 Permanently close the La Luz Gate and demolish the current facilities.
- Alternative 4 Relocate the gate approximately 3.3 miles south of the current location to
 include a guardhouse, identification check lanes, vehicle inspection station, and security
 facilities.

20 2.2.2 No Action

Analysis of the No Action Alternative provides a benchmark, enabling decision-makers to compare the magnitude of the potential environmental effects of the Proposed Action. NEPA requires an EA to analyze the No Action Alternative. No action means that the Proposed Action would not take place. No action for this EA means that airfield improvements would not occur, and the Main Gate and La Luz Gate would not be repositioned, resulting in safety concerns not being addressed and continued inefficiencies on the airfield and at the Main and La Luz Gates.

27

			Soli of Alternat			
		Masta				
Alternative Actions	1. Missions	2. Land Use	3. Minimize Inefficiencies	4. Security	5. Safety	Meets Purpose and Need
		Air	field			
Airfield Alternative 1 - Expand EOR arming positions and extend Taxiway L and J	Yes	Yes	Yes	NA	Yes	Yes
Airfield Alternative 2 - Expand EOR arming positions, add taxiways parallel to Runways 04- 22 and 16-34	Yes	Yes	No	NA	Yes	No

Table 2-1. Comparison of Alternatives

Selection Standard								
Alternative Actions	1. Missions	2. Land	3. Minimize Inefficiencies	4. Security	5. Safety	Meets Purpose and Need		
		Mair	n Gate					
Main Gate Alternative 1 - Reposition gate	Yes	Yes	Yes	Yes	Yes	Yes		
Main Gate Alternative 2 - Renovate existing facilities	Yes	Yes	No	No	No	No		
		La Lu	z Gate					
La Luz Gate Alternative 1 - Relocate gate 3.0 miles south	Yes	Yes	Yes	Yes	Yes	Yes		
La Luz Gate Alternative 2 - Renovate existing facilities	Yes	Yes	Yes	Yes	Yes	Yes		
La Luz Gate Alternative 3 - Close gate and demolish facilities	Yes	Yes	Yes	Yes	Yes	Yes		
La Luz Gate Alternative 4 - Relocate 3.3 miles south EOR=end of the runway: NA=not a	Yes	Yes	No	Yes	Yes	No		

Table 2-1. Comparison of Alternatives

1 EOR=end of the runway; NA=not applicable

2 2.3 DESCRIPTION OF THE ALTERNATIVES CONSIDERED FOR DETAILED ANALYSIS

3 The Air Force uses several guidelines and instructions in determining the best approach for construction, 4 renovation, and demolition. AFI 32-1023, Designing and Constructing Military Construction Projects, implements AFPD 32-10 and Military Standard 3007F, Standard Practice for Unified Facilities Criteria and 5 6 Unified Facilities Guide Specifications. AFI 32-1023 provides guidance on Air Force military construction 7 projects, including general design criteria and standards on construction management. DAFMAN 32-1084 provides guidance for determining space allocations for Air Force facilities and may be used to program 8 new facilities or evaluate existing spaces. 9

10 Alternatives with the potential to meet the purpose of and need for each proposed action were considered. 11 Table 2-2 summarizes the actions that are proposed as part of each alternative. The locations for each suggested project are shown in Figures 2-1 through 2-5. The improvement projects would be staggered 12 and are proposed to start in 2025, with an estimated construction schedule of 12 to 24 months for each 13 project. The estimated completion date for all projects would be in 2028. The specific schedule is dependent 14 on the timing of the design schedule and construction window relative to regional weather. 15

- 2.3.1 Airfield Improvements 16
- 2.3.1.1 Alternative 1 17

Seven projects are proposed under this alternative (Figure 2-1). Airfield improvements would include the 18 expansion of four EOR arm/dearm pads and construction of new crew shelters at EOR B, D, and E, and 19 Taxiway A; re-marking apron parking pavement; and extending two taxiways, L and J. Projects would 20 include the subsequent demolition of excess buildings and degraded pavement that are within or adjacent 21

to the airfield areas proposed for improvements. Additional details are provided in Table 2-2. 22

1 2.3.1.2 No Action Alternative

Under the No Action Alternative, the proposed airfield improvement projects would not occur. Activities that
 occur on existing ramps and taxiways would continue to operate under substandard, congested conditions,
 and inefficient workarounds to meet mission requirements would continue. Failure to complete the needed
 airfield improvements would degrade the 49 WG's ability to accomplish its mission.

6 2.3.2 Main Gate Improvements

7 2.3.2.1 Alternative 1

8 Under this alternative, the Main Gate would be repositioned, and the access control point would increase 9 to four identification check lanes, shifting the orientation of traffic lanes to decrease the potential for traffic 10 to back up onto main thoroughfares. A new Visitors Center, guardhouse, vehicle inspection building with 11 two vehicle inspection bays, and an overwatch tower or pad would be constructed (Figures 2-2 and 2-3). 12 Additional details are provided in Table 2-2. The potential area of ground disturbance would include the actual construction footprints for the new structures or additions and the surrounding lands where 13 construction-related clearing and grading would occur (the construction buffer areas). A construction buffer 14 area of 50 feet (ft) around all construction footprints was added to the area of potential ground disturbance. 15 for a total of approximately 24 acres (ac) of construction area and buffer. For construction activities, the 16 anticipated depth of excavation required is approximately 10 ft below ground surface. 17

The existing Main Gate facilities would be demolished. Required demolition activities may include abating any asbestos and/or lead-based paint that is present; removing demolished debris, slabs, foundations, and footings; removing any buried storage tanks associated with the structures; removing and capping buried utilities; backfilling to original grade; and restoring vegetation or other surface preparation to prevent future erosion. Materials would be recycled to the maximum extent possible.

23 2.3.2.2 No Action Alternative

Under the No Action Alternative, the Main Gate would not be repositioned with the construction of new and additional facilities. Under the No Action Alternative, the Main Gate would not meet current AT/FP standards, diminishing base security. In addition, congestion at the Main Gate would continue during peak traffic hours, interfering with traffic flow and increasing the potential for accidents.

28 2.3.3 La Luz Gate Improvements

29 2.3.3.1 Alternative 1

Under Alternative 1, the La Luz gate would be moved an estimated 2.5 to 3 miles southwest of the current 30 location on La Luz Gate Road within the base boundary. The proposed La Luz Gate relocation would be 31 32 located approximately 1.5 miles west of the installation boundary. Security fencing and cable barriers would be extended on both sides of the road to the boundary. Construction would include three identification 33 check lanes, a new gatehouse and identification check booths, a two-vehicle inspection station, an 34 overwatch tower or pad, and other related facilities (Figures 2-4 and 2-5). Additional details are provided 35 36 in Table 2-2. The potential area of ground disturbance would include the actual construction footprints for 37 the new structures or additions and the surrounding lands where construction-related clearing and grading 38 would occur (the construction buffer areas). A construction buffer area of 50 ft around all construction footprints was added to the area of potential ground disturbance, for a total of approximately 20 ac of 39 construction area and buffer. For construction activities, the anticipated depth of excavation required is 40 41 approximately 10 ft below ground surface.

The existing La Luz facilities would be demolished. Required demolition activities may include actions such as abating any asbestos and/or lead-based paint that is present; removing demolished debris, slabs, foundations, and footings; removing any buried storage tanks associated with the structures; removing and capping buried utilities; backfilling to original grade; and restoring vegetation or other surface preparation to prevent future erosion. Materials would be recycled to the maximum extent possible.

Alternative	Description	Estimated Construction Start (Year)	Estimated Facility or Infrastructure Size	Estimated Demolition
	•	Airfield Impr	ovements	
Alternative 1	Taxiway A - Increase F-16 arming positions from 4 to 6: Remove degraded pavement; add new and additional pavement; install taxiway and parking spot markings; construct EOR crew shelter.	2025	153,677 ft ² parking pavement 27,582 ft ² shoulder pavement	
	EOR B - Increase F-16 arming positions from 8 to 12: Remove degraded pavement; add new and additional pavement; install taxiway and parking spot markings; construct EOR crew shelter.	2025	172,729 ft ² parking pavement 42,038 ft ² shoulder pavement	38,583 ft ² pavement
	EOR D - Increase F-16 arming positions from 7 to 18: Remove degraded pavement; add new and additional pavement; install taxiway and parking spot markings; construct EOR crew shelter.	2025	269,096 ft ² parking pavement 64,497 ft ² shoulder pavement	55,543 ft² pavement
	EOR E - Increase F-16 arming positions from 4 to 12: Remove degraded pavement; add new and additional pavement; install taxiway and parking spot markings.	2025	153,229 ft ² parking pavement 54,108 ft ² shoulder pavement	2,770 ft ² parking pavement 42,955 ft ² shoulder pavement
	Apron Parking: Remove existing markings, add new markings specific for F-16 dimensions.	2025	1,742,400 ft ²	
	Taxiway L: Extend taxiway from Runway 7-25 to Runway 04-22	2025	1,031,450 ft ² parking pavement 650,252 ft ² shoulder pavement	214,050 ft ² parking pavement 206,919 ft ² shoulder pavement
	Taxiway J: Extend taxiway from Taxiway A to Taxiway R	2025	1,446,619 ft ² parking pavement 756,637 ft ² shoulder pavement	173,971 ft ² parking pavement 165,829 ft ² shoulder pavement

Alternative	Description	Estimated Construction Start (Year)	Estimated Facility or Infrastructure Size	Estimated Demolition					
Main Gate									
Alternative 1	Reposition gate entrance, construct a new Visitors Center, guardhouse, four identification check lanes, a vehicle inspection building with two vehicle inspection bays, and an overwatch tower or pad. Demolish current facilities and excess pavement.	2026	New:223,331 ft² roadway pavement15,857 ft² parking2,004 ft² Visitors Center1,901 ft² pedestrian pavement467 ft² guardhouse5,880 ft² canopy36 ft² ID check booths1,340 ft² vehicle inspection station49 ft² overwatch tower/pad	 123,782 ft² traffic lane and parking pavement 2,190 ft² Visitors Center 430 ft² gatehouse 3,972 ft² canopy 160 ft² guard structures 3,614 ft² vehicle inspection 					
		La Luz	Gate						
Alternative 1	Relocate gate entrance approximately 2.5 to 3 miles south, to include a guardhouse, three identification check lanes with booths, a 2-lane inspection building, and an overwatch tower or pad. Extend security fence and cable barriers to meet the relocated entrance. Demolish current facilities and excess pavement.	2027	 New: 142,429 ft² roadway and parking pavement 15,840 ft new fencing 467 ft² guardhouse 5,880 ft² canopy 36 ft² ID check booths 1,340 ft² inspection building 49 ft² overwatch tower 	 34,240 ft² traffic lane and parking pavement 3,614 ft² vehicle inspection 430 ft² gatehouse 3,972 ft² canopy 160 ft² guard structures 					
Alternative 2	Renovate current facilities, expand to three identification check stations with booths, add a 2-lane inspection building and an overwatch tower or pad.	2027	 New: 132,509 ft² roadway pavement Renovate: 3,614 ft² vehicle inspection 430 ft² gatehouse 3,972 ft² canopy160 ft² guard structures 						

 Table 2-2. Summary of Alternatives Considered for Detailed Analysis

Alternative	Description	Estimated Construction Start (Year)	Estimated Facility or Infrastructure Size	Estimated Demolition
Alternative 3	Permanently close and demolish current facilities and excess pavement. Erect a gate across La Luz Gate Road at base boundary.	2027		 34,240 ft² traffic lane and parking pavement 3,614 ft² vehicle inspection 430 ft² gatehouse 3,972 ft² canopy 160 ft² guard structures

Table 2-2. Summary of Alternatives Considered for Detailed Analysis

ac=acres, EOR=end of the runway; ft2=square feet; ID=identification

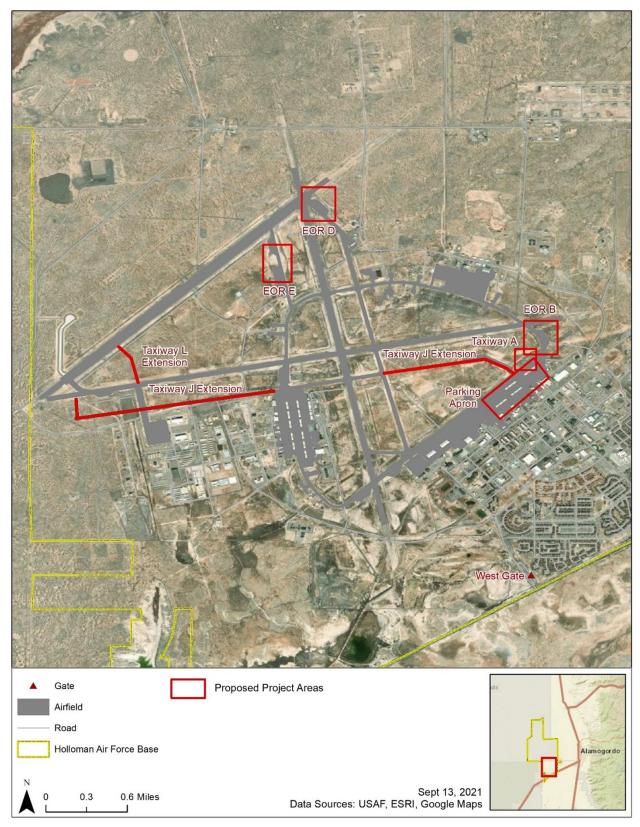
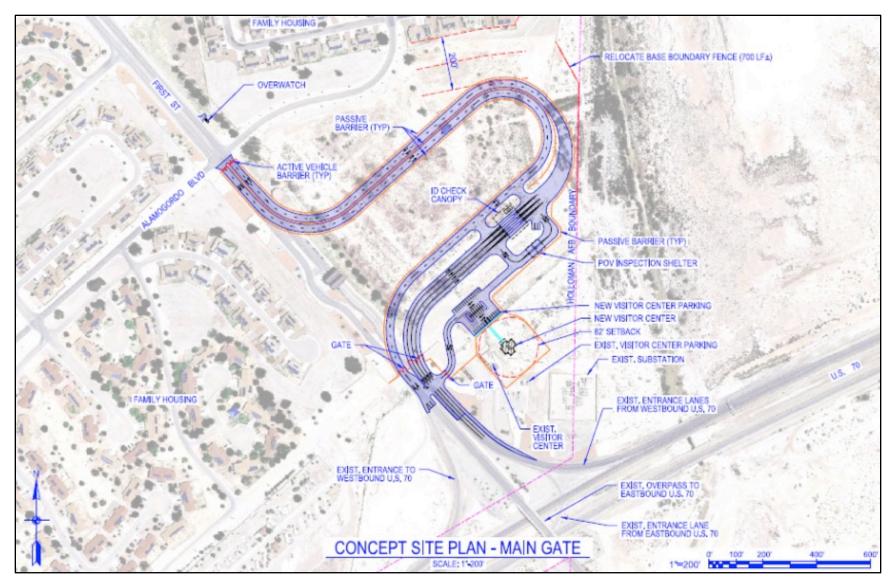


Figure 2-1. Location of the Proposed Actions for Airfield Improvement







- 2 Figure 2-3. Proposed Site Plan for the Main Gate Repositioning
- 3

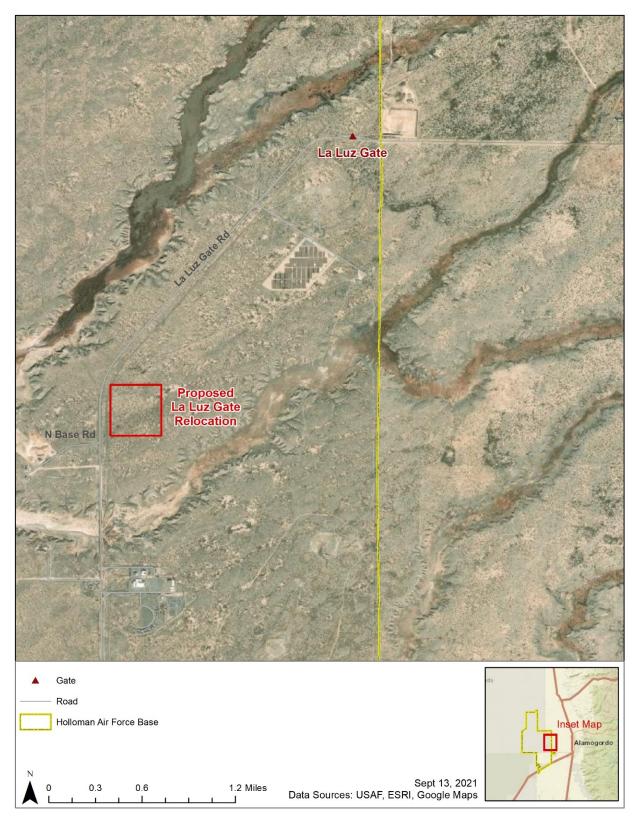
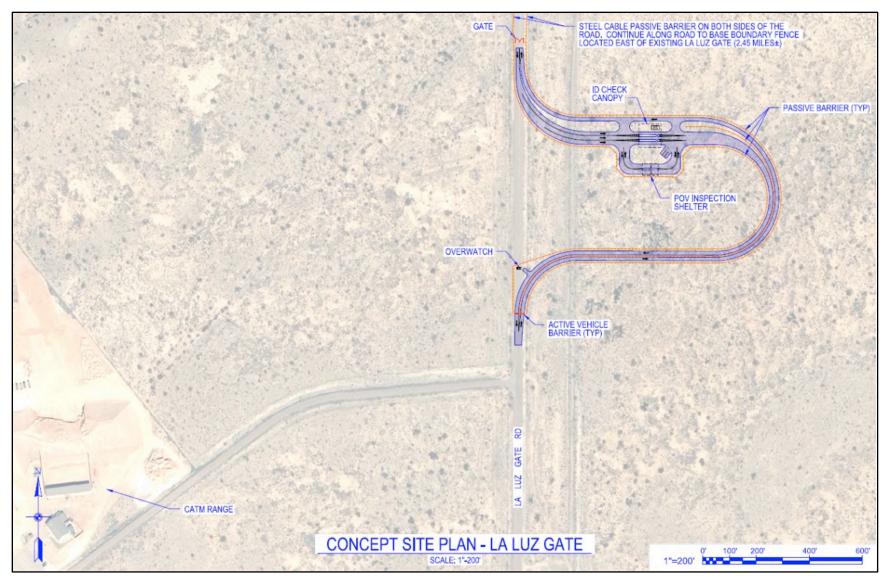




Figure 2-4. Location of the Proposed La Luz Gate Relocation



- Figure 2-5. Proposed Site Plan for the La Luz Gate Relocation
- 2 3

1 2.3.3.2 Alternative 2

Alternative 2 would include renovating the current La Luz Gate facilities, rerouting and adding additional identification check lanes, and adding additional security infrastructure (i.e., overwatch tower or pad). For construction activities, the anticipated depth of excavation required is approximately 10 ft below ground surface. Renovation activities may include actions such as abating any asbestos and/or lead-based paint that is present and removing old, useless, and worn debris. Materials would be recycled to the maximum extent possible.

8 2.3.3.3 Alternative 3

9 Under Alternative 3, the La Luz Gate would be permanently closed, and the current facilities would be 10 demolished. A gate that could be used for emergency access would be added on La Luz Gate Road to 11 close the base boundary fence. Required demolition activities may include actions such as abating any 12 asbestos and/or lead-based paint that is present; removing demolished debris, slabs, foundations, and 13 footings; removing any buried storage tanks associated with the structures; removing and capping buried 14 utilities; backfilling to original grade; and restoring vegetation or other surface preparation to prevent future 15 erosion. Materials would be recycled to the maximum extent possible.

16 2.3.3.4 No Action Alternative

17 Under the No Action Alternative, the La Luz Gate would remain in its current location with its existing 18 configuration and facilities. The La Luz Gate would not meet current AT/FP standards and increased

response time for Security Forces and other first responders would continue, diminishing base security,

20 safety, and access.

21 2.4 ALTERNATIVES ELIMINATED FROM FURTHER CONSIDERATION

Airfield Alternative 2. This alternative, which would expand the number of F-16 arming positions at Taxiway A and EORs B, D and E, replace markings on the apron parking, and construct additional taxiways that are parallel to Runways 04-22 and 16-34, does not meet the Selection Standard to minimize inefficiencies. Constructing two additional parallel taxiways would incur added time and expenses to improve taxiway efficiencies and reduce taxiway congestion that would be resolved through the addition of shorter taxiway extensions; therefore, this alternative was eliminated from further consideration.

Main Gate Alternative 2. This alternative, which would renovate the existing Main Gate facilities and add one additional traffic and identification check lane, does not meet the Selection Standards to minimize inefficiencies, meet minimum AT/FP standards, and improve safety at access control points. Due to the age and location of the existing facilities, renovations would still not meet current AT/FP standards. In addition, leaving the facilities in their present position would not alleviate traffic congestion or solve the current safety issues with traffic during peak hours. This alternative was eliminated from further consideration.

La Luz Gate Alternative 4. This alternative, which would relocate the La Luz Gate approximately 3.3 miles south of the current location, does not meet the Selection Standard to minimize inefficiencies. While locating the La Luz Gate closer to the main cantonment would reduce Security Forces' response time, the time saved would be negligible. This option would incur additional costs and time needed to plan, budget, and construct an alternative route to provide access to the existing Combat Arms Training and Maintenance facility. The additional costs and time cannot be justified by the relatively short distance gained; therefore, this alternative was eliminated from further consideration.

41 2.5 SUMMARY OF ENVIRONMENTAL CONSEQUENCES

The potential impacts associated with the Proposed Action, alternatives, and No Action Alternative are summarized in **Table 2-3**. The summary is based on information discussed in detail in **Chapter 3** (Existing Conditions and Environmental Consequences) of the EA, which includes a concise definition of the issues addressed and the potential environmental impacts associated with each alternative.

Resource	Alternative 1 (Airfield, Main Gate, La Luz Gate)	Alternative 2 La Luz Gate	Alternative 3 La Luz Gate	No Action Alternative
Noise	Airfield – short-term and long-term negligible adverse impacts. Main Gate – short-term minor impacts; long-term negligible adverse impacts. La Luz Gate – short-term	Same as described in Alternative 1.	Same as described in Alternative 1.	No impacts to the noise environment.
Safety	negligible adverse impacts.Airfield – No impactsassociated with constructionand demolition withadherence to OSHA andAFOSH requirements.Beneficial impacts to airfieldsafety; no impacts toexplosive safety.Main Gate – short-term,minor adverse impacts ontraffic safety; long-termbeneficial impacts followingconstruction.La Luz Gate – short-term,minor adverse impacts ontraffic safety; long-termbeneficial impacts followingconstruction.La huz Gate – short-term,minor adverse impacts ontraffic safety; long-termbeneficial impacts followingconstruction.	Same as described in Alternative 1.	No impacts associated with demolition with adherence to OSHA and AFOSH requirements.	Safety, operational, and training inefficiencies would remain. AT/FP standards would not be met, and traffic backups would continue to create hazards at the Main Gate. Insufficient response time by emergency personnel would persist at the La Luz Gate.
Air Quality	Short-term, minor adverse impacts associated with construction emissions and increased particulate matter. No significant impact on climate change.	Same as described in Alternative 1.	Same as described in Alternative 1.	No impacts on air quality.

Resource	Alternative 1 (Airfield, Main Gate, La Luz Gate)	Alternative 2 La Luz Gate	Alternative 3 La Luz Gate	No Action Alternative
Biological Resources	 Vegetation – No impacts to native vegetation from airfield improvements or repositioning of the Main Gate. Long-term minor impacts to native vegetation from relocating the La Luz Gate. Long-term beneficial impacts on native vegetation following demolition of existing facilities and revegetation at the Main Gate and La Luz Gate. Wildlife – short-term, minor adverse impacts on wildlife and habitat. T&E Species – negligible impact on the federal candidate monarch butterfly with an Air Force determination of may affect, but not likely to adversely affect. A no effect determination on the federal and state listed least tern. No impact to the state listed White Sands pupfish. Potential short-term, minor adverse impact to the burrowing owl. No impacts on invasive species control. 	Long-term, minor adverse impacts to native vegetation. Potential short-term, minor adverse impacts to wildlife. No impact to federal or state listed species. Potential short-term, minor adverse impacts to the burrowing owl. No impacts on invasive species control.	Long-term minor beneficial impacts to native vegetation. Long-term, minor beneficial impacts to wildlife. Long-term, minor beneficial impacts to T&E species. No impact on invasive species control.	No impacts on biological resources.

	Comparison of Potential Enviro		I the Alternatives by Nes	source
Resource	Alternative 1 (Airfield, Main Gate, La Luz Gate)	Alternative 2 La Luz Gate	Alternative 3 La Luz Gate	No Action Alternative
Cultural Resources	No effect on historic properties including archaeological sites, TCPs, or architectural resources at the airfield, Main Gate and La Luz Gate locations. No effects to the historic roadbed with concurrence	No effect on historic properties.	Potential effects would be the same as described in Alternative 2.	No impacts on historic properties.
Transportation	from the NM SHPO. Major long-term beneficial impact on airfield efficiency. Long-term beneficial impact on transportation resources at the Main Gate. Long-term minor beneficial impact on transportation resources at the La Luz Gate.	Negligible beneficial impact on transportation resources.	Minor adverse impact on transportation resources.	Existing airfield inefficiencies, hazardous traffic conditions at the Main Gate, and inadequate emergency response time at the La Luz Gate would persist.
Water Resources	No impacts to groundwater. Impacts from erosion and offsite sedimentation would be negligible. No impacts on floodplains with airfield improvements, the Main Gate, or the La Luz Gate.	Same as described in Alternative 1.	Same as described in Alternative 1.	No impacts on water resources.

	nparison of Potential Enviro			
Resource	Alternative 1 (Airfield, Main Gate, La Luz Gate)	Alternative 2 La Luz Gate	Alternative 3 La Luz Gate	No Action Alternative
Geological Resources	<u>Geology</u> Airfield – no impacts. Main Gate/La Luz Gate – long-term negligible adverse impacts.	Same as described in Alternative 1.	Same as described in Alternative 1.	No impacts on geology, topography, and soils.
	<u>Topography</u> Airfield/Main Gate/La Luz Gate – long-term, negligible adverse impacts.			
	<u>Soils</u> Airfield/Main Gate/La Luz Gate – short-term, minor adverse impacts.			
HAZMAT and Wastes, Contaminated Sites, and Toxic Substances	Short-term minor adverse impacts on hazardous materials and toxic substances.	Same as described in Alternative 1.	Same as described in Alternative 1.	No impacts to hazardous materials and wastes.
	No impacts to the Environmental Restoration Program.			
	Short-term minor adverse impacts from toxic hazards.			

	Table 2-3. Comparison of Potential Environmental Consequenc	ces of the Alternatives by Resource
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1 3.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

This EA analyzes potential impacts on existing environmental conditions associated with airfield improvements and the repositioning of the Main Gate and La Luz Gate at Holloman AFB, New Mexico. The analysis considers the current, baseline conditions of the affected environment and compares them to conditions that might occur should the Air Force implement either of the Proposed Action Alternatives or the No Action Alternative.

Section 3.1 provides a justification for those resources eliminated from analysis is provided. Section 3.2 defines project resource evaluation criteria and the geographic scope of potential consequences, or the region of influence (ROI), is identified. Lastly, Sections 3.3 to 3.11 describe the existing conditions and discuss potential effects, reasonably foreseeable future impacts, and other environmental considerations for each resource presented by location.

12 3.1 RESOURCE AREAS ELIMINATED FROM ANALYSIS

Several resources were considered relative to the Proposed Action but not carried forward for analysis.
 These include resources whose baseline conditions lacked a relationship to, and any potential to be altered
 by, implementation of the Proposed Action.

16 3.1.1 Airspace Management

Airspace management is not addressed in this EA because none of the proposed activities would result in
 a change to current airspace uses, flight activities, or training, and no changes to current aircraft operations

19 would occur. As a result, the Air Force anticipates no short- or long-term impacts on airspace management 20 at Holloman AFB. Therefore, airspace management was not carried forward for detailed analysis in this

21 EA.

22 3.1.2 Land Use

Land use is not addressed in this EA as none of the proposed activities would result in a change to current land use designations. Much of the land that is the subject of this EA consists of previously disturbed areas. As a result, the Air Force anticipates no short- or long-term impacts on land use at Holloman AFB. Therefore, land use was not carried forward for detailed analysis in this EA.

27 3.1.3 Visual Resources

Visual resources are defined as the natural and man-made physical features that give a particular 28 landscape its character and influence the visual appeal of an area for workers, residents, and visitors. Visual 29 resources are not addressed in this EA as none of the proposed activities would result in a net change to 30 31 the characteristic features of the proposed area. Given their location on an active military installation, the 32 visual resources of the project areas would be defined by the architecture of the current facilities and the landscaping around them, all of which are described in detail in the Holloman AFB Architectural 33 Compatibility Plan. As all new facilities are required to adhere to the design guidelines listed in the 34 Architectural Compatibility Plan, the visual integrity and appeal of the affected areas would be largely 35 unaffected. As a result, the Air Force anticipates no short- or long-term impacts on visual resources at 36 Holloman AFB. Therefore, visual resources were not carried forward for detailed analysis in this EA. 37

38 3.1.4 Infrastructure

Infrastructure consists of the physical and supportive structures (facilities, wiring, pipes, etc.) designed to ensure users have the utilities they need to operate comfortably within a given environment. For the purposes of this EA, utilities such as electricity, drinking water, sewage, and communications were not evaluated as no significant impacts are expected from any of the proposed actions.

1 3.1.5 Environmental Justice

Executive Order (EO) 12898, Federal Actions to Address Environmental Justice in Minority Populations 2 3 and Low-Income Populations, was issued by the President of the United States on February 11, 1994. The 4 objectives of this EO, as it pertains to this EA, include mandating that federal agencies implement strategies 5 to identify low-income and underserved/underrepresented populations potentially affected by proposed 6 federal actions. Additionally, potential environmental justice issues regarding children must be addressed pursuant to EO 13405, Protection of Children from Environmental Health Risks and Safety Risks. This EO 7 8 directs federal agencies to identify and assess environmental health and safety risks that may 9 disproportionately affect children.

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Access to Holloman AFB is limited to military personnel, their families, military retirees, and assigned government and contract workers. The Proposed Action lies entirely within the borders of Holloman AFB, and potential effects fall solely on current and future installation employees and military personnel by consolidating operations and modernizing common use facilities. Therefore, disproportionate environmental or human health impacts to underserved/underrepresented populations, low-income, or child populations would not occur. This was confirmed by using the EPA's Environmental Justice Screening and Mapping Tool (USEPA, 2022).

18 3.1.6 Socioeconomics

Implementation of the Proposed Action would have no long-term economic or socioeconomic effects on the working populations of Otero County. As most, if not all, demolition and construction activities would be contracted to local companies, there could be a slight, short-term beneficial impact to the local economy for the duration of the Proposed Action. Upon completion of the proposed projects, operation of the new airfield segments and gates would have no impact on the socioeconomics of the region, as the number of personnel employed at Holloman AFB would not change.

25 3.2 ANALYZED RESOURCES AND EVALUATION CRITERIA

In this section, each resource is analyzed, and the geographic scope is identified. The expected geographic scope of potential consequences is referred to as the ROI. The ROI boundaries will vary depending on the nature of each resource. For example, the ROI for some resources, such as air quality, extends over a larger jurisdiction unique to the resource. The specific criteria for evaluating impacts and assumptions for the analyses are presented under each resource area. Evaluation criteria for most potential impacts were obtained from standard criteria; federal, state, or local agency guidelines and requirements; and/or legislative criteria.

Impacts are defined in general terms and are qualified as adverse or beneficial, and as short-term or long-term. For the purposes of this EA, short-term impacts are generally considered those impacts that would have temporary effects. Long-term impacts are generally considered those impacts that would result in permanent effects.

37 Impacts are defined as

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- major, the impact is severe or highly noticeable and considered to be significant;
- minor, the impact is localized and slight but detectable;
 - moderate, the impact is readily apparent and appreciable;
- negligible, the impact is localized and not measurable or at the lowest level of detection; or
 - beneficial, the impact promotes or improves the natural and human environment.

Major impacts are considered significant and receive the greatest attention in the decision-making process. The significance of an impact is assessed based on the relationship between context and intensity. Major impacts require application of a mitigation measure to achieve a less than significant impact. Moderate impacts may not meet the criteria to be classified as significant, but the degree of change is noticeable and has the potential to become significant if not effectively mitigated. Minor impacts have little to no effect on

- the environment and are not easily detected; impacts defined as negligible are the lowest level of detection and generally not measurable. Beneficial impacts provide desirable situations or outcomes.
- 3 Impacts and their significance, as well as the means (e.g., BMPs) for reducing potential environmental 4 impacts are also discussed for each resource.

5 Reasonably foreseeable future actions that could result in a potential effect to environmental resources in 6 conjunction with the Proposed Action are summarized in **Appendix B**.

For the alternatives analyzed, airfield improvements and the Main Gate relocation are described under Alternative 1, whereas the La Luz Gate relocation also includes Alternatives 2 and 3. If La Luz Gate Alternatives 2 or 3 are selected, the airfield improvements and Main Gate repositioning as described under

- 10 Alternative 1 may also be implemented.
- 11 3.3 NOISE
- 12 3.3.1 Definition of the Resource

Noise is characterized as any sound that is undesirable because it interferes with communication, is intense 13 enough to damage hearing, or is otherwise considered an irritant. Noise can be intermittent or continuous, 14 steady or impulsive, and can involve any number of sources and frequencies. Noise can be readily 15 identifiable or generally nondescript. Human response to increased sound levels varies according to the 16 source type, characteristics of the source, distance between the source and the receptor, receptor 17 sensitivity, and time of day. Potentially affected sensitive noise receptors are specific (e.g., residential 18 areas, schools, churches, or hospitals) or broad (e.g., nature preserves or designated districts) areas in 19 which occasional or persistent sensitivity to noise above ambient levels exists. See Appendix C for further 20 21 information about sound and noise.

Under the Noise Control Act of 1972, the Occupational Safety and Health Administration (OSHA) 22 established workplace standards for noise. The minimum requirement states that constant noise exposure 23 24 must not exceed 90 A-weighted decibels (dBA) over an 8-hour period. The Air Force further limits personnel to 85 dBA over an 8-hour period to ensure hearing is protected; anything beyond this value requires hearing 25 26 protection to be worn. The highest allowable sound level to which workers can be constantly exposed is 115 dBA and exposure to this level must not exceed 15 minutes within an 8-hour period (see Table 3-1 for 27 other examples based on OSHA standards). These standards limit instantaneous exposure, such as impact 28 noise, to 140 A-weighted decibels. If noise levels exceed these standards, employers are required to 29 provide hearing protection equipment that will reduce sound levels to acceptable limits. 30

The average day/night sound level (DNL) metric is a measure of the total community noise environment. DNL is the average A-weighted sound level over a 24-hour period, with a 10-decibel adjustment added to the environmental night levels (between 2200 and 0700 hours). This adjustment accounts for increased human sensitivity to environmental night noise events. The DNL metric was adopted by the US Department of Housing and Urban Development, Federal Aviation Administration, US Environmental Protection Agency (USEPA), and DOD as the common standard for assessing noise levels for compatibility with land use, health and human safety, and effects on wildlife.

The region of influence for noise includes all areas within 0.5 miles of the project locations identified in **Table 2-2** and shown on **Figures 2-1** through **2-5**.

Typical Sound Levels from Example Activities				
Noise Level (dBA)	Common Sounds ^a	Effect	T _{Max} b	
10	Just audible	Negligible	n/a	
30	Soft whisper (15 feet)	Very quiet	n/a	

 Table 3-1.

 Typical Sound Levels from Example Activitie

Noise Level (dBA)	Common Sounds ^a	Effect	Т _{мах} ь
50	Light auto traffic (100 feet)	Quiet	n/a
60	Air conditioning unit (20 feet)	Intrusive	n/a
70	Noisy restaurant or freeway traffic	Telephone use difficult	n/a
80	Alarm clock (2 feet)	Annoying	n/a
90	Heavy truck (50 feet) or city traffic	Very annoying	8 hours
100	Garbage truck	Very annoying	2 hours
110	Pile drivers	Strained vocal effort	30 minutes
120	Jet takeoff (200 feet) or auto horn (3 feet)	Maximum vocal effort	7.5 minutes
140	Carrier deck jet operation	Painfully loud	28 seconds

Table 3-1.Typical Sound Levels from Example Activities

^a Source: USEPA, 1981

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^b Source: OSHA, 2017

n/a = not applicable; T_{Max} = maximum time of exposure prior to hearing damage

4 3.3.2 Affected Environment

The ambient sound environment at Holloman AFB is affected mainly by Air Force aircraft operations, 5 automotive vehicles, and maintenance activities. Figure 3-1 presents the existing DNL noise contours for 6 Holloman AFB plotted in 5-decibel (dB) increments, ranging from 65 to 85 dBA DNL. Secondary sources 7 of noise, such as industrial activities and military training, also contribute to the louder ambient sound 8 9 environment along the installation flightline compared to other portions of Holloman AFB. The ambient 10 sound environment of the remaining areas of the installation is quieter because development is less concentrated. Intermittent noises from other sources, such as live-fire weapons, also contribute to the 11 overall ambient sound environment of Holloman AFB. 12

Sensitive noise receptors that could potentially be exposed to noise from installation activities are proximate to the southeastern portion of the installation, where housing and an elementary school are located. The

city of Alamogordo is located several miles away and is not considered a sensitive receptor due its distance
 from Holloman AFB.

- 17 3.3.3 Environmental Consequences Evaluation Criteria
- 18 The level of impact from noise generated by demolition activities is largely based on the
- existing sensitive receptors (schools, residential neighborhoods, etc.); and
- distance of demolition activities to sensitive receptors.
- Potential noise impacts are considered if sensitive receptors experience continuous noise exposures exceeding 65 A-weighted decibels. The ROI for this resource includes all areas within 0.5 miles of the project locations identified in **Table 2-1** and shown on **Figures 2-1 through 2-5**.

3.3.4 Environmental Consequences – Alternative 1 (Airfield Improvements, Reposition Main Gate and La Luz Gate)

- 26 The construction activities associated with the Proposed Action would result in a series of both short-term
- 27 and long-term negligible impacts on noise.

All construction and demolition activities proposed under this alternative would be conducted during the 1 2 daytime hours of 0700 to 1700. Depending on the proximity to the ROI, use of heavy equipment could 3 cause an increase in sound that is above the ambient level in the region. A variety of sounds are emitted 4 from loaders, trucks, graders, and other common construction equipment. Table 3-2 presents noise levels 5 associated with common types of construction equipment, which can exceed the ambient sound levels by 20 to 25 dBA in an urban environment. Unobstructed sound pressure levels decrease according to the 6 inverse square law, or approximately 6 dB for every doubling of distance from the source of noise; therefore, 7 impacts from construction noise are typically confined to within 0.5 miles of the ROI. 8

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Estimated Noise Levels for Common Construction Equipment							
Construction Equipment	L _{max} ^a 50 ft (dBA)	L _{max} ^b 150 ft (dBA)	L _{max} ^b 300 ft (dBA)	L _{max} ^b 400 ft (dBA)	L _{max} ^b 800 ft (dBA)	L _{max} ^b 1,600 ft (dBA)	L _{max} ^b 0.5 mi (dBA)
Backhoe	78	68	62	60	54	48	44
Chain Saw	84	74	68	66	60	54	50
Ground Compactor	83	73	67	65	59	53	49
Concrete Mixer Truck	79	69	63	61	55	49	45
Concrete Pump Truck	81	71	65	63	57	51	47
Concrete Saw	90	80	74	72	66	60	56
Crane	81	71	65	63	57	51	47
Dozer	82	72	66	64	58	52	48
Excavator	81	71	65	63	57	51	47
Front End Loader	79	69	63	61	55	49	45
Grapple (Backhoe)	87	77	71	69	63	57	53
Impact Pile Driver	101	91	85	83	77	71	67
Jack Hammer	89	79	73	71	65	59	55
Pavement Scarifier	90	80	74	72	66	60	56
Pneumatic Tools	85	75	69	67	61	55	51
Vacuum Excavator	85	75	69	67	61	55	51

Table 3-2.
Estimated Noise Levels for Common Construction Equipment

a. Measured values at L₅₀ taken from the United States Department of Transportation (USDOT) Federal Highway Administration (FHWA) *Construction Noise Handbook* (USDOT 2006).

b. Derived values utilizing the inverse square law $\left\{L_{p2} = L_{p1} + 20 \log_{10} \left(\frac{r_1}{r_2}\right)\right\}$ and published values at L_{p1}=L₅₀ from the FHWA.

The proposed project areas associated with airfield improvements are located within the 65 dBA noise 14 contours (Figure 3-1), so elevated noise is already expected in the region from other sources. As seen in 15 Table 3-3, the nearest sensitive receptors are the Holloman Elementary School and the northeastern 16 portion of Holloman housing, both approximately 3.200 ft from proposed construction sites. The loudest 17 expected noise at either location would not exceed 65 dBA, which is approximately the same as the DNL 18 noise contour for each receptor. While this may result in a minor overall increase in the noise environment, 19 this increase would be on the order of 1-3 dB which is generally considered unnoticeable by the human 20 21 ear. Upon completion of the project, the noise floor would return to normal.

Table 2.2

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Table 3-3.
Estimated Noise Levels at Nearest Sensitive Receptors – Airfield Improvements

Nearest Sensitive Receptor	Minimum Distance ¹ <i>(feet)</i>	Loudest Noise Possible ² <i>(dBA)</i>	Loudest Expected Noise ³ <i>(dBA)</i>
Holloman Elementary School	3,200	65	53
Holloman Housing (NE corner)	3,200	65	53

1. Distances were approximated and measured from the center of the work sites to the nearest boundary for each sensitive receptor.

3 4 5 6 2. All noise levels are estimated based on the values in Table 3-2. Values provided are for unobstructed noises. Further attenuation is likely due to buildings and masonry walls lying between the source and receptor.

3. Values exclude the loudest sound in Table 3-2 (Pile Driver) as this equipment is unlikely to be used during construction.

7 Construction activities associated with repositioning the Main Gate would result in a series of short-term, minor impacts and long-term negligible impacts on noise. The use of heavy equipment at the project site 8 would cause an increase in sound that is notably above the ambient level in the region. As seen in Table 9 3-4, the nearest sensitive receptors are the Holloman Elementary School (3.200 ft away) and the 10 southeastern portion of Holloman housing (200 ft away). The loudest expected noise at the nearby housing 11 area may temporarily exceed 80 dBA during some construction activities. Upon completion of the project, 12 the noise floor at the southeast corner of Holloman housing may remain somewhat elevated as traffic will 13

14 be diverted from current conditions to approximately 200 ft from the housing.

15 Table 3-4. Estimated Noise Levels at Nearest Sensitive Receptors – Repositioning of Main Gate 16

Nearest Sensitive Receptor	Approximate Distance ¹ <i>(feet)</i>	Loudest Noise Possible ² <i>(dBA)</i>	Loudest Expected Noise ³ <i>(dBA)</i>
Holloman Elementary School	3,200	65	53
Holloman Housing (SE corner)	200	89	81

17 1. Distances were approximated using Google Earth as measured from the center of the work sites to the nearest boundary for each sensitive receptor. 18

19 2. All noise levels are estimated based on the values in Table 3-2. Values provided are for unobstructed noises. Further attenuation

20 21 is likely due to buildings and masonry walls lying between the source and receptor.

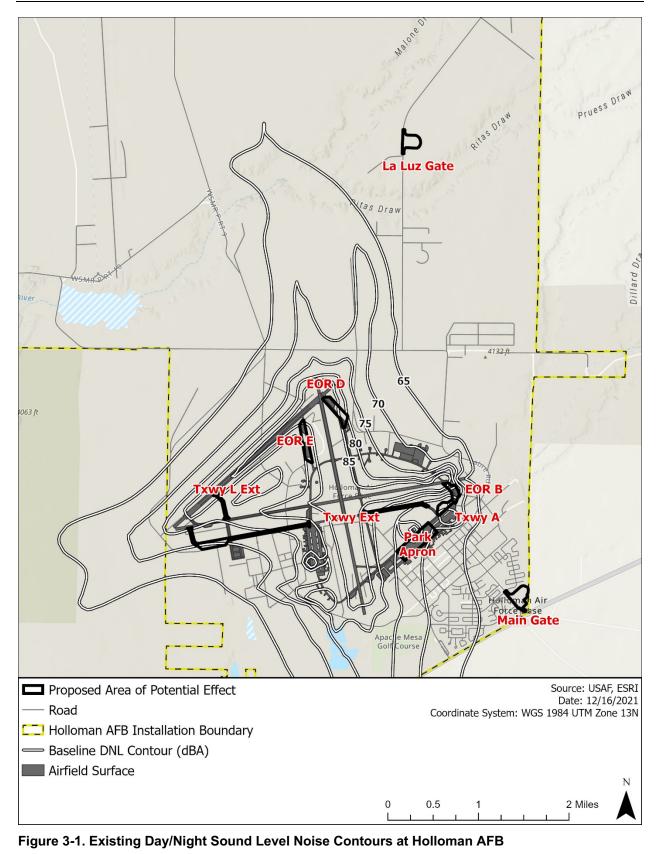
3. Values exclude the loudest sound in Table 3-2 (Pile Driver) as this equipment is unlikely to be used during construction.

22 Construction activities associated with the relocation of the La Luz Gate would result in a series of

short-term, negligible impacts on noise. As previously discussed, construction and demolition activities 23

would be conducted during the daytime hours of 0700 to 1700. While the use of heavy equipment at the 24

25 project site would cause an increase in sound that is notably above the ambient level in the region, there are no sensitive receptors within several miles of the project site so no impacts from noise are expected. 26



2 3

- 1 3.3.5 Environmental Consequences Alternative 2 (La Luz Gate Renovation)
- 2 Noise impacts under this alternative would be the same as those discussed under Alternative 1.
- 3 3.3.6 Environmental Consequences Alternative 3 (La Luz Gate Closure and Demolition)
- 4 Noise impacts under this alternative would be the same as those discussed under Alternative 1.

5 3.3.7 Environmental Consequences – No Action Alternative

Under the No Action Alternative, the proposed construction activities associated with the airfield and gates
 project would not be implemented, and the existing conditions discussed in Section 3.3.2 would remain
 unchanged. No new noises would be introduced to the on- and off-installation noise environments;
 therefore, no impacts would occur with implementation of the No Action Alternative.

10 3.3.8 Reasonably Foreseeable Future Actions and Other Environmental Considerations

11 No reasonably foreseeable impacts to the noise environment are expected as a result of the Proposed 12 Action or alternatives.

- 13 **3.4** SAFETY
- 14 3.4.1 Definition of the Resource

Safety and health concerns associated with occupational and explosive activities are considered in this section. Occupational safety and health consider issues associated with proposed construction and demolition activities, as well as ground operations and maintenance activities that support unit operations in the vicinity of the arm/dearm pads and taxiways. Airfield safety relates to aircraft separation distances, the safe and efficient movement of aircraft, and personnel operating near areas subjected to jet blast. Explosive safety relates to the management and safe use of munitions in the vicinity of the arm/dearm pads.

Existing conditions are organized by occupational safety, airfield safety, and explosive safety. The ROI for occupational and explosive safety concerns includes the Holloman AFB airfield and areas immediately adjacent to the arm/dearm pads identified for expansion, new crew shelters, and the areas proposed for taxiway extension. The ROI for occupational safety also includes the proposed locations for the Main and La Luz Gates and the current facilities that would be demolished.

26 3.4.2 Affected Environment

3.4.2.1 Occupational Safety and Health

Worker safety associated with construction, renovation, and demolition activities is covered by OSHA 28 29 regulations and all applicable installation safety requirements; typical construction activities do not pose a safety issue to workers provided that all applicable OSHA and Air Force safety requirements are 30 implemented. Occupational safety and health include several categories covering ground and industrial 31 operations, operational activities, and motor vehicle use. Ground mishaps can occur from the use of 32 equipment or materials and maintenance functions. The purpose of the OSHA program is to protect 33 personnel from occupational deaths, injuries, or illnesses; OSHA safety guidance published in the 34 35 Department of Labor 29 series CFR governs general safety requirements relating to general industry practices (§1910), construction (§1926) and elements for federal employees (§1960). These standards 36 37 include guidance for entry into areas in which a hazard may exist. Day-to-day operations and maintenance 38 activities conducted by the 49 WG are performed in accordance with applicable Air Force safety regulations, published Air Force Technical Orders, and standards prescribed by Air Force Occupational Safety and 39 Health (AFOSH) requirements identified within AFI 91-202, The US Air Force Mishap Prevention Program, 40 and DAFMAN 91-203, Air Force Occupational Safety, Fire and Health Standards. Due to its large size, 41 Holloman AFB has three fire stations manned during normal flight operations to ensure responders can 42 43 access any portion of the airfield quickly.

1 3.4.2.2 Airfield Safety

Safety zones around airfields that restrict incompatible land uses are designated to reduce exposure to aircraft safety hazards. These include the clear zones (CZ), which are areas immediately beyond the ends of a runway, and accident potential zone (APZ) I and APZ II, which are areas beyond the CZs. The standards for CZs and APZs are established by DOD Instruction 4165.57, *Air Installations Compatible Use Zones*. Within the CZs, which cover a 3,000-by-3,000-ft area at the end of each runway, the overall accident risk is the highest. APZ I, which extends for 5,000 ft beyond the CZ, is an area of reduced accident potential. In APZ II, which is 7,000 ft long, accident potential is the lowest among the three zones.

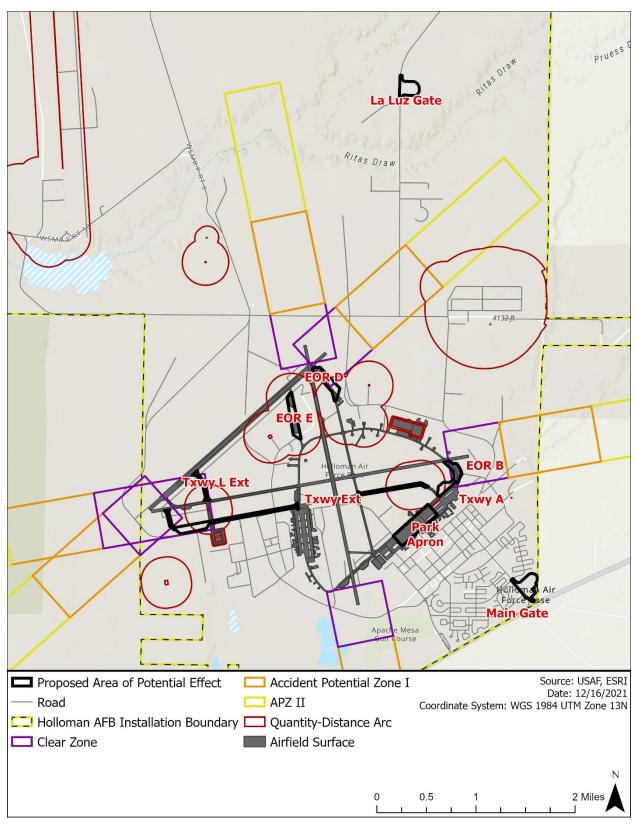
9 Open space (undeveloped) and agricultural uses (excluding raising of livestock) are the only uses deemed 10 compatible in a CZ. Land use within APZs is based on the concept of limiting density, and uses such as 11 residential development, educational facilities, and medical facilities are considered incompatible and are 12 strongly discouraged. At Holloman AFB, there is no incompatible land use within the CZs or APZs 13 (Holloman AFB, 2016b). The safety zones are shown in **Figure 3-2**.

14 3.4.2.3 Explosive Safety

15 Personnel assigned to the 311th, 314th, and 8th Aircraft Maintenance Units support the flying mission of their respective Fighter Squadrons with weapons load and arm/dearm operations. The 49 WG's Munitions 16 Flight is assigned to the 49 Maintenance Group and provides the 49 WG flying mission with munitions 17 support, including storage, inspection, maintenance, and accountability as well as delivery and pick-up of 18 aircraft munitions to and from the airfield. Aircraft munitions include ammunition, propellants (solid and 19 liquid), pyrotechnics, warheads, explosive devices, and chemical agent substances and associated 20 components that present real or potential hazards to life, property, or the environment. 21 22 DESR6055.09 AFMAN 91-201, Explosives Safety Standards, defines the guidance and procedures 23 dealing with munition storage and handling.

24 During typical training operations, aircraft are not loaded with high-explosive ordnance. Training munitions 25 usually include captive air-to-air training missiles, countermeasure chaff and flares, 20-millimeter cannon 26 ammunition with inert training projectiles, and training bombs with spotting charges (BDU-33). All munitions 27 are loaded and unloaded on the aircraft parking ramp and stored and maintained in the munitions storage area. Occasionally, live bombs and 20-millimeter ammunition containing high explosives may be used for 28 training activities. Locations and facilities where munitions are stored and handled are sited for the allowable 29 types and amounts of explosives. All storage and handling of munitions is carried out by trained and 30 gualified munitions systems personnel and in accordance with Air Force-approved technical orders. 31

Defined distances are maintained between munitions storage and handling areas and a variety of other types of facilities. The Quantity-Distance (Q-D) safety arcs are determined by the type and quantity of explosive material to be stored. The aircraft parking ramps, arm/dearm pads, and combat aircraft parking areas have associated Q-D arcs. Each explosive material storage or handling facility has Q-D arcs extending outward from its sides and corners for a prescribed distance. Within these Q-D arcs, development is either restricted or prohibited altogether to ensure personnel safety and to minimize potential for damage to other facilities in the event of an accident. The Q-D arcs on Holloman AFB are shown on **Figure 3-2**.



2 Figure 3-2. Safety Zones and Quantity-Distance Arcs on Holloman AFB, New Mexico

1 3.4.3 Environmental Consequences Evaluation Criteria

Impacts from implementation of the Proposed Action are assessed according to their potential to increase or decrease safety and health risks to personnel, the public, property, or the environment. Impacts on safety might include airfield or gate location changes that result in greater safety risk or constructing new facilities within CZs, APZs, or Q-D safety arcs. For the purposes of this EA, an impact is considered significant if the proposed safety measures are not consistent with AFOSH and OSHA standards or violate the requirements of AFMAN 91-201 resulting in unacceptable safety risks.

- 8 3.4.4 Environmental Consequences Alternative 1 (Airfield Improvements, Reposition Main
 9 Gate and La Luz Gate)
- 10 3.4.4.1 Occupational Safety and Health

Under Alternatives 1, 2, and 3, the number of F-16 arm/dearm positions at Taxiway A and EORs B, D, and E would be expanded, new crew shelters would be constructed, and Taxiways I and J would be extended (see **Figure 2-1**). Degraded pavement on the arm/dearm pads would be removed and replaced. In addition, the Main Gate would be repositioned, and the number of identification check lanes would be increased. Subsequently, the existing facilities and unnecessary traffic lanes would be demolished. Under Alternative 1, the La Luz Gate would be moved between 2.5 and 3 miles southwest of its current location with additional identification check lanes, and the facilities at the current location would be demolished.

The actions associated with proposed construction and demolition activities from the implementation of all 18 alternatives would not impact health and safety. Construction and demolition activities have associated 19 inherent risks from chemical (e.g., asbestos, lead, hazardous materials [HAZMAT]) and physical (e.g., noise 20 propagation, falling, electrocution, collisions with equipment) sources. Companies and individuals 21 contracted to perform construction activities on Air Force installations are responsible for adhering to OSHA 22 23 requirements to mitigate these hazards. Industrial hygiene programs address exposure to HAZMAT, use of personal protective equipment, and the availability and use of safety data sheets, the latter of which are 24 also the responsibility of construction contractors to provide to workers. Federal civilian and military 25 26 personnel that must enter areas under construction should be familiar with and adhere to OSHA and 27 AFOSH requirements, as well as applicable industrial hygiene programs. Individuals tasked to operate and maintain equipment, such as power generators, are responsible for following all applicable technical 28 29 guidance, as well as adhering to established OSHA and Air Force safety guidelines.

30 During construction activities and rerouting of traffic lanes to the new Main Gate, traffic flow may be 31 disrupted. This may create short-term, adverse impacts on safety due to the potential to slow traffic and increase congestion on Highway 70W, thus increasing the possibility of traffic accidents. Potential negative 32 33 impacts would be mitigated using signage and markings to control traffic flow in construction areas in accordance with the US Department of Transportation Manual on Uniform Traffic Control Devices and New 34 Mexico statutes that govern construction zones and traffic control (66-7-303.1). Possible impacts would be 35 resolved once construction and demolition activities are concluded. Upon completion of the Main Gate 36 relocation under the three action alternatives, there would be long-term improvement to safety by improving 37 38 the flow of traffic entering the base during peak hours and reducing the backup of traffic onto US 70.

Repositioning of the La Luz Gate under Alternative 1 may temporarily disrupt traffic flow on La Luz Gate Road and create minor, short-term impacts to safety by increasing congestion at the gate and the potential for accidents. Like the repositioning of the Main Gate, these impacts would be mitigated through adherence to the US Department of Transportation *Manual on Uniform Traffic Control Devices* and New Mexico statutes. Upon completion of the La Luz Gate relocation under Alternative 1, there would be long-term improvements to safety due to the reduction in response time of first responders to the La luz Gate in the event of an emergency.

46 3.4.4.2 Airfield Safety

Under Alternative 1, the expanded arm/dearm pads and the taxiway extensions would be designed in accordance with AFI 32-1023, *Designing and Constructing Military Construction Projects* and UFC 3-2601 01, *Airfield and Heliport Planning and Design*. Moreover, operations would continue to meet the safety 2 guidelines outlined in AFI 91-202. The improvements to the airfield are expected to enhance safety by 3 improving aircraft movements on the airfield, increasing aircraft separation on the arm/dearm pads, meeting 4 the idle jet blast criteria in UFC 3-260-01, and improving ground operations.

5 3.4.4.3 Explosive Safety

There would be no impacts to explosive safety under Alternative 1. The expansion of the arm/dearm pads
and taxiway extension would have no impact on munitions support activities. In addition, if the expanded
arm/dearm pads and extended taxiways require alterations of existing Q-D arcs (see Figure 3-2), changes
would be accomplished by the 49 Wing Safety to ensure compliance with the requirements specified in
DESR6055.09_AFMAN 91-201. The relocation of the Main Gate and La Luz Gate would not impact existing
Q-D arcs.

12 3.4.5 Environmental Consequences – Alternative 2 (La Luz Gate Renovation)

13 Under Alternative 2, the La Luz Gate would remain at its current location, but traffic would be rerouted to 14 improve flow and additional identification check lanes would be added. The current facilities would be 15 renovated. The potential impacts to occupational safety and health and explosive safety from the 16 improvements of the La Luz Gate would be the same as those described for the La Luz Gate under 17 Alternative 1.

18 3.4.6 Environmental Consequences – Alternative 3 (La Luz Gate Closure and Demolition)

Under Alternative 3, the La Luz Gate would be permanently closed to daily traffic and the existing La Luz Gate pavement and facilities would be demolished. The potential impacts to occupational safety and health and explosive safety from the demolition of existing facilities at the La Luz Gate would be the same as those described for the La Luz Gate under Alternative 1.

23 3.4.7 Environmental Consequences – No Action Alternative

Under the No Action Alternative, the proposed airfield improvement would not be implemented and the current arm/dearm pads and airfield configuration would remain. The challenges to safety, operational, and training efficiencies discussed in **Section 3.4.2** would be unchanged. Additionally, the Main and La Luz Gates would remain in their current locations and configuration. Under the No Action Alternative, the gates would not meet AT/FP standards and traffic backups at the Main Gate during peak travel would continue, as well as increased response times by first responders to the La Luz Gate.

30 3.4.8 Reasonably Foreseeable Future Actions and Other Environmental Considerations

Implementation of Alternatives 1, 2, or 3, in addition to reasonably foreseeable future actions at Holloman AFB, would follow existing safety procedures and policies for occupational, airfield, and explosive safety. Safety zones would not change under any alternatives. Contracted construction personnel would follow all applicable AFOSH and OSHA requirements at Holloman AFB. As such, no reasonably foreseeable effects on occupational, airfield, and explosive safety are expected with the implementation of the alternatives.

36 3.5 AIR QUALITY

37 3.5.1 Definition of the Resource

Air quality is defined by the concentration of various pollutants in the atmosphere at a given location. Under the Clean Air Act (CAA), the six pollutants defining air quality, called "criteria pollutants," include carbon monoxide (CO), sulfur dioxide (SO₂), nitrogen dioxide (NO₂), ozone (O₃), suspended particulate matter (measured less than or equal to 10 microns in diameter [PM₁₀] and less than or equal to 2.5 microns in diameter [PM_{2.5}]), and lead. CO, SO₂, and some particulates are emitted directly into the atmosphere from emissions sources. NO₂, O₃, and some particulates are formed through atmospheric chemical reactions that are influenced by weather, ultraviolet light, and other atmospheric processes. Volatile organic

- compounds (VOCs) and nitrogen oxides (NOx) emissions are used to represent O₃ generation because 1 they are precursors of O₃. Sulfur oxides (SO_x) are used to represent SO₂ emissions. 2
- The USEPA has established National Ambient Air Quality Standards (NAAQS) (40 CFR § 50) for criteria 3 pollutants. NAAQS are classified as primary or secondary. Primary standards protect against health effects, 4 and secondary standards protect against welfare effects, such as damage to farm crops, vegetation, and 5 6 buildings. Some pollutants have short-term and long-term standards. Short-term standards are designed to 7 protect against acute health effects, while long-term standards were established to protect against chronic health effects. The state of New Mexico has established its own ambient air quality standards for criteria 8 pollutants, which in some cases are more stringent than the NAAQS.
- 9
- Areas that are and have been historically in compliance with the NAAQS or have not been evaluated for 10 11 NAAQS compliance are designated as attainment areas. Areas that violate a federal air quality standard 12 are designated as nonattainment areas. Areas that have transitioned from nonattainment to attainment are 13 designated as maintenance areas and are required to adhere to maintenance plans to ensure continued 14 attainment. The maintenance designation can be removed from an area if the area demonstrates to the 15 USEPA it can consistently remain below NAAQS for more than 20 years.
- 16 The USEPA General Conformity Rule applies to federal actions occurring in nonattainment or maintenance areas when the total direct and indirect emissions of nonattainment pollutants (or their precursors) exceed 17 18 specified thresholds. The emissions thresholds that trigger requirements for a conformity analysis are called 19 de minimis levels. De minimis levels (in tons per year) vary by pollutant and depend on the severity of the 20 nonattainment status for the air quality management area in question.
- 21 The New Mexico Environment Department (NMED) Air Quality Bureau oversees programs for permitting 22 the construction and operation of new or modified stationary source air emissions in the state of New 23 Mexico. The NMED Air Quality Bureau has delegated authority over air quality in Bernalillo County to the Albuguergue Environmental Health Department-Air Quality Division. 24
- Climate Change and Greenhouse Gases, Global climate change refers to long-term fluctuations in 25 temperature, precipitation, wind, sea level, and other elements of Earth's climate system. The ways in which 26 the Earth's climate system is influenced by changes in the concentrations of various gases in the 27 28 atmosphere have been discussed worldwide. Of particular interest, greenhouse gases (GHGs) are gas 29 emissions that trap heat in the atmosphere. These emissions occur from both natural processes and human 30 activities. Scientific evidence indicates a trend of increasing global temperature over the past century 31 because of an increase in GHG emissions from human activities. The climate change associated with this global warming is predicted to produce negative economic and social consequences worldwide. 32
- The ROI for air quality includes Holloman AFB and the neighboring communities within Air Quality Control 33 34 Region 153.

35 3.5.2 Affected Environment

- Holloman AFB is located in Otero County, which is in attainment for all criteria pollutants. Holloman AFB 36 37 manages a Major Title V Permit that includes operating or emissions limits to ensure compliance with the 38 CAA. This also covers most of the permitted stationary emission sources on the installation. These sources 39 include emergency generators, fire pump engines, boilers, water heaters, fuel storage tanks and fuel 40 dispensing systems, gasoline service stations, surface coating operations, aircraft engine testing, fire 41 training, remediation activities, miscellaneous chemical usage, and open detonation of munitions for military training. Holloman AFB is considered a major stationary source as defined by Title V of the CAA, and 42 43 potential emissions of all criteria pollutants should not exceed the 250 ton per year major source threshold. 44 Holloman AFB is also considered a synthetic minor source of Hazardous Air Pollutants under Title I, Section 45 112 of the CAA.
- 46 Otero County is designated by the USEPA as unclassified/in-attainment for all criteria pollutants. Therefore, the Federal General Conformity Rule does not apply for all alternatives and no conformity analysis is 47 required. Fugitive dust emissions would be significantly reduced with BMPs such as watering during 48

1 ground-disturbing activities, using soil stabilization agents for dust suppression, and decreasing speed 2 limits on unpaved roads for all construction projects.

Climate Change and Greenhouse Gases. Ongoing global climate change has the potential to increase average temperatures and cause more frequent, intense, and prolonged droughts in the southwest United States, including New Mexico (Garfin, et al., 2014). These variations in regional climate patterns could result in changes to flooding frequency, vegetation types, vegetation growth rates, wildfire potential, groundwater depth, and potable water availability.

- 8 3.5.3 Environmental Consequences Evaluation Criteria
- 9 The potential air quality emissions generated by demolition activities are largely based on the
- 10 existing emissions;
- attainment status of the region in which the emissions would be released;
 - presence of controls and BMPs (e.g., spraying water to reduce airborne particulate matter); and
 - individual or cumulative total emissions that exceed any Federal, state, or local regulations.

The impacts to air quality resources are considered if individual or cumulative total emissions exceed any federal, state, or local regulations.

- 3.5.4 Environmental Consequences Alternative 1 (Airfield Improvements, Reposition Main
 Gate and La Luz Gate)
- 18 3.5.4.1 Airfield

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The Airfield Improvements Alternative 1 would result in a short-term impact on air quality, primarily associated with site grading operations. Emissions of criteria pollutants and greenhouse gases (GHGs) would be directly produced from activities such as the operation of heavy equipment, heavy-duty diesel vehicles hauling debris to and from the project area, and workers commuting daily to and from the project areas in their personal vehicles. Additionally, heavy equipment moving soil and debris would produce a notable amount of particulate matter if uncontrolled. However, all such emissions would be temporary and produced only when construction activities are occurring.

The air pollutant of greatest concern is particulate matter. The quantity of uncontrolled fugitive dust emissions from a construction site is proportional to the area of land being worked and the level of activity. Fugitive dust emissions would be produced from the ground disturbances associated with this alternative. Fugitive dust emissions associated with construction would be greatest during the site grading and would vary daily depending on the work phase, level of activity, and prevailing weather conditions. Particulate matter emissions would also be produced from the combustion of fuels in vehicles and construction equipment.

33 Construction activities would incorporate BMPs and environmental control measures (e.g., wetting the ground surface) to minimize fugitive particulate matter air emissions. Additionally, work vehicles are 34 assumed to be well maintained and to use diesel particulate filters to reduce particulate matter air 35 emissions. These BMPs and environmental control measures could reduce uncontrolled particulate matter 36 emissions from a construction site by at least 50 percent depending upon the environmental control 37 38 measures required and the potential for particulate matter air emissions. The Air Force contractor 39 responsible for demolition and construction activities would also be obligated to use reasonably available fugitive dust control measures during any activity associated with the Proposed Alternatives. 40

- The Air Force Air Conformity Applicability Model (ACAM) was used to estimate the annual air emissions from construction activities associated with the Airfield Improvements Alternative 1. **Table 3-5** summarizes
- the anticipated uncontrolled air emissions from activities by construction category. The ACAM reports are
- 44 in **Appendix C**.

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Improvements								
Activity ¹	NO _x (tons)	VOC (tons)	CO (tons)	SO _x (tons)	PM _{2.5} ² (tons)	PM ₁₀ ² (tons)	NH₃ (tons)	CO ₂ e (tons)
Taxiway A	0.774	0.145	1.016	0.0021	0.035	4.325	0.0006	209.7
EOR B	0.743	0.140	0.965	0.0020	0.033	2.554	0.0007	200.0
EOR D	0.977	0.184	1.294	0.0026	0.046	3.917	0.0009	258.4
EOR E	0.744	0.140	0.965	0.0020	0.033	2.551	0.0007	200.5
Taxiway L	3.425	0.652	4.074	0.0097	0.153	41.989	0.0026	967.7
Taxiway J	3.430	0.669	4.076	0.0097	0.154	50.751	0.0026	969.1
Building Demolition	0.260	0.042	0.392	0.0008	0.009	0.112	0.0004	76.4
Project Total:	10.353	1.973	12.781	0.029	0.463	106.197	0.009	2,881.8

Table 3-5. Estimated Air Emissions from Proposed Construction and Demolition Activities for Airfield

1. All calculations were performed using ACAM v5.0.17b. See Appendix C for the complete report. Values are rounded.

4 5 2. PM emissions in this table are uncontrolled. Utilizing standard fugitive dust controls would reduce PM emissions by at least 50%.

6 Climate Change and Greenhouse Gases. Construction associated with the Airfield Improvements 7 Alternative 1 would emit approximately 2.881.8 tons of carbon dioxide equivalent (CO₂e) during a given 8 year. This amount of CO₂e is comparable to the GHG footprint of 347 single family homes for one year 9 (USEPA, 2021). As such, this one-time emission of GHGs would not meaningfully contribute to the effects of global climate change. Therefore, the Airfield Improvements Alternative 1 would not be expected to result 10 in a significant impact on climate change. 11

12 3.5.4.2 Main Gate

13 The Main Gate Alternative 1 would result in a short-term, minor impact on air guality, primarily associated 14 with construction operations. Emissions of criteria pollutants and GHGs would be directly produced from 15 activities such as the operation of heavy equipment, heavy-duty diesel vehicles hauling debris to and from 16 the project area, and workers commuting daily to and from the project sites in their personal vehicles. Additionally, heavy equipment moving soil and debris would produce a notable amount of particulate matter 17 if uncontrolled. However, all such emissions would be temporary and produced only when construction 18 activities are occurring. Construction activities would incorporate BMPs and environmental control 19 measures (e.g., wetting the ground surface) to minimize fugitive particulate matter air emissions. 20 Additionally, work vehicles are assumed to be well maintained and to use diesel particulate filters to reduce 21 particulate matter air emissions. 22

23 Table 3-6 summarizes the anticipated air emissions from activities by construction category. The ACAM reports are in Appendix C. 24

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Table 3-6. Estimated Air Emissions from Proposed Construction and Demolition Activities for Repositioning of the Main Gate

Activity ¹	NO _x (tons)	VOC (tons)	CO (tons)	SO _x (tons)	PM _{2.5} ² (tons)	PM ₁₀ ² (tons)	NH₃ (tons)	CO₂e (tons)
Construction / Demolition	1.030	0.315	1.522	0.003	0.040	7.767	0.001	341.1
Project Total:	1.030	0.315	1.522	0.003	0.040	7.767	0.001	341.1

1. All calculations were performed using ACAM v5.0.17b. See Appendix C for the complete report. Values are rounded.

4 5 2. PM emissions in this table are uncontrolled. Utilizing standard fugitive dust controls would reduce PM emissions by at least 50%.

6 Climate Change and Greenhouse Gases. Construction associated with the Main Gate Alternative 1 would 7 emit approximately 341.1 tons of CO₂e during a given year. This amount of CO₂e is comparable to the GHG footprint of 41 single family homes for one year (USEPA, 2021a). As such, this one-time emission of GHGs 8 9 would not meaningfully contribute to the potential effects of global climate change. Therefore, the Main 10 Gate Alternative 1 would not be expected to result in a significant impact on climate change.

11 3.5.4.3 La Luz Gate

The La Luz Gate Alternative 1 would result in a short-term, minor impact on air quality, primarily associated 12 with construction operations. Emissions of criteria pollutants and GHGs would be directly produced from 13 activities such as the operation of heavy equipment, heavy-duty diesel vehicles hauling debris to and from 14 the project area, and workers commuting daily to and from the project sites in their personal vehicles. 15 Additionally, heavy equipment moving soil and debris would produce a notable amount of particulate matter 16 17 if uncontrolled. However, all such emissions would be temporary in nature and produced only when 18 construction activities are occurring. Construction activities would incorporate BMPs and environmental 19 control measures (e.g., wetting the ground surface) to minimize fugitive particulate matter air emissions. 20 Additionally, work vehicles are assumed to be well maintained and to use diesel particulate filters to reduce 21 particulate matter air emissions.

22 Table 3-7 summarizes the anticipated air emissions from activities by construction category. The ACAM reports are in Appendix C. 23

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Table 3-7. Estimated Air Emissions from Proposed Construction and Demolition Activities for La Luz Gate Alternative 1

Activity ¹	NO _x (tons)	VOC (tons)	CO (tons)	SO _x (tons)	PM _{2.5} ² (tons)	PM ₁₀ ² (tons)	NH₃ (tons)	CO₂e (tons)
Construction / Demolition	0.703	0.228	1.028	0.002	0.028	1.908	0.001	226.3
Project Total:	0.703	0.228	1.028	0.002	0.028	1.908	0.001	226.3

27 1. All calculations were performed using ACAM v5.0.17b. See Appendix C for the complete report. Values are rounded.

28 2. PM emissions in this table are uncontrolled. Utilizing standard fugitive dust controls would reduce PM emissions by at least 50%.

Climate Change and Greenhouse Gases. Construction associated with the La Luz Gate Alternative 1 29 30 would emit approximately 226.3 tons of CO₂e during a given year. This amount of CO₂e is comparable to

the GHG footprint of 27 single family homes for one year (USEPA, 2021). As such, this one-time emission 31

of GHGs would not meaningfully contribute to the effects of global climate change. Therefore, the La Luz 32

33 Gate Alternative 1 would not be expected to result in a significant impact on climate change.

1 3.5.5 Environmental Consequences – Alternative 2 (La Luz Gate Renovation)

2 The La Luz Gate Alternative 2 would result in a short-term, minor impact on air quality, primarily associated 3 with construction operations. Emissions of criteria pollutants and GHGs would be directly produced from activities such as the operation of heavy equipment, heavy-duty diesel vehicles hauling debris to and from 4 5 the project area, and workers commuting daily to and from the project sites in their personal vehicles. 6 Additionally, heavy equipment moving soil and debris would produce a notable amount of particulate matter if uncontrolled. However, all such emissions would be temporary and produced only when construction 7 8 activities are occurring. Construction activities would incorporate BMPs and environmental control 9 measures (e.g., wetting the ground surface) to minimize fugitive particulate matter air emissions. Additionally, work vehicles are assumed to be well maintained and to use diesel particulate filters to reduce 10 particulate matter air emissions. 11

Table 3-8 summarizes the anticipated air emissions from activities by construction category. The ACAM
 reports are in **Appendix C**.

14 15

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Table 3-8. Estimated Air Emissions from Proposed Construction and Demolition Activities for La Luz Gate Alternative 2

Activity ¹	NO _x (tons)	VOC (tons)	CO (tons)	SO _x (tons)	PM _{2.5} ² (tons)	PM ₁₀ ² (tons)	NH₃ (tons)	CO₂e (tons)
Renovation	0.371	0.167	0.503	0.001	0.017	1.012	0.000	100.3
Project Total:	0.371	0.167	0.503	0.001	0.017	1.012	0.000	100.3

17 1. All calculations were performed using ACAM v5.0.17b. See Appendix C for the complete report. Values are rounded.

18 2. PM emissions in this table are uncontrolled. Utilizing standard fugitive dust controls would reduce PM emissions by at least 50%.

19 Climate Change and Greenhouse Gases. Construction associated with the La Luz Gate Alternative 2 20 would emit approximately 100.3 tons of CO₂e during a given year. This amount of CO₂e is comparable to 21 the GHG footprint of 12 single family homes for one year (USEPA, 2021). As such, this one-time emission 22 of GHGs would not meaningfully contribute to the effects of global climate change. Therefore, the La Luz 23 Gate Alternative 2 would not be expected to result in a significant impact on climate change.

24 3.5.6 Environmental Consequences – Alternative 3 (La Luz Gate Closure and Demolition)

The La Luz Gate Alternative 3 would result in a short-term, minor impact on air quality, primarily associated 25 with construction operations. Emissions of criteria pollutants and GHGs would be directly produced from 26 activities such as the operation of heavy equipment, heavy-duty diesel vehicles hauling debris to and from 27 the project area, and workers commuting daily to and from the project sites in their personal vehicles. 28 Additionally, heavy equipment moving soil and debris would produce a notable amount of particulate matter 29 30 if uncontrolled. However, all such emissions would be temporary and produced only when construction activities are occurring. Construction activities would incorporate BMPs and environmental control 31 measures (e.g., wetting the ground surface) to minimize fugitive particulate matter air emissions. 32 33 Additionally, work vehicles are assumed to be well maintained and to use diesel particulate filters to reduce 34 particulate matter air emissions.

Table 3-9 summarizes the anticipated air emissions from activities by construction category. The ACAM
 reports are in Appendix C.

Estimated Air Emissions from C&D Activities for La Luz Gate Alternative 3								
Activity ¹	NO _x (tons)	VOC (tons)	CO (tons)	SO _x (tons)	PM _{2.5} ² (tons)	PM₁₀² (tons)	NH₃ (tons)	CO₂e (tons)
Demolition	0.192	0.033	0.246	0.001	0.007	0.383	0.000	60.6
Project Total:	0.192	0.033	0.246	0.001	0.007	0.383	0.000	60.6

Table 3-9.

3 1. All calculations were performed using ACAM v5.0.17b. See Appendix C for the complete report. Values are rounded.

4 2. PM emissions in this table are uncontrolled. Utilizing standard fugitive dust controls would reduce PM emissions by at least 50%.

Climate Change and Greenhouse Gases. Construction associated with the La Luz Gate Alternative 3 would emit approximately 60.6 tons of CO₂e during a given year. This amount of CO₂e is comparable to the GHG footprint of 11 single family homes for one year (USEPA, 2021). As such, this one-time emission of GHGs would not meaningfully contribute to the effects of global climate change. Therefore, the La Luz Gate Alternative 3 would not be expected to result in a significant impact on climate change.

10 3.5.7 Environmental Consequences – No Action Alternative

Under the No Action Alternative, the proposed construction and demolition activities associated with the Airfield and Access Control Points Improvements would not be implemented and the existing conditions discussed in **Section 3.5.2** would remain unchanged. Therefore, no air quality impacts would occur with implementation of the No Action Alternative.

15 3.5.8 Reasonably Foreseeable Future Actions and Other Environmental Considerations

Implementation of Alternatives 1, 2, or 3, in addition to reasonably foreseeable future actions at Holloman
 AFB, would not result in any reasonably foreseeable effects on the region's air quality.

18 3.6 BIOLOGICAL RESOURCES

19 3.6.1 Definition of the Resource

20 Biological resources include native or invasive plants and animals; sensitive and protected floral and faunal species; and the habitats, such as wetlands, forests, and grasslands, in which they exist. Habitat can be 21 defined as the resources and conditions in an area that support a defined suite of organisms. Special status 22 species include plant and animal species that are: (1) listed as endangered, threatened, or proposed for 23 listing by the USFWS under the ESA and their designated critical habitats; (2) protected by the federal 24 Migratory Bird Treaty Act of 1981; (3) protected under the Bald and Golden Eagle Protection Act of 1940; 25 or (4) listed under state ESAs or similar conservation laws. The description of the primary federal statutes 26 27 that form the regulatory framework for the evaluation of biological resources is provided in Appendix C.

The ROI for biological resources includes the areas on Holloman AFB situated on and adjacent to the locations proposed for airfield improvements and gate relocation (see **Figures 2-1 through 2-5**).

30 3.6.2 Affected Environment

The information presented in this section was primarily gathered from the Holloman AFB Integrated Natural Resources Management Plan (INRMP; Holloman AFB, 2018) and from the USFWS (2021) and New Mexico Department of Game and Fish (NMDGF, 2019, 2021).

Ecoregion descriptions are provided to describe the common vegetation within the ROIs. Ecoregions are used to characterize areas of similar type, quality, and quantity of environmental resources (USEPA, 2021b). Ecoregions are assigned hierarchical levels to delineate ecosystems spatially based on different planning and reporting needs. Level I is the broadest ecoregion level, dividing North America into 15

ecological regions. Level II includes 50 ecoregions, and Level III divides the continental United States into

1 105 ecoregions. Level IV further subdivides the Level III ecoregions (USEPA, 2021b). Level III ecoregion 2 descriptions provide a regional perspective and are more specifically oriented for environmental monitoring,

3 assessment and reporting, and decision-making (Commission for Environmental Cooperation, 1997).

4 3.6.2.1 Vegetation

The ecosystems on Holloman AFB, part of a more extensive system ranging beyond base borders, are 5 represented by the Level III Chihuahuan Desert ecoregion (NMDGF, 2019). The Chihuahuan Desert 6 ecoregion encompasses 26,989 mi² of the southern third of New Mexico and is the northern portion of a 7 8 contiguous warm desert extending into central Mexico. Elevations range from 2.800 to 8.550 ft, and the 9 terrain consists of broad basins bordered by isolated, rugged mountains. This ecoregion is arid, marked by 10 hot summers and mild winters. There are 27 naturally vegetated habitat types, 3 unvegetated land covers, and agricultural land mostly comprised of two habitats. Chihuahuan Semi-Desert Grassland and 11 Chihuahuan Desert Scrub (NMDGF, 2019). Holloman AFB land includes both of these upland habitats as 12 well as dunelands (Great Plains Sand Grassland and Shrubland and Intermountain Saltbrush Shrubland), 13 playa (Intermountain Saltbrush Shrubland), arroyo riparian (Warm Desert Arroyo Riparian Scrub), and 14 wetlands (Holloman AFB, 2018). Except in small patches of high elevation woodlands of oak (Quercus 15 spp.) and piñon-juniper above 7,050 ft, dominant plant species are blue grama (Bouteloua gracilis) and 16 black grama (Bouteloua eriopoda), creosote (Larrea tridentata), American tarwort (Flourensia cernua), 17 mesquite (Prosopis spp.), and vuccas (Yucca spp.). Common faunas include prairie dogs, kit foxes, 18 pronghorn (Antilocapra americana), and black-tailed jackrabbits (Lepus californicus) (NMDGF, 2021). 19

Within the ROI, the undeveloped areas of Holloman AFB are dominated by xerophytic shrubland and 20 grassland communities having plant assemblages biogeographically related to the Chihuahuan Desert and 21 Great Basin (Holloman AFB, 2018). The cantonment area contains the greatest total number of acres and 22 23 continuous extent of Alkali Sacaton Grasslands within Holloman AFB. Shrublands dominated by fourwing 24 saltbush (Atriplex canescens) also cover a large portion of the cantonment area. Pickleweed Shrubland 25 and Gyp Dropseed Grassland make up much of the remaining undeveloped plant assemblages within the 26 cantonment area. Mixed Shrub-Grasslands north of Douglas Road are dominated by shrubland communities with extensive patches of grassland communities (Holloman AFB, 2018). Holloman AFB 27 28 development, disturbance, and roads cover about eight percent of the area, with the remaining communities 29 associated with riparian habitat within the draws or rock outcrops on Tularosa Peak.

30 3.6.2.2 Wildlife

Considering its relatively small size. Holloman AFB provides a large diversity of habitats for aquatic and 31 terrestrial species (Holloman AFB, 2018). Throughout the Tularosa Basin, suitable wildlife habitat is limited, 32 due to ranching, farming, and urban and rural development. Within this patchwork, wildlife inhabits 33 34 increasingly smaller pockets of native habitat further fragmented by roads and fences. Mammals range 35 from small bat and rodent species to medium-size carnivores and large ungulates such as pronghorn, mule 36 deer and the nonnative gemsbok (Oryx gazella). Common wildlife in the area includes coyote (Canis 37 latrans), desert cottontail (Sylvilagus auduboni), and black-tailed jackrabbit (Lepus californicus). Holloman 38 AFB manages land used by at least 16 different species of bats, including the pale Townsend's big-eared bat (Corynorhinus townsendii) and spotted bat (Euderma maculatum). A 2011 bat survey using mist-nets 39 40 and acoustic monitoring identified at least six different bat species on base, including the most commonly detected species, the Mexican free-tailed bat (Tadarida brasiliensis) (Holloman AFB, 2018). 41

Other mammal species observed on Holloman AFB include the Ord's kangaroo rat (*Dipodomys ordii*), desert pocket mouse (*Chaetodipus penicillatus*), plains pocket mouse (*Perognathus flavescens gypsi*), White Sands woodrat (*Neotoma micropus leucophaea*), porcupine (*Erethizon dorsatum*), coyote, kit fox (*Vulpes macrotis neomexicanus*), long-tailed weasel (*Mustela frenata*), ringtail (*Bassariscus astutus*), Rocky Mountain mule deer (*Odocoileus hemionus*), and the desert mule deer (*Odocoileus hemionus crooki*).

48 During previous surveys, at least 264 bird species have been inventoried on Holloman AFB and the Boles
 49 Wells Water System Annex, and 81 of these species are currently listed by at least one agency or

organization as a species of concern (Holloman AFB, 2018). Some species that have been more commonly

observed include waterfowl such as northern shoveler (*Anas clypeata*) and ruddy duck (*Oxyura jamaicensis*), raptors such as Swainson's hawk (*Buteo swainsoni*) and prairie falcon (*Falco mexicanus*), gamebirds like Gambel's quail (*Callipepla gambelii*) and scaled quail (*Callipepla squamata*), as well as numerous species of passerines (commonly known as song or perching birds). The western burrowing owl (*Athene cunicularia hypogea*) is a year-round resident, taking advantage of the habitat and prey found in and around the airfield and the cantonment area (Holloman AFB, 2018).

Holloman AFB manages habitat for a variety of amphibian, lizard, and snake species, and according to
previous surveys, it is home to at least 3 amphibian, 11 lizard, and 9 snake species (Holloman AFB, 2018).
This includes the desert massasauga (*Sistrurus tergeminus*) and Texas horned lizard (*Phrynosoma cornutum*). The mosquito fish (*Gambusia affinis*) is the most common fish species on base and was
introduced by NMDGF into ditches, lagoons, and Lake Holloman to control mosquito populations.

12 3.6.2.3 Threatened and Endangered Species and/or Species of Concern

A list of federal listed species that may occur in the action area was obtained from the USFWS Information for Planning and Consultation (IPaC) website (USFWS, 2022) and for state listed species from New Mexico Environmental Review Tool (NMDGF, 2022, Project ID: NMERT-1913). Twenty federal and/or state listed species are identified as potentially occurring on or within 1 mile of the base, of which only five species have been documented on Holloman AFB (Holloman AFB, 2018) **Table 3-10** provides a list of the species and their federal and state status.

None of the federally listed species identified in the IPaC List of Threatened and Endangered Species (Project Code: 2022-0034619) have been documented on base during natural resource surveys (Holloman AFB, 2018). While some riparian habitat is present that may be used by yellow-billed cuckoo, they have not been documented on base. The northern aplomado falcon (*Falco femoralis*) also has the potential to occur on

Holloman AFB, yet numerous surveys have not documented its presence. The federal candidate monarch 23 24 butterfly (Danaus plexippus) is found throughout New Mexico, with summer and spring breeding occurring in the southern half of the state (Xerces Society, 2022). While surveys for monarch butterflies and potential 25 26 habitat have not yet occurred at Holloman AFB, several species of host milkweed (Asclepias spp.) are 27 present in Otero County (Xerces Society, 2019), and nectar-producing plants such as desert willow (Chilopsis linearis) and sunflowers (Helianthus spp.) are located on Holloman AFB (Xerces Society, 2016; 28 Holloman AFB, 2018). For the remaining species listed within the IPaC as potentially being present on 29 Holloman AFB, either the base is not within their known range, suitable habitat does not occur on base, or 30 31 both.

Species	Federal Status ¹	State Status ¹	Documented on Holloman AFB ¹
Birds			
Aplomado falcon (<i>Falco femoralis</i>) ²		Е	No
Northern aplomado falcon (<i>Falco femoralis</i> septentrionalis) ²	NEP	E	No
Mexican spotted owl (Strix occidentalis lucida)	Т		No
Yellow-billed Cuckoo Coccyzus americanus	Т		No
Baird's sparrow (Centronyx bairdii)		Т	Yes
Bald eagle (Haliaeetus leucocephalus)		Т	Yes
Peregrine falcon (Falco peregrinus anatum)		Т	Yes
Common blackhawk (Buteogallus anthracinus)		Т	No
Interior least tern (Sternula antillarum athalassos) ²		E	No
Bell's vireo (Vireo bellii)		Т	No
Gray vireo (Vireo vicinior)		Т	No
Mammals	•	1	

 Table 3-10.

 Federal and State Listed Species Identified and Documented on Holloman AFB

ted on AFB ¹
1
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Table 3-10. Identified and Decumented on Hellomen AEP

1 Notes:

Sources: USFWS, 2022; NMDGF, 2021; Holloman AFB, 2018 1.

2 3 4 The Northern aplomado falcon is a subspecies of the Aplomado falcon. The aplomado falcon is believed to be extirpated from 2 New Mexico.

5 6 Abbreviations: AFB = Air Force Base; C = Candidate; E = Endangered; NEP = Nonessential Experimental Population; PE = Proposed Endangered; PT = Proposed Threatened; T = Threatened

7 The state listed species known to occur on Holloman AFB include the Baird's sparrow (Ammodramus bairdii), bald eagle (Haliaeetus leucocephalus), least tern (Sternula antillarum), peregrine falcon (Falco 8 peregrinus), and White Sands pupfish (Cyprinodon tularosa) (Holloman AFB, 2018). Of these, the Baird's 9 10 sparrow and bald eagle are documented as vagrants on Holloman AFB. Peregrine falcons occasionally use the wetlands for foraging on Holloman AFB in the summer and winter months. The White Sands pupfish is 11 endemic to the Tularosa Basin and two translocated populations were introduced in 1970 to Lost River on 12 Holloman AFB (Figure 3-3). Numerous species considered Species of Greatest Conservation Need also 13 14 occur on Holloman AFB, and while these species are not listed under the ESA or the New Mexico Wildlife Conservation Act. Holloman AFB does survey and manage for them, including the western burrowing owl 15 (an S3 vulnerable species) that has been documented within shrubland found within and north of the 16 cantonment area, and the snowy plover (an S3 vulnerable species) documented in the wetlands on the 17 southwest area of the base (Figure 3-3). 18

19 3.6.2.4 Invasive Species

20 Saltcedar (Tamarix spp.) is a concern in wetland areas at Holloman AFB where it has been planted in the past as a wind break and for dune stabilization (Holloman AFB, 2018). Five-horn smotherweed (Bassia 21 hyssopifolia) is native to Europe and Asia, has a high salinity tolerance, and has become invasive at Lagoon 22 G and Ponds 3 and 4. Other invasive plant species such as African rue (Peganum harmala) and Russian 23 24 thistle (Salsola kali) are common in grasslands on Holloman AFB and degrade habitat for native wildlife species. On the airfield, saltcedar and African rue are of primary concern, and they are regularly controlled 25 by mechanical and chemical treatment. Saltcedar within the rest of the cantonment and the northern base 26 27 is also controlled with mechanical treatment and herbicide.

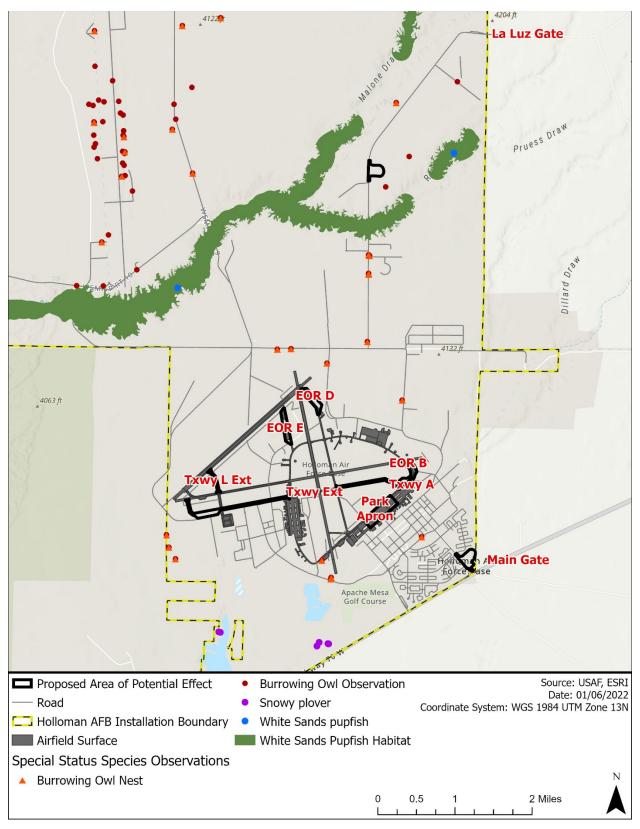


Figure 3-3. Documented Locations of Western Burrowing Owl, White Sands Pupfish, and Snowy

³ Plover on Holloman AFB

- 1 3.6.3 Environmental Consequences Evaluation Criteria
- 2 The level of impact on biological resources is based on the:
 - importance (i.e., legal, commercial, recreational, ecological, or scientific) of the resource;
 - proportion of the resource that would be affected relative to its occurrence in the region;
- sensitivity of the resource to the proposed activities; and
- duration of potential ecological ramifications.

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

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

3.6.4 Environmental Consequences – Alternative 1 (Airfield Improvements, Reposition Main Gate and La Luz Gate)

18 3.6.4.1 Vegetation

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19 Under Alternative 1, airfield improvements would require ground-disturbing activities of an estimated 110 ac of land within the airfield and an estimated 5.1 ac of land for the Main Gate relocation (see Table 2-2 20 and Figures 2-1 through 2-3). The cantonment area, which includes the airfield and Main Gate, are the 21 22 most disturbed areas on the base (Holloman AFB, 2018). The vegetation within the airfield and cantonment is primarily shrubland dominated by sparse fourwing saltbush, associated with highly disturbed areas, and 23 24 some alkali sacaton shrubland. The proposed relocation of the La Luz Gate would disrupt an estimated 3.1 ac of previously undisturbed fourwing saltbush shrubland/alkaline sacaton grassland vegetation (see 25 Figures 2-4 and 2-5). 26

27 During construction activities, soil surfaces, including existing vegetation, would be cleared, graded, 28 trenched, and leveled for the construction of expanded ramps and taxiways on the airfield and the new Main Gate traffic lanes, parking, and facilities. During construction on airfield ramps and taxiways, degraded 29 30 or unnecessary pavement would be removed or replaced. Upon completion of the new Main Gate and La Luz Gate facilities, an estimated 2.8 ac and 0.8 ac, respectively, of obsolete gate facilities and unnecessary 31 32 roads and parking areas would be demolished. After demolition, the area would be landscaped using 33 xeriscaping techniques that are designed to eliminate or reduce the need for irrigation, as well as drought-34 tolerant native plants adapted to the region's climate that would provide long-term, beneficial impacts.

Prior to the start of construction, the contractor would be required to implement pre-construction BMPs and obtain permits to limit the displacement of native plants. The vegetation on the airfield and Main Gate is previously disturbed and maintained, and the development of this land would not have significant impacts on vegetation. Moreover, the net loss of previously undisturbed native vegetation from the construction of the La Luz Gate would be minor. As such, there would be long-term, minor impacts to native vegetation from construction activities.

41 3.6.4.2 Wildlife

Potential impacts to wildlife would occur from the short-term presence of heavy equipment and noise associated with construction activities. The potential short-term impacts would not jeopardize the continued existence of a species or result in an overall decrease in population diversity, abundance, or fitness.

Construction activities under the Proposed Action and Alternatives include potential short-term direct and 1 indirect impacts to wildlife. Direct impacts include possible interactions with machinery or destruction of 2 3 nests or burrows containing eggs or young. Indirect impacts include habitat loss or disturbance from noise 4 and human activity from land clearing and construction preparation. Projects in the airfield area and Main 5 Gate area are less likely to disturb wildlife due to existing continuous disturbances associated with activities in these areas. More wildlife may be present in the less disturbed location proposed for the La Luz Gate, 6 7 but conservation efforts would minimize effects. Most of the wildlife species found on base are common 8 and well adapted to rural or semi-urban settings, and some of these species may return following project 9 construction. Some species may avoid project sites long term; however, the affected areas are small and the habitat marginal. While some mortality of wildlife may occur, any loss would be minor and would not 10 result in long-term impacts to wildlife populations. Conservation BMPs to minimize direct and indirect 11 impacts for ground nesting birds include conducting ground-disturbing construction outside the primary 12 nesting season of 1 March through 1 July. When project activities cannot occur outside the bird nesting 13 season, a survey would be conducted by a qualified biologist, prior to scheduled activity, to determine if 14 active bird nests or breeding behaviors are detected within the area of impact. If nesting birds are detected, 15 16 vegetation removal activities would be delayed until nestlings have fledged, or the nest fails, or breeding 17 behaviors are no longer observed. If the activity must occur, active nests would be properly buffered to 18 avoid take of adults, eggs, and nestling birds. Potential impacts to wildlife and habitat from implementation 19 of the Proposed Action or Alternatives are expected to be short-term and minor.

20 3.6.4.3 Threatened and Endangered Species

21 As discussed above, the proposed construction on the airfield and at the Main Gate would occur at locations that experience regular disturbances and therefore do not provide optimal habitat for the federal listed 22 species regularly documented on Holloman AFB. In addition, the northern aplomado falcon has not been 23 documented on Holloman AFB. Therefore, these species would not be affected by the implementation of 24 25 Alternative 1. While the monarch butterfly has the potential to occur on Holloman AFB, the amount of 26 undisturbed vegetation that would be removed under the Alternative 1 relocation of the La Luz Gate would be minor, comprising only about 0.02 percent of the grassland community north of Douglas Road. Any 27 28 potential impacts would be negligible. Natural resource surveys have not documented the remaining federally listed species on Holloman AFB (Holloman AFB, 2018). The Air Force has made a no effect determination 29 for the Mexican spotted owl, vellow-billed cuckoo, Peñasco least chipmunk, Rio Grande cutthroat trout, 30 Sacramento Mountains thistle, Sacramento prickly poppy, Todsen's pennyroyal, and Wright's marsh thistle 31 32 from implementation of Alternative 1. The Air Force has made a may affect, but not likely to adversely affect determination for the federal candidate monarch butterfly at Holloman AFB from the implementation of 33 Alternative 1. 34

The minimal amount of undisturbed habitat that would be removed from the relocation of the La Luz Gate would not affect the Baird's sparrow, bald eagle, or peregrine falcon, which may use this habitat for foraging, since they are either vagrant or occasional visitors on Holloman AFB. These species would not be affected by the airfield improvements and relocations of the Main Gate and La Luz Gate under Alternative 1.

39 Habitat and documented locations for the state listed White Sands pupfish are located within a guarter mile of the proposed site for the La Luz Gate (see Figure 3-3). Prior to construction activities, the contractor 40 would be required to comply with the Holloman AFB Storm Water Pollution Prevention Plan (SWPPP) and 41 the Master Sediment Control Plan, which includes complying with regulatory requirements, coordinating 42 construction BMPs to minimize storm water contamination, and adherence to BMPs for storm water 43 management as related to construction activities (Holloman AFB, 2005). To ensure adherence to the 44 SWPPP, the 49 CES Environmental Flight is required to inspect all temporary construction sites. Prior to 45 46 the start of construction, sediment traps, sediment basins, storm drain inlet and outlet protection, and other appropriate standard construction practices would be implemented to control stormwater runoff and soil 47 erosion from the site. There would be no impact on the White Sands pupfish from the implementation of 48 49 Alternative 1.

50 Western burrowing owls or active nests may be present near the locations proposed for airfield 51 improvements or the Main Gate and La Luz Gate relocations. As discussed in the Wildlife section above, 1 conservation BMPs would be implemented to minimize direct and indirect impacts. If necessary, the 49

- 2 CES Environmental Flight may relocate burrows away from the locations proposed for construction 3 activities. Potential impacts on burrowing owls and habitat from implementation of the Proposed Action or
- 4 Alternatives are expected to be short-term and minor.

5 Conservation BMPs to minimize direct and indirect impacts for ground nesting birds include conducting the 6 proposed action outside the primary nesting season (identified as 1 March through 1 July). When project 7 activities cannot occur outside the bird nesting season, a survey conducted by a qualified biologist prior to 8 the scheduled activity would determine if active bird nests or breeding behaviors are detected within the 9 area of impact. If nesting birds are present, vegetation removal activities would be delayed until nestlings 10 have fledged, or the nest fails, or breeding behaviors are no longer observed. If the activity must occur, 11 active nests would be properly buffered to avoid take of adults, eggs, and nestling birds.

12 3.6.4.4 Invasive Species

As described in the Vegetation analysis, there would be activities that disturb vegetation in the airfield, Main 13 14 Gate, and La Luz Gate ROIs. Upon completion of the construction activities, the area would be landscaped 15 using xeriscaping techniques designed to eliminate or reduce the need for irrigation, as well as drought-16 tolerant native plants adapted to the region's climate to stabilize the soil. Affected areas would be maintained to help prevent nonnative, invasive plant growth, which would provide long-term, beneficial 17 impacts. BMPs would help prevent the spread of invasive plants and would include removing vegetation 18 and soils from any equipment used in areas with invasive plants. There would be no impacts on invasive 19 species control from the implementation of Alternative 1. 20

21 3.6.5 Environmental Consequences – Alternative 2 (La Luz Gate Renovation)

22 3.6.5.1 Vegetation

Under Alternative 2, additional access lanes and identification check lanes would be installed at the current La Luz Gate, and the current facilities would be renovated. Under this alternative, an estimated 132,509 square feet of additional pavement for roadway would be added. The additional pavement would require the removal of an estimated three ac of previously disturbed land and may also impact some previously undisturbed fourwing saltbush shrubland/alkaline sacaton grassland vegetation. The amount of native vegetation removed from the additional roadway pavement would be minimal and result in long-term, minor impacts to native vegetation from construction activities.

30 3.6.5.2 Wildlife

The potential impacts to wildlife from the renovation of the La Luz Gate would be similar to those described under Alternative 1, although less land would be disturbed. The same conservation BMPs described under Alternative 1 would be implemented under Alternative 2 for the La Luz Gate. Potential impacts on wildlife are expected to be short-term and minor.

35 3.6.5.3 Threatened and Endangered Species

The addition of traffic lanes and renovation of the existing La Luz Gate facilities under Alternative 2 would have no impact on federal or state listed species. While the western burrowing owl may be present near the existing La Luz Gate, the same BMPs described for Alternative 1 would be applied to minimize impacts. Potential impacts to burrowing owls and habitat from the implementation of Alternative 2 are expected to be short-term and minor.

41 3.6.5.4 Invasive Species

The potential impacts to invasive species from the addition of traffic lanes and renovation of existing La Luz Gate facilities under Alternative 2 and the actions to minimize impacts would be the same as those described under Alternative 1. There would be no impacts on invasive species control from the implementation of Alternative 2.

1 3.6.6 Environmental Consequences – Alternative 3 (La Luz Gate Closure and Demolition)

2 3.6.6.1 Vegetation

Under Alternative 3, an estimated 0.8 ac of existing La Luz Gate pavement and facilities would be demolished. Upon completion of demolition activities, the area would be landscaped using xeriscaping techniques designed to eliminate or reduce the need for irrigation, as well as drought-tolerant native plants adapted to the region's climate to stabilize the soil. Affected areas would provide long-term, beneficial impacts.

8 3.6.6.2 Wildlife

9 The removal of the existing La Luz Gate facilities and the subsequent landscape actions described above 10 would provide additional habitat for wildlife. The small amount of additional land that would be converted 11 from improved to vegetated habitat would have long-term, minor beneficial impacts on wildlife.

12 3.6.6.3 Threatened and Endangered Species

The removal of existing La Luz Gate facilities under Alternative 3 would have no impact on federal or state listed species. As discussed for Wildlife above, the conversion of land from improved to natural habitat may increase habitat for the western burrowing owl and result in long-term, minor beneficial impacts.

16 3.6.6.4 Invasive Species

Under Alternative 3, some traffic lanes and the existing La Luz Gate facilities would be demolished. After completion of demolition activities, the area would be landscaped using xeriscaping techniques designed to eliminate or reduce the need for irrigation, as well as drought-tolerant native plants adapted to the region's climate to stabilize the soil. Affected areas would be maintained to help prevent nonnative, invasive plant growth that would provide long-term, beneficial impacts. There would be no impacts on invasive species control from the implementation of Alternative 3.

23 3.6.7 Environmental Consequences – No Action Alternative

Under the No Action Alternative, the proposed airfield improvement would not be implemented, the arm/dearm pads and airfield geometry would remain as currently configured, and the Main and La Luz Gates would stay in their current locations and configuration. As such, there would be no impact on biological resources.

28 3.6.8 Reasonably Foreseeable Future Actions and Other Environmental Considerations

The alternatives, in addition to the reasonably foreseeable future actions summarized in **Appendix B**, would result in long-term, negligible to minor impacts on biological resources. There are no impacts on threatened and endangered species on Holloman AFB, when taken in conjunction with reasonably foreseeable future actions. No significant reasonably foreseeable effects on biological resources would be expected from the proposed construction, demolition, and renovation projects.

34 3.7 CULTURAL RESOURCES

35 3.7.1 Definition of the Resource

Cultural resources are any prehistoric or historic district, site, building, structure, or object considered important to a culture or community for scientific, traditional, religious, or other purposes. These resources are protected and identified under several federal laws and EOs.

39 Cultural resources include the following subcategories:

•	Archaeological (i.e., prehistoric or historic sites where human activity has left physical evidence
	of that activity, but no structures remain standing);

- Architectural (i.e., buildings or other structures or groups of structures, or designed landscapes that are of historic or aesthetic significance); and
- Traditional Cultural Properties (TCP; resources of traditional, religious, or cultural significance to Native American tribes and other communities).

A historic property is defined in 36 CFR § 800.16 as any prehistoric or historic district, site, building,
structure, or object included in, or eligible for inclusion on the National Register of Historic Places (NRHP).
To be eligible for the NRHP, historic properties must be 50 years old and have national, state, or local
significance in American history, architecture, archaeology, engineering, or culture. They must possess
sufficient integrity of location, design, setting, materials, workmanship, feeling, and association to convey
their historical significance and meet at least one of four criteria (National Park Service, 2002):

- Associated with events that have made a significant contribution to the broad patterns of our history (Criterion A);
 - Associated with the lives of persons significant in our past (Criterion B);
- Embody distinctive characteristics of a type, period, or method of construction, or represent the
 work of a master, or possess high artistic values, or represent a significant and distinguishable
 entity whose components may lack individual distinction (Criterion C); and/or
- Have yielded or be likely to yield information important in prehistory or history (Criterion D).

Properties that are less than 50 years old can be considered eligible for the NRHP under Criterion Consideration G if they possess exceptional historical importance. Those properties must also retain historic integrity and meet at least one of the four NRHP Criteria for Evaluation (Criterion A, B, C, or D). The term "historic property" refers to National Historic Landmarks, NRHP-listed, and NRHP-eligible cultural resources.

25 Federal laws protecting cultural resources include the Archaeological and Historic Preservation Act of 1960, 26 as amended, the American Indian Religious Freedom Act of 1978, the Archaeological Resources Protection Act of 1979, the Native American Graves Protection and Repatriation Act of 1990, and the NHPA, as 27 amended through 2016, and associated regulations (36 CFR Part 800). The NHPA reguires federal 28 29 agencies to consider the effects of federal undertakings on historic properties prior to making a decision or taking an action and to integrate historic preservation values into their decision-making process. Federal 30 31 agencies fulfill this requirement by completing the Section 106 consultation process, as set forth in 36 CFR 32 Part 800. Section 106 of the NHPA also requires agencies to consult with federally recognized Indian tribes with a vested interest in the undertaking. 33

Section 106 of the NHPA requires all federal agencies to seek to avoid, minimize, or mitigate adverse effects on historic properties (36 CFR § 800.1[a]). For cultural resource analysis, the Area of Potential Effects (APE) is used as the ROI. APE is defined as the "geographic area or areas within which an undertaking may directly or indirectly cause alterations in the character or use of historic properties, if any such properties exist," (36 CFR § 800.16[d]) and thereby diminish their historic integrity.

39 3.7.2 Affected Environment

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Holloman AFB is located in the Tularosa Basin of south-central New Mexico, approximately 7 mi southwest
 of Alamogordo. The Main Cantonment covers 51,813 ac. Holloman AFB is bounded by White Sands Missile
 Range (WSMR) to the north, south, and west and by White Sands National Park to the south. Private, state,
 and Bureau of Land Management lands lie to the east of Holloman AFB.

The APE, as defined for analyzing historic properties in this EA, includes the locations proposed for alteration (i.e., increased pavement at EORs, additional taxiways, and proposed gate locations) and areas in which excess and degraded pavement would be demolished. A 50-foot construction buffer is also

included in the APE (Figure 3-4 through 3-7). Per 36 CFR 800.4, Identification of Historic Properties, 1 2 Holloman AFB determined the scope of identification efforts in consultation with the New Mexico (NM) SHPO as well as Tribal Historic Preservation Officers (THPO) and other Tribal representatives of the 3 4 Mescalero Apache, Fort Sill Apache Tribe, Ysleta del Sur Pueblo, and the Pueblo of Zuni. The NM SHPO concurred with the cultural resources APE and historic inventory. See Appendix A for feedback from 5 THPOs and other Tribal representatives. 6

7 3.7.2.1 Archaeological and Traditional Cultural Properties

8 Archaeological sites on Holloman AFB cover more than 10.000 years of human occupation and represent 9 a wide range of site types including unique prehistoric "hearth mounds" as well as ranching and military-10 era sites. Since 1979, a total of 262 sites have been identified and recorded including 135 prehistoric sites, 24 historical sites, 50 military-era sites, 44 multicomponent sites, and 9 recent or undated sites (Holloman 11 AFB, 2017a). Holloman AFB has 100% complete archaeological survey coverage on the main base. A 12 total of 12 archaeological sites are located within a 0.5-mile radius of the APE. Nine of these sites have 13 been determined ineligible for inclusion in the NRHP with SHPO concurrence. Two sites have been 14 determined eligible for inclusion in the NRHP with SHPO concurrence, and one site is unevaluated and 15 therefore is provided the same consideration and protections as an eligible site. Table 3-11 identifies 16 17 archaeological historic properties within the vicinity of the APE.

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Table 3-11. Areas of Cultural, Historical, and Architectural Significance Within or Adjacent to the Area of Potential Effect									
L A Sito				Adjacant	Within 0.5 mile				

LA Site Number	HAR Site Number	NRHP Determination	Within APE	Adjacent to APE	Within 0.5-mile Radius of APE
LA 115877	HAR-256	Not evaluated	No	No	Yes
LA 168660	HAR-373	Individually eligible	No	No	Yes
LA 168662	HAR-374	Individually eligible	No	Yes	Yes

21 22 Abbreviations: APE = Area of Potential Effect; HAR = Holloman Archeological Resource: LA = New Mexico Laboratory of

Anthropology; NRHP = National Register of Historic Places

23 Site New Mexico Laboratory of Anthropology (LA) 115877/ Holloman Archeological Resource (HAR)-256

24 is one of 68 single component Jornada Mogollon/Formative period sites and LA 168660/HAR-373 is one of

25 44 multicomponent sites documented on Holloman AFB Main Base. Both are located approximately 0.25

26 miles south of the southernmost border of the La Luz Gate Relocation APE (Figure 3-7).

27 Site LA 168662/HAR-374 is the historic Old La Luz Road that connected La Luz to the Mesilla Valley, starting in the Territorial period and continuing into the early twentieth century. The road is currently 28 overgrown with mesquite, fourwing saltbush, alkali sacaton, and broom snakeweed and not completely 29 30 visible from the ground. It shows up clearly on aerial photographs, however, running parallel to (and south of) the modern segment of La Luz Gate Road that connects the current operating La Luz Gate to the 31 32 proposed relocation spot. As recorded, the site has been impacted by wind but is in good condition and appears to be undisturbed (Zia Engineering and Environmental, 2010). Old La Luz Road is just outside the 33 northernmost boundary of the La Luz Gate Relocation APE, where the APE crosses the modern La Luz 34 Gate Road (see Figure 3-7). 35

36 The Mescalero Apache have shown consistent interest in base activities. Although consultation with the Mescalero Apache has involved visits to and tours of the base, no resulting TCPs or other significant 37 38 resources have been identified. The Fort Sill Apache Tribe, Ysleta del Sur Pueblo, and the Pueblo of Zuni 39 have asked to be notified of major actions taken on Holloman AFB by the Air Force, and access procedures 40 and agreements have been established to facilitate this (Holloman AFB, 2017a). Tribal consultation 41 associated with the Proposed Action is ongoing. Tribes consulted as part of this EA and copies of all associated correspondence are included in Appendix A. 42

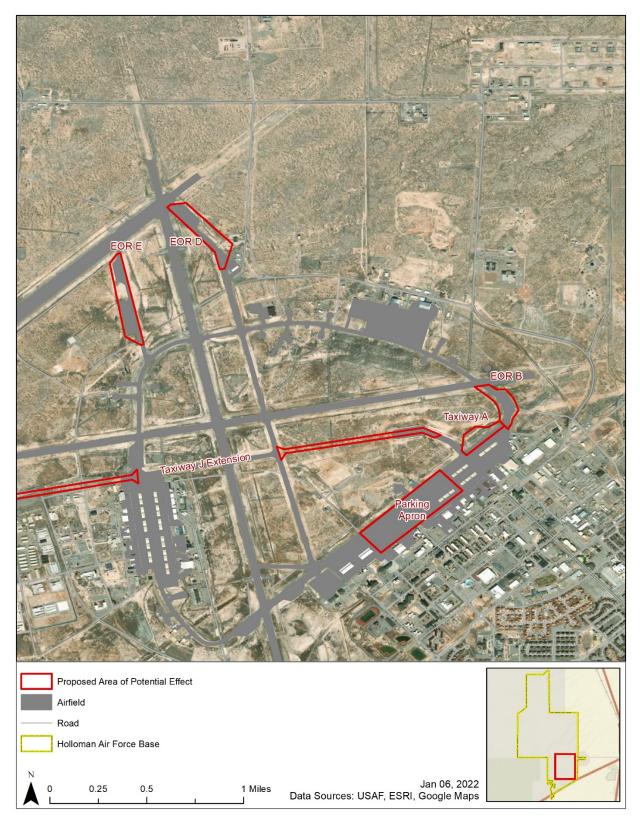




Figure 3-4. Area of Potential Effect for Airfield Improvement, East Side

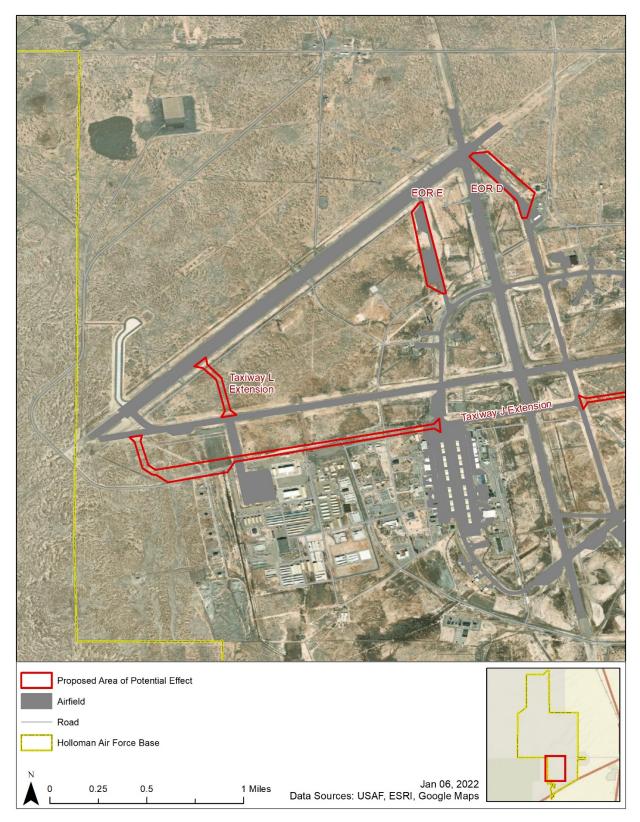
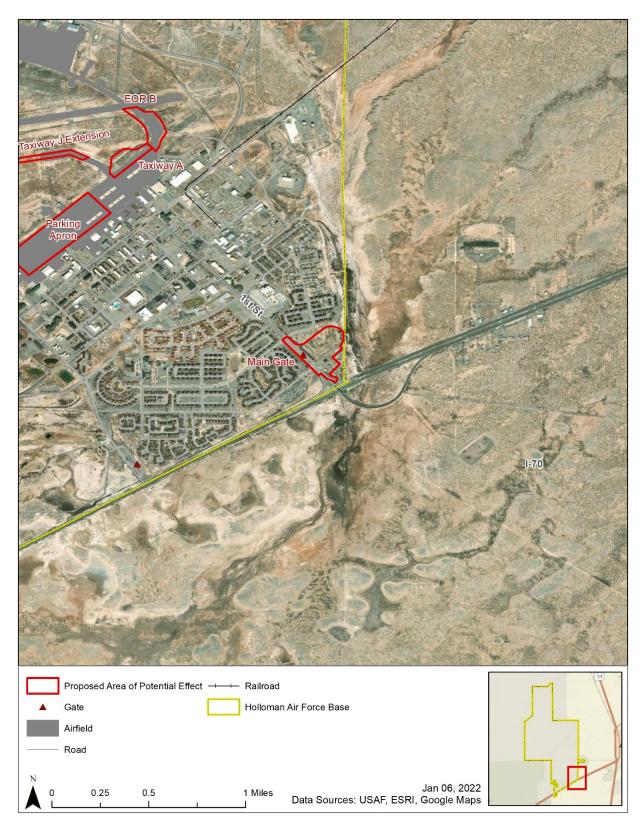


Figure 3-5. Area of Potential Effect for Airfield Improvement, West Side



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Figure 3-6. Area of Potential Effect for Main Gate Repositioning



Figure 3-7. Area of Potential Effect for La Luz Gate Relocation

1 3.7.2.2 Architectural Properties

There are no historic districts within the Holloman AFB Main Cantonment. The only Holloman AFB districts considered eligible for inclusion in the NRHP are the High-Speed Test Track Historic District and the Missile Test Stands Historic District—both of which are located several miles from the main cantonment area (Holloman AFB, 2017a; O'Leary, 1994). None of the architectural resources within the APE are eligible for listing on the NRHP.

7 3.7.3 Environmental Consequences Evaluation Criteria

8 Effects on cultural resources might include physically altering, damaging, or destroying all or part of a 9 resource or altering characteristics of the resource that make it eligible for listing in the NRHP. Those effects 10 can include introducing visual or audible elements that are out of character with the property or its setting; 11 neglecting the resource to the extent that it deteriorates or is destroyed; or the sale, transfer, or lease of the property out of agency ownership (or control) without adequate enforceable restrictions or conditions to 12 ensure preservation of the property's historic significance. For the purposes of this EA, an effect is 13 considered adverse if it alters the integrity of a historic property (i.e., NRHP-listed or eligible archaeological 14 sites or architectural resources) or if it has the potential to adversely affect TCPs and the practices 15 16 associated with the property.

3.7.4 Environmental Consequences – Alternative 1 (Airfield Improvements, Reposition Main Gate and La Luz Gate)

Under Alternative 1, proposed Airfield Improvements as described in Section 2.3.1.1 and Main Gate Improvements as described in Section 2.3.2.1 would be implemented. There are no significant archaeological sites, TCPs, or architectural resources within, adjacent to, or in the general vicinity of these locations. Therefore, per 36 CFR § 800.4, *Identification of Historic Properties,* no historic properties would be affected by proposed improvements to the airfield and Main Gate locations.

Proposed improvements for the La Luz Gate location would include construction of three identification check lanes, a new gatehouse and identification check booths, a two-vehicle inspection station, an overwatch tower or pad, and other related facilities (additional details provided in **Section 2.3.3.1**). Potential effects to the proposed area of ground disturbance, including the actual construction footprints, adjacent area where construction-related clearing and grading would occur, and a construction buffer of 50 ft around all construction were analyzed for this EA.

There are no significant TCPs or architectural resources within, adjacent to, or in the vicinity of the portion of the APE associated with the potential La Luz Gate Relocation. Archaeological sites LA 115877/HAR-256 and LA 168660/HAR-373 are located approximately 0.25 miles south of the southernmost border of the portion of the APE associated with the potential La Luz Gate Relocation. It has been determined that any construction-related activities would not diminish or otherwise impact the integrity of these sites.

Site LA 168662/HAR-374, historic Old La Luz Road, is located just outside the northernmost boundary of the La Luz Gate Relocation APE, where the APE crosses the modern La Luz Gate Road. Since the APE was defined with consideration to staging areas and construction buffers, per 36 CFR § 800.4, no historic properties would be affected by construction-related activities as planned actions would not diminish or otherwise impact the integrity of this site. Furthermore, as the site is a historic roadbed, located adjacent to a major existing roadway, the proposed gate relocation would not have the potential to directly or indirectly impact the site's location, setting, feeling, or association. See **Appendix A** for SHPO correspondence.

44 3.7.5 Environmental Consequences – Alternative 2 (La Luz Gate Renovation)

45 Under Alternative 2, the existing La Luz Gate would be renovated in place as described in **Section 2.3.3.2**.

46 There are no significant archaeological sites, TCPs, or architectural resources within, adjacent to, or in the

47 general vicinity of the portion of the APE associated with the current location of the La Luz Gate. Therefore,

per 36 CFR § 800.4, no historic properties would be affected by implementation of Alternative 2. See
 Appendix A for SHPO correspondence.

3 3.7.6 Environmental Consequences – Alternative 3 (La Luz Gate Closure and Demolition)

Under Alternative 3, the existing La Luz Gate would be permanently closed, and the current facilities would
be demolished as described in Section 2.3.3.3. Potential effects for the implementation of Alternative 3
would be the same for historic properties as Alternative 2. See Appendix A for SHPO correspondence.

7 3.7.7 Environmental Consequences – No Action Alternative

8 Under the No Action Alternative, the proposed airfield improvement projects would not occur, the Main Gate 9 would not be repositioned with the construction of new and additional facilities, and the La Luz Gate would 10 remain in its current location with its existing configuration and facilities. There would be no potential to 11 adversely affect historic properties.

12 3.7.8 Reasonably Foreseeable Future Actions and Other Environmental Considerations

The Proposed Action and alternatives, in addition to reasonably foreseeable future actions on Holloman AFB, are not anticipated to result in incremental or cumulative effects to historic properties, including archaeological sites, TCPs, or architectural resources.

16 3.8 TRANSPORTATION

17 3.8.1 Definition of the Resource

18 Transportation resources includes all means of travel including, but not limited to, streets for vehicles and 19 bicycles, sidewalks for walking, and any means of aircraft movement on the ground. This resource also 20 includes any means of controlling the flow of transportation, such as stop lights, crosswalk placement, and 21 signage. Local municipalities determine their own need for streets and roads while the New Mexico 22 Department of Transportation oversees state and Federal highways.

The ROI for transportation includes the areas on Holloman AFB located on and adjacent to the locations proposed for airfield improvements and gate relocation (see **Figures 2-1 through 2-5**).

- 25 3.8.2 Affected Environment
- 26 3.8.2.1 Transportation Airfield

Holloman AFB features three runways (04/22, 07/25, and 16/34) that are commonly used for military
training. Additionally, Holloman currently has 23 EOR arm/dearm pads for staging F-16s. The F-16 is one
of the primary aircraft that operates out of Holloman AFB and typically uses Runway 16/34 when weather
conditions permit. However, frequent windy weather mandates the use of Runway 07/25 instead, creating
delays and congestion when returning to the West Ramp.

32 3.8.2.2 Transportation – Roads

There are currently three gated entrances to Holloman AFB: the Main Gate (at the southeast corner of the installation), the West Gate (at the southwestern side of the base), which is configured for inspecting and accepting large vehicles and heavy equipment, and the La Luz Gate (at the northeast corner of the base). The location of each gate is shown in **Figure 1-1**.

The Main Gate features up to three lanes for base access, which can be increased by stationing extra security personnel per lane to perform identification checks. Even with all lanes open, the Main Gate undergoes significant congestion during the morning hours (0600-0900), which often backs traffic up onto the westbound lanes of Highway 70. This in turn creates a hazardous environment for drivers as they approach stopped or slowed traffic at high speeds, resulting in frequent accidents. According to a recent 1 study by the 49th Security Forces Squadron (49 SFS), the main gate processes approximately 58 percent

of all outbound traffic, or around 1200 vehicles per day (**Table 3-12**). Inbound traffic is likely of similar

3 volume.

4 5

Table 3-12.				
49 Security Forces Squadron Outbound Traffic Stu	dy			

Gate	Outbound Traffic (10-day average)	Percent of Total Outbound Traffic
Main Gate 1178		58%
West Gate	655	32%
La Luz Gate	213	10%

6 The La Luz Gate (also known as the North Gate) sees far less traffic than the Main Gate, in part because

7 it is much smaller and more remote, being located several miles from the main base and featuring up to

two lanes only. As shown in **Table 3-12**, approximately 10 percent of the total traffic count passes through

9 the La Luz Gate. Due to its lower use and difficulty reaching the gate in a timely manner for emergency 10 services, the gate is typically only open during peak hours – in the morning and late afternoon. Additionally,

the present facilities at La Luz Gate were neither designed nor intended for full-time security personnel.

- 12 3.8.3 Environmental Consequences Evaluation Criteria
- 13 The level of impact on transportation is based on the:
- (All) Amount of congestion experienced on roads/runways, as measured by wait time to arrive at a given destination.
- (Airfield) Number of sorties prevented from flying due to congestion.
- (Main Gate) Number of cars backed up onto Highway 70, if any.
- (Gates) Response time for emergency responders to arrive at the gate.
- 3.8.4 Environmental Consequences Alternative 1 (Airfield Improvements, Reposition Main
 Gate and La Luz Gate)
- 21 3.8.4.1 Transportation Airfield

Several improvements are proposed under this alternative, resulting in a total construction of 3.23 million square feet of parking pavement, 1.6 million square feet of shoulder asphalt, and demolition of 900,000 square feet of existing pavement. Also included is the demolition of several excess/degraded facilities that exist within the project areas. Individual improvements are shown in **Table 2-2** and **Figure 2-1** and are assessed below.

- Increasing arming positions from 23 to 48 by enlarging those existing areas at Taxiway A and EORs B, D, and E would expand staging for F-16 aircraft.
- Extending Taxiway L would connect Runways 07-25 and 04-22, creating a shortcut so returning
 aircraft would not need to taxi to the end of the runways to return to the West Ramp, effectively
 reducing congestion.
- Extending Taxiway J to nearly the full length of Runway 07-25 would allow aircraft to taxi
 between the West Ramp and the parking apron while Runway 07-25 is in use, creating a more
 efficient airfield.

1 Once completed, this alternative would have a major long-term beneficial impact on airfield efficiency, 2 ensuring that Holloman AFB meets both current and future needs of the Air Force.

3 3.8.4.2 Transportation – Roads

Under this alternative, the existing Main Gate, Visitor's Center, and excess pavement would be demolished, 4 and new facilities and roads would be constructed. Improvements would include an access control point 5 featuring four identification check lanes. Shifting the road would provide more room for traffic to exit from 6 Highway 70, increasing the efficiency of processing vehicles and decreasing the likelihood of accidents. A 7 8 new Visitor's Center, guardhouse, vehicle inspection building with two vehicle inspection bays, and an 9 overwatch tower or pad would also be constructed (see Figures 2-2 and 2-3). See Table 2-2 for specific 10 details regarding construction and demolition. With all improvements considered, there would be a net beneficial impact on transportation resources given the increased efficiency and enhanced safety of 11 processing traffic. 12

13 Under this alternative, the existing La Luz Gate would be demolished, and a new gate would be constructed 14 approximately three miles south along the same road (see Figure 2-4). Excess existing roads would be 15 demolished, and the road would be reconfigured to that shown in Figure 2-5. New facilities would meet all 16 modern gate requirements, including AT/FP standoffs. Improvements would include a guardhouse, three identification check lanes with booths, a two-lane inspection building, and an overwatch tower or pad. Once 17 complete, the La Luz facilities would offer an efficient alternative to using the Main Gate for some personnel, 18 potentially reducing traffic at other gates and resulting in a minor long-term beneficial impact on 19 transportation resources. 20

21 3.8.5 Environmental Consequences – Alternative 2 (La Luz Gate Renovation)

Under this alternative, the existing La Luz Gate would be renovated to bring it to modern standards. In addition to renovations of existing facilities, this alternative may include construction of new roadway pavement to adhere to AT/FP requirements. To use the renovated facility, 49 SFS personnel would still need to pre-position at the gate to ensure an adequate emergency response time. Traffic efficiency at the gate may increase if two lanes could be used simultaneously, resulting in a negligible beneficial impact on transportation resources.

28 3.8.6 Environmental Consequences – Alternative 3 (La Luz Gate Closure and Demolition)

Under this alternative, the existing La Luz Gate would be demolished, and the gate would be permanently closed. A new security gate would be constructed at the base boundary (fence line) to ensure the road could still be used during emergencies. Personnel that normally use the La Luz Gate would be diverted to the Main and/or West Gate, potentially causing additional congestion and resulting in a minor impact on transportation resources.

34 3.8.7 Environmental Consequences – No Action Alternative

Under the No Action Alternative, the proposed construction and demolition activities associated with the Holloman AFB airfield and gates projects would not be implemented and the existing conditions discussed in **Section 3.8.2** would remain unchanged. Therefore, no new impacts on infrastructure would occur with implementation of the No Action Alternative. Sorties that rely on existing ramps and taxiways would continue to operate under suboptimal, congested conditions with inefficient workarounds to implement their mission. Traffic concerns would continue to be an issue at the Main Gate, and emergency services would still need to pre-position to ensure adequate response time to the La Luz Gate.

42 3.8.8 Reasonably Foreseeable Future Actions and Other Environmental Considerations

43 The alternatives, in addition to the reasonably foreseeable future actions summarized in **Appendix B**, would

- result in long-term improvements to transportation. No significant reasonably foreseeable effects on
- transportation would be expected from the proposed construction, demolition, and renovation projects.

1 3.9 WATER RESOURCES

2 3.9.1 Definition of the Resource

Water resources are natural and man-made sources of water that are available for use by, and for the benefit of, humans and the environment. Water resources relevant to Holloman AFB's location in New Mexico include groundwater, surface water, and floodplains. Evaluation of water resources examines the quantity and quality of the resource and its demand for various purposes and ensures compliance with the Clean Water Act, 33 U.S.C. §1251 et seq. (1972).

8 Groundwater exists in the saturated zone beneath the Earth's surface that collects and flows through 9 aquifers. Groundwater is an essential resource that functions to recharge surface water and is used for 10 drinking, irrigation, and industrial purposes. Groundwater typically can be described in terms of depth from 11 the surface, aquifer or well capacity, water quality, recharge rate, and surrounding geologic formations. The 12 state of New Mexico passed ground and surface water protection objectives subject to the Water Quality 13 Act, New Mexico Statutes Annotated 74-6, under 20.6.2 New Mexico Administrative Code. Groundwater 14 quality and quantity are regulated under several federal and state programs.

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

19 Floodplains are areas of low, level ground along rivers, stream channels, or coastal waters that are subject 20 to periodic or infrequent inundation from rain or melting snow. Floodplain ecosystem functions include 21 natural moderation of floods, flood storage and conveyance, groundwater recharge, nutrient cycling, water quality maintenance, and provision of habitat for a diversity of plants and animals. Flood potential is 22 23 evaluated by the Federal Emergency Management Agency, which defines the 100-year floodplain as an 24 area within which there is a one percent chance of inundation by a flood event in a given year, or a flood 25 event in the area once every 100 years. The risk of flooding is influenced by local topography, the frequency 26 of precipitation events, the size of the watershed above the floodplain, and upstream development. Federal, 27 state, and local regulations often limit floodplain development to passive uses, such as recreation and conservation activities, to reduce the risks to human health and safety. EO 11988, Floodplain Management, 28 requires federal agencies to determine whether a proposed action would occur within a floodplain and 29 directs them to avoid floodplains to the maximum extent possible whenever there is a practicable 30 alternative. 31

The ROI for water resources includes the areas on Holloman AFB located on and adjacent to the locations proposed for airfield improvements and gate relocation (see **Figures 2-1 through 2-5**).

34 3.9.2 Affected Environment

35 3.9.2.1 Groundwater

Holloman AFB lies within the Tularosa Basin, a closed basin with no known outflow. Groundwater recharge
 is provided by summer monsoons, storm events, and snowmelt from the nearby San Andres and
 Sacramento Mountains, which percolate unrestricted through the earth until eventually reaching the Bolson
 aquifer. The Bolson aquifer is highly saline and contains high total dissolved solids, classifying it as non potable. The only source of potable water is from several perched aquifers near mountain canyons located
 off-base (Holloman AFB, 2018).

42 3.9.2.2 Surface Water

No ponding areas and no perennially flowing surface waters are located on Holloman AFB in the project areas. There are no wetlands or jurisdictional waters as defined by the United States Army Corps of Engineers (USACE, 2015) and none regulated under Section 404 of the Clean Water Act within the project areas. There are, however, several prominent drainages on Holloman AFB which bear intermittent water 1 flows during large rain events such as thunderstorms or monsoons. The largest of these is the Lost River

drainage system north of the main installation and running roughly east-west, which splits into the Rita and
 Malone Draws. The Dillard Draw runs north-south along the southeastern portion of the installation
 boundary.

5 3.9.2.3 Floodplains

Floodplains are typically low-lying areas that are subject to inundation during significant rainfall events. The floodplain for Holloman AFB is primarily associated with the Lost River drainage system and several other draws that cross the base. As seen in **Figure 3-8**, the proposed construction site for La Luz Gate Alternative 1 is located between the floodplains of the Rita and Malone Draws. According to the Federal Emergency Management Agency, the draw furthest to the southeast (Dillard Draw) is associated with the 100-year floodplain and is adjacent to the proposed construction site for the Main Gate Alternative 1. There are no floodplains associated with the proposed construction under Airfield Improvements Alternative 1.

- 13 3.9.3 Environmental Consequences Evaluation Criteria
- 14 The level of impact on water resources is based on the:
- 15 Location of the ROI relative to floodplains;
- Location of the ROI relative to surface water or ponding areas; and
- Use of groundwater during construction and post-construction steady-state usage.
- 3.9.4 Environmental Consequences Alternative 1 (Airfield Improvements, Reposition Main
 Gate and La Luz Gate)
- 20 3.9.4.1 Groundwater

This project would have no appreciable effect on daily water use at Holloman AFB. While the aquifer underlying the installation is non-potable and not regulated, BMPs would be implemented under the stormwater permit (see Section 3.9.4.2) to control runoff and ensure no direct access to groundwater recharge points. This would also decrease sediment transportation that could be transferred to groundwater resources or drainage ditches and minimize contamination. With best practices and planning during construction and demolition activities, there would be no impacts on groundwater resources.

27 3.9.4.2 Surface Water

28 There are no notable drainage or ponding regions within the project area. Much of the area is level or near 29 level, and minimal runoff occurs during rain events. Most water is readily absorbed into the soils or quickly evaporates in the desert heat. Since more than one acre would be disturbed by this alternative, a National 30 Pollutant Discharge Elimination System (NPDES) stormwater permit would be required. Additionally, 31 construction activities would be governed by a SWPPP, which would outline the necessary steps for 32 stormwater runoff management to reduce soil erosion and minimize the potential impact of contaminants 33 on other water resources. For example, an SWPPP may include containment measures for heavy 34 construction equipment leaking petroleum products. Following construction, soil stabilization efforts such 35 36 as seeding or compost berms would be used to minimize future erosion. With proper implementation of a 37 well-designed SWPPP, impacts from erosion and offsite sedimentation would be negligible.

38 3.9.4.3 Floodplains

There are no floodplains associated with any airfield improvements so there would be no impacts (see **Figure 3-8**). The Main Gate is adjacent to Dillard Draw, which contributes to the 100-year floodplain in the region. Since this alternative continues to utilize land adjacent to the draw, care would be taken to ensure facilities, roads, and parking lots remain outside the floodplain. Given the location of the proposed gate features relative to Dillard Draw, no impacts to floodplains are expected from the repositioning of the Main

- 1 Gate. The proposed siting location for the La Luz Gate is between floodplains associated with the Rita and
- 2 Malone Draws. However, the project area itself is flat and elevated relative to the draws and falls outside 3 their area of impact. It is expected that no impacts to floodplains would result from the relocation of the La
- 4 Luz Gate.
- 5 3.9.5 Environmental Consequences Alternative 2 (La Luz Gate Renovation)
- 6 3.9.5.1 Groundwater
- 7 Potential impacts to groundwater would be the same as those described under Alternative 1.
- 8 3.9.5.2 Surface Water
- 9 Potential impacts to surface water would be the same as those described under Alternative 1.
- 10 3.9.5.3 Floodplains
- 11 There are no floodplains associated with the existing La Luz Gate so there would be no impacts.
- 12 3.9.6 Environmental Consequences Alternative 3 (La Luz Gate Closure and Demolition)
- 13 3.9.6.1 Groundwater
- 14 Potential impacts to groundwater would be the same as those described under Alternative 1.
- 15 3.9.6.2 Surface Water
- 16 Potential impacts to surface water would be the same as those described under Alternative 1.
- 17 3.9.6.3 Floodplains
- 18 There are no floodplains associated with the existing La Luz Gate so there would be no impacts.
- 19 3.9.7 Environmental Consequences No Action Alternative

Under the No Action Alternative, the proposed construction and demolition activities associated with the Holloman AFB airfield and gates projects would not be implemented, and the existing conditions discussed in **Section 3.9.2** would remain unchanged. Therefore, no new impacts on water resources would occur with implementation of the No Action Alternative.

- 24 3.9.8 Reasonably Foreseeable Future Actions and Other Environmental Considerations
- No significant reasonably foreseeable effects on water resources would be expected from the proposed construction, demolition, and renovation projects.
- 27 28

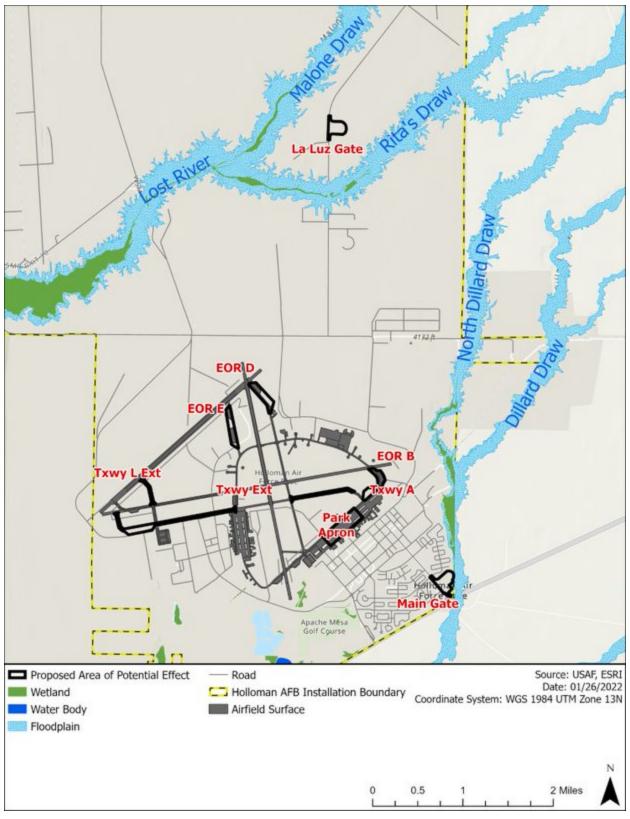


Figure 3-8. Holloman AFB Floodplain Map

1 3.10 GEOLOGICAL RESOURCES

2 3.10.1 Definition of the Resource

Geological resources consist of the Earth's surface and subsurface materials. Within a given physiographic province, these resources typically are described in terms of topography and physiography, geology, soils, and, where applicable, geologic hazards. Topography and physiography pertain to the general shape and arrangement of the land surface, including the height and position of natural and man-made features. Geology is the study of the Earth's composition and provides information on the structure and configuration of surface and subsurface features.

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 structure, elasticity, strength, shrink-swell potential, and erosion potential affect the ability of a given area to support certain applications or uses. In some cases, soil properties must be assessed for their compatibility with particular construction activities or types of land use.

The ROI for geological resources includes the areas on Holloman AFB located on and adjacent to the locations proposed for airfield improvements and gate relocation (see **Figures 2-1 through 2-5**).

16 3.10.2 Affected Environment

17 3.10.2.1 Regional Geology

The Rio Grande Rift is a zone of faults and sediment-filled basins extending from south-central Colorado across New Mexico and into northern Mexico. The rift is a defining physiographic feature of central New Mexico and laid the foundation for the Tularosa Valley during the Paleozoic era. The valley filled with sediment from the surrounding mountains: San Andres Mountains to the west, Chupadero Mesa and the New Mexico highlands to the north, Sierra Blanca, Carrizo, and Sacramento Mountains to the east, and Organ Mountains to the southwest. Much of the sediment accrual consists of soils containing high levels of calcium carbonate and sulfate, making it a poor agricultural substrate.

25 3.10.2.2 Topography and Soils

Project area soils primarily consist of varieties of Holloman-Gypsum land-Yesum complex. Specific soil types potentially found at Holloman AFB are shown in **Figure 3-9.** (USDA-NRCS, 2021; Holloman AFB, 2018).

- 29 3.10.3 Environmental Consequences Evaluation Criteria
- The level of impact on geological resources is based on the:
- Depth of constructed features potentially impacting the bedrock;
- Changes to topography from construction activities; and
- Type of soil(s) constructed features would be built upon.
- 35 36

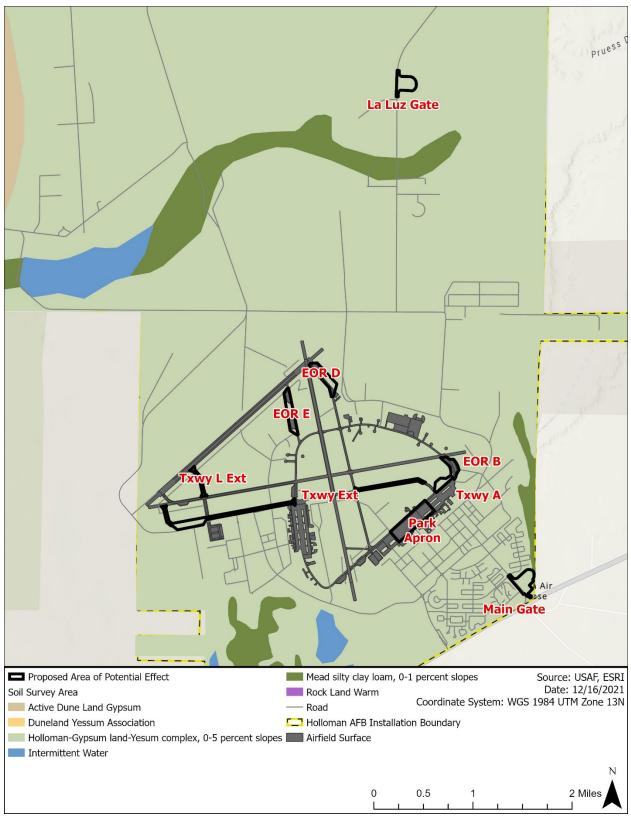


Figure 3-9. Soils found on Holloman AFB

3.10.4 Environmental Consequences – Alternative 1 (Airfield Improvements, Reposition Main Gate and La Luz Gate)

The proposed airfield improvements would result in long-term negligible and short-term minor impacts on geology, topography, and soil resources. All airfield projects would largely occur on previously disturbed land. Any previously occupied area would be graded to level and undergo soil stabilization measures.

The proposed repositioning of the Main Gate would result in both long- and short-term, negligible and shortterm, minor impacts on geology, topography, and soil resources. As with the airfield projects, actions would largely occur on previously disturbed land and, after demolition of existing facilities, the area would be graded to level and undergo soil stabilization measures.

The proposed relocation of the La Luz Gate would result in long-term, negligible and short-term, minor impacts on geology, topography, and soil resources. Projects under this alternative would largely occur on undisturbed land. All construction areas would be graded to level and previously occupied areas would undergo soil stabilization measures.

14 3.10.4.1 Regional Geology

No impacts on geology would occur from airfield construction activities. Although impacts on geological
 features could occur, the proposed construction would not be substantial or deep enough to cause notable
 impacts on geological features such as those of the supporting bedrock.

Long-term, negligible impacts on geology would occur from construction and demolition activities for the repositioning of the Main Gate and the relocation of the La Luz Gate. A geotechnical investigation would be performed prior to any required excavation to determine the final design of the supporting foundation. Although impacts on geological features could occur, the proposed construction and demolition would not be substantial or deep enough to cause notable impacts on geological features such as the supporting bedrock. Short-term, negligible impacts on geology would occur from demolition activities when extracting previously placed utilities, footings, and other subsurface features.

25 3.10.4.2 Topography

Long-term, negligible impacts on topography would occur from construction activities associated with airfield improvements. All affected areas would be graded to level prior to construction activities. As the region already features low slopes (0-5%), this would result in little change to the topography of the ROI.

Long-term, negligible impacts on topography would occur from construction and demolition activities 29 associated with the repositioning of the Main Gate. All affected areas were originally graded to level to 30 31 support existing structures at the time of their construction; however, intermittent settling at some sites is 32 expected. Additionally, as utilities, footings, and other subsurface features of existing structures are 33 extracted from demolition sites, some need for backfill may be expected. After demolition activities are 34 completed for each structure, each site will receive minor grading and backfill as necessary to return the site to the natural topography of the area. Similarly, prior to construction, the affected site would be graded 35 36 to level to support the new facility.

Long-term, negligible impacts on topography would occur from construction and demolition activities associated with the relocation of the La Luz Gate. Potential siting areas have been partially disturbed from the construction of the existing road, though new disturbances would be required for supporting facilities under this alternative. However, much of the surrounding area is naturally nearly level already (0-5 percent slope) so, while some backfill may be necessary, little change would occur to the region. Upon completion of construction, any remaining open areas would be returned to the natural topography of the area.

43 3.10.4.3 Soils

44 Short-term, minor impacts on soils would occur from construction and demolition activities associated with 45 the airfield improvement projects and the repositioning of the Main Gate and La Luz Gate largely via ground

- 1 disturbance, erosion, and soil compaction. Under the Proposed Action, erosion and soil compaction would
- be controlled by using established protocols, such as applying water to limit airborne dust in windy environments and employing soil stabilization techniques (e.g., re-vegetating graded areas), once site construction and demolition operations are complete.
- 5 3.10.5 Environmental Consequences Alternative 2 (La Luz Gate Renovation)

This alternative would result in long-term, negligible and short-term, minor impacts on geology, topography,
 and soil resources. All projects under this alternative would largely occur on previously disturbed land. Any
 previously occupied area would be graded to level and undergo soil stabilization measures.

- 9 3.10.5.1 Regional Geology
- 10 Potential impacts to regional geology would be the same as those described under Alternative 1.
- 11 3.10.5.2 Topography
- 12 Potential impacts to topography would be the same as those described under Alternative 1.
- 13 3.10.5.3 Soils
- 14 Potential impacts to soils would be the same as those described under Alternative 1.
- 15 3.10.6 Environmental Consequences Alternative 3 (La Luz Gate Closure and Demolition)
- This alternative would result in short-term, negligible and short-term, minor impacts on geology, topography, and soil resources. All projects under this alternative would largely occur on previously disturbed land. Any
- previously occupied area would be graded to level and undergo soil stabilization measures.
- 19 3.10.6.1 Regional Geology
- 20 Potential impacts to regional geology would be the same as those described under Alternative 1.
- 21 3.10.6.2 Topography
- 22 Potential impacts to topography would be the same as those described under Alternative 1.
- 23 3.10.6.3 Soils
- 24 Potential impacts to soils would be the same as those described under Alternative 1.
- 25 3.10.7 Environmental Consequences No Action Alternative

Under the No Action Alternative, the proposed construction and demolition activities associated with the Holloman AFB airfield and gates projects would not be implemented, and the existing conditions discussed in **Section 3.10.2** would remain unchanged. Therefore, no new impacts on geology, topography and soils

- 29 would occur with the implementation of the No Action Alternative.
- 30 3.10.8 Reasonably Foreseeable Future Actions and Other Environmental Considerations
- 31 The alternatives, in addition to the reasonably foreseeable future actions summarized in **Appendix B**, would
- 32 result in long-term, negligible to minor impacts on geological resources. No significant reasonably
- 33 foreseeable effects on geological resources would be expected from the proposed construction, demolition,
- 34 and renovation projects.

1 3.11 HAZARDOUS MATERIALS AND WASTES, CONTAMINATED SITES, AND TOXIC SUBSTANCES

2 3.11.1 Definition of the Resource

3 The Comprehensive Environmental Response, Compensation, and Liability Act, as amended by the 4 Superfund Amendments and Reauthorization Act and the Toxic Substances Control Act, defines hazardous 5 materials (HAZMAT) as any substance with physical properties of ignitability, corrosivity, reactivity, or 6 toxicity that might cause an increase in mortality, serious irreversible illness, an incapacitating reversible 7 illness, or that might pose a substantial threat to human health or the environment. OSHA is responsible 8 for enforcement and implementation of federal laws and regulations pertaining to worker health and safety 9 under 29 CFR Part 1910. OSHA also includes the regulation of HAZMAT in the workplace and ensures 10 appropriate training in their handling. The Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act (RCRA), which was further amended by the Hazardous and Solid Waste 11 Amendments, identifies the properties of hazardous waste. According to this Act, hazardous wastes include 12 13 solid waste, or combination of solid wastes, which because of its quantity, concentration, or physical. chemical, or infectious characteristics may cause, or significantly contribute to, an increase in mortality or 14 an increase in serious irreversible, or incapacitating reversible, illness; or, pose a substantial present or 15 potential hazard to human health or the environment when improperly treated, stored, transported, or 16 disposed of, or otherwise managed. Certain types of hazardous wastes are subject to special management 17 18 provisions intended to ease the management burden and facilitate the recycling of such materials. These 19 are called universal wastes, and their associated regulatory requirements are specified in 40 CFR § 273. 20 Four types of waste are currently covered under the universal waste regulations: hazardous waste batteries, 21 hazardous waste pesticides that are either recalled or collected as part of waste pesticide collection 22 programs, hazardous waste thermostats, and hazardous waste lamps.

23 The DOD developed the Environmental Restoration Program (ERP) to facilitate thorough investigations 24 and cleanup of contaminated sites on military installations (i.e., active installations, installations subject to 25 Base Realignment and Closure, and Formerly Used Defense Sites). The Installation Restoration Program 26 and Military Munitions Response Program (MMRP) are components of the ERP. The Installation Restoration Program requires each DOD installation to identify, investigate, and clean up hazardous waste 27 disposal or release sites. The MMRP addresses non-operational rangelands that are suspected or known 28 to contain unexploded ordnance, discarded military munitions, or munitions constituent contamination. A 29 description of ERP activities provides a useful gauge of the condition of soils, water resources, and other 30 resources that might be affected by contaminants. It also aids in identifying properties and their usefulness 31 for given purposes (e.g., activities dependent on groundwater usage might be restricted until remediation 32 33 of a groundwater contamination plume has been completed).

AFPD 32-70, *Environmental Quality*, and Air Force Regulation 32-7000 series incorporate the requirements
 of all federal regulations and other AFI and DOD Directives for the management of hazardous materials,
 hazardous wastes, and toxic substances.

- 37 AFPD 32-70 establishes the policy that the Air Force is committed to, including:
 - Cleaning up environmental damage resulting from its past activities;
 - Meeting all environmental standards applicable to its present operations;
 - Planning its future activities to minimize environmental impacts;
- Responsibly managing the irreplaceable natural and cultural resources it holds in public trust;
 and
 - Eliminating pollution from its activities wherever possible.

AFI 32-7044, *Storage Tank Compliance*, implements AFPD 32-70 and identifies compliance requirements for underground storage tanks, aboveground storage tanks (ASTs), and associated piping that store petroleum products and hazardous substances. Evaluation of HAZMAT and hazardous wastes focuses on underground storage tanks and ASTs as well as the storage, transport, and use of pesticides, fuels, oils, and lubricants. Evaluation might also extend to generation, storage, transportation, and disposal of hazardous wastes when such activity occurs at or near the project site of a Proposed Action. In addition to being a threat to humans, the improper release of HAZMAT and hazardous wastes can threaten the health

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- 1 and well-being of wildlife species, botanical habitats, soil systems, and water resources. In the event of the
- 2 release of HAZMAT or hazardous wastes, the extent of contamination varies based on type of soil,
- 3 topography, weather conditions, and water resources.

4 A toxic substance is a chemical or mixture of chemicals that may present an unreasonable risk of injury to

5 health or the environment, but is not regulated as a contaminant under the hazardous waste statutes. These

6 substances include asbestos-containing materials (ACM), polychlorinated biphenyls (PCBs), and lead-

based paint (LBP). USEPA regulates these special hazard substances under the Toxic Substances Control
 Act (15 USC § 53).

Asbestos is a mineral fiber found in rock and soil. It has been used in multiple types of building construction
 materials for insulation and as a fire retardant, and in a variety of manufactured goods such as roofing
 shingles, attic insulation, heat-resistant fabrics, automobile clutches and brakes, etc. Exposure to asbestos
 generally occurs during demolition work, production use, and repair/remodeling work (USEPA, 2021c).
 USEPA has established regulations regarding asbestos abatement and worker safety under 40 CFR § 763,

14 with additional regulations concerning emissions at 40 CFR § 61.

Polychlorinated biphenyls are a group of man-made organic chemicals consisting of carbon, hydrogen and
chlorine atoms. They were domestically manufactured from 1929 in various electrical equipment, paints,
plastics, rubber products, oils, adhesives etc. until they were banned in 1979. The United States no longer
produces PCBs, but exposure can still occur during maintenance and repair of older electrical instruments,
transformers, caulking, heat insulation and other devices containing PCBs (USEPA, 2021d). The disposal
of PCBs is addressed in 40 CFR §§ 750 and 761.

Lead can be found in paint, dust, and soil. Title V of the Toxic Substances Control Act, as well as the Residential Lead-Based Paint Reduction Act of 1992, regulates the use and disposal of LBP at federal facilities. Appropriate disposal of LBP-containing debris depends on testing of representative waste streams, typically via the toxicity characteristic leaching procedure. If toxicity characteristic leaching procedure analysis indicates that the representative debris meets the toxicity characteristic for lead, it is regulated by RCRA under 40 CFR § 261. The presence of toxic substances, as well as their locations, quantities, and conditions, assist in determining the significance of a proposed action.

AFI 32-7086, Hazardous Materials Management, establishes the procedures and standards that govern management of HAZMAT throughout the Air Force. It applies to all Air Force personnel who authorize, procure, issue, use, or dispose of HAZMAT and to those who manage, monitor, or track any of those activities.

The ROI for hazardous materials and wastes, petroleum products, toxic substances, and ERPs includes the areas on Holloman AFB located on and adjacent to the locations proposed for airfield improvements and gate relocation (**see Figures 2-1 through 2-5**).

35 3.11.2 Affected Environment

Holloman AFB has implemented an Environmental Management System (EMS) program in accordance
 with the International Organization for Standardization 14001 Standards; EO 13834, *Regarding Efficient Federal Operations*; and AFI 32-7001, *Environmental Management*. The EMS policy prescribes to protect
 human health, natural resources, and the environment by implementing operational controls, pollution
 prevention environmental action plans, and training.

All personnel, including contractors, are informed of the Holloman AFB EMS program. All project-related activities should be conducted in a manner that is consistent with relevant policy and objectives identified in the installation's EMS program. Project Managers shall ensure that all personnel are aware of the environmental impacts associated with their activities and reduce those impacts by practicing pollution prevention techniques. Installation Unit Environmental Coordinators manage and monitor the EMS requirements and advise the Project Managers of all the EMS and environmental policies.

1 3.11.2.1 Hazardous Materials and Wastes

Holloman AFB has one state-issued RCRA Part B permit for treatment, storage, and disposal facilities that
 maintains installation and hazardous management plans. The permit responsibilities include controlling the
 procurement and use of hazardous materials to support Air Force missions, ensuring the safety and health
 of personnel and surrounding communities, and minimizing Air Force dependence on hazardous materials.
 The Holloman AFB Installation Security Forces serve as Conservation Law Enforcement Officers by
 providing security for hazardous material spills and ensuring compliance with reporting requirements
 (Holloman AFB, 2018).

Holloman AFB maintains an inventory of ASTs under the Spill Prevention Control and Countermeasure
Plan. This Plan includes the location, contents, capacity, containment measures, status, and installation
dates of ASTs (Holloman AFB, 2014). Storage tanks at Holloman AFB contain jet fuel, diesel fuel, used
cooking oil, used oil, and unleaded gasoline. There are 148 ASTs on Holloman AFB (Holloman AFB,
2016a). There are no underground storage tanks at Holloman AFB.

14 3.11.2.2 Environmental Restoration Program

Holloman AFB began its Installation Restoration Program in 1983 with the investigation of possible locations
of various Areas of Concern and Solid Waste Management Units for hazardous waste contamination. The
RCRA Facility Assessment was completed in 1987 (URS Group, Inc., 2015). Currently, there are 217 ERP
sites identified at Holloman AFB: 181 are closed and 36 are open (Holloman AFB, 2016a). Additionally,
there are 23 MMRP sites: 11 are closed and 12 are open (Holloman AFB, 2016a). None of the facilities
identified for construction or renovation within the ROI are within an active ERP or MMRP site, nor have
any been identified as Areas of Concern.

22 3.11.2.3 Toxic Substances

The 49 CES/CEIE developed the Asbestos Management Plan for Holloman AFB, which includes program 23 administration, organizational roles and responsibilities, standard work practices, and documentation 24 25 (Holloman AFB, 2017b). A complete asbestos survey was done for all Holloman AFB buildings in the early 1990s. Sampling was done in many buildings to identify locations with ACM. The 49th CE Structures Shop 26 maintains an inventory of the ACM locations at Holloman AFB identified during the comprehensive base-27 28 wide survey (Holloman AFB, 2017b). This inventory contains information on the location, quantity, and type 29 of ACM; however, it was not available for review. Comprehensive information or records on the presence or absence of LBP in the buildings identified for construction and renovation is not available. Holloman AFB 30 has not developed an LBP Management Plan at this time. 31

32 3.11.3 Environmental Consequences Evaluation Criteria

Impacts on hazardous materials management would be considered if the federal action resulted in noncompliance with applicable federal, state, and local regulations or increased the amounts generated or procured beyond waste management procedures and capacities at Holloman AFB. Impacts on ERP sites would be considered if the federal action disturbed or created contaminated sites, resulting in negative effects on human health or the environment.

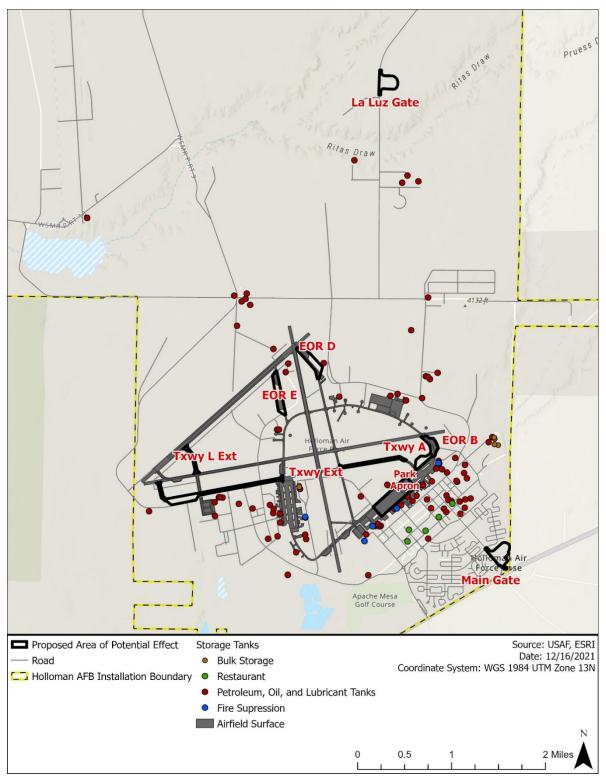




Figure 3-10. Holloman AFB Storage Tanks

3.11.4 Environmental Consequences – Alternative 1 (Airfield Improvements, Reposition Main Gate and La Luz Gate)

3 3.11.4.1 Hazardous Materials

4 Short-term, minor impacts on hazardous materials and waste would occur during construction and 5 demolition activities associated with the Proposed Action. Both construction and demolition activities would 6 require the use of hazardous materials (in the form of structural coatings, adhesives, solvents, welding 7 materials, etc.) and petroleum products (fuels, lubricants, hydraulic fluids, etc.). Negligible amounts of 8 hazardous wastes would be generated from the same processes. Construction equipment would be well maintained, and absorbent materials would be placed under the equipment to contain any possible leaks. 9 Additional hazardous wastes would be generated in the form of debris from demolition processes. The 10 contractors performing the work would be responsible for containing, storing, managing, and coordinating 11 the disposal of all hazardous wastes generated during the Proposed Action. Contractors would be required 12 to adhere to all federal, state and local regulations, including those instituted by Holloman AFB. 13

No long-term impacts from daily operation of the new facilities and structures would exist, as future operations would not differ significantly from those currently performed at Holloman AFB. No new hazardous materials or wastes are expected to be generated. All facilities would continue to operate in accordance with the Holloman AFB RCRA permit to manage wastes.

18 3.11.4.2 Environmental Restoration Program

No construction activity or soil disturbance at any ERP site would occur as the Proposed Actions are not located in any such area.

21 3.11.4.3 Toxic Substances

Short-term, minor impacts from toxic hazards would occur during demolition and construction processes. Surveys would be performed by certified personnel to determine the presence and extent of any hazardous materials prior to demolition. Based on exploratory survey results, plans would be created that identify the necessary controls to reduce hazards to workers and prevent the release of toxic materials from the site. Per New Mexico Administrative Code 20.11.20.22, Albuquerque Environmental Health Department-Air Quality Division would be notified if abatement of ACM is anticipated to exceed 75,000 cubic feet, although that is unlikely to happen. All hazardous debris would be disposed of at a USEPA-approved facility.

- 29 3.11.5 Environmental Consequences Alternative 2 (La Luz Gate Renovation)
- Potential impacts to hazardous materials and wastes, waste petroleum products, toxic substances, and ERPs would be the same as those described under Alternative 1.
- 32 3.11.6 Environmental Consequences Alternative 3 (La Luz Gate Closure and Demolition)
- Potential impacts to hazardous materials and wastes, waste petroleum products, toxic substances, and ERPs would be the same as those described under Alternative 1.
- 35 3.11.6.1 Environmental Consequences No Action Alternative
- 36 Under the No Action Alternative, the proposed construction and demolition activities associated with the
- 37 Alternatives Airfield and Access Control Points Improvements for Holloman AFB would not be implemented,
- and the existing conditions discussed in Section 3.11.2 would remain unchanged, resulting in no impacts
 to hazardous materials and wastes.

- 1 3.11.6.2 Reasonably Foreseeable Future Actions and Other Environmental Considerations
- 2 The Proposed Action and alternatives, in addition to reasonably foreseeable future actions on Holloman
- AFB, are not anticipated to result in reasonably foreseeable effects to HAZMAT, waste, contaminated sites,
 and toxic substances.

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Draft EA for Airfield and Access Control Points Improvements Holloman Air Force Base, New Mexico

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APPENDIX A INTERGOVERNMENTAL AND STAKEHOLDER COORDINATION This page intentionally left blank

1 A.1 INTRODUCTION

Scoping is an early, open process for developing the breadth of issues to be addressed in an Environmental Assessment (EA) and for identifying significant concerns related to an action. Per the requirements of Executive Order (EO) 12372, *Intergovernmental Review of Federal Programs*, as amended by EO 12416, federal, state, and local agencies with jurisdiction that could potentially be affected by the Proposed Action or alternatives were notified during the development of this EA.

7 The Intergovernmental Coordination Act and EO 12372 require federal agencies to cooperate with and 8 consider state and local views when implementing a federal proposal. Through the coordination process, 9 potentially interested and affected government agencies, government representatives, elected officials, and 10 interested parties that could be affected by the Proposed Action and alternatives were notified during the 11 development of this EA. The recipient mailing list and agency and intergovernmental coordination letters 12 and responses are included in this Appendix.

13 A.1.1 Agency Consultations

14 Implementation of the Proposed Action involves coordination with several organizations and agencies. Compliance with Section 7 of the Endangered Species Act (ESA) and implementing regulations (50 CFR 15 Part 402) requires communication with the US Fish and Wildlife Service (USFWS) in cases where a federal 16 17 action could affect listed threatened or endangered species, species proposed for listing, or candidates for 18 listing. The primary focus of this coordination is to request a determination of whether any of these species occur in the proposal area. If any protected species is present, a determination would be made of any 19 potential adverse effects on the species. Should no species protected by the ESA would be affected by the 20 Proposed Action or alternatives, no additional consultation would be required. Letters were sent to the 21 appropriate USFWS offices as well as relevant state agencies informing them of the proposal, requesting 22 data regarding applicable protected species, and subsequently requesting concurrence with the Air Force's 23 determination of no effect to any federally listed species. 24

Coordination with appropriate New Mexico state government agencies and planning districts will occur for review and comment. Compliance with Section 106 of the National Historic Preservation Act (NHPA) and implementing regulations (36 CFR § 800) will be accomplished through the State Historic Preservation Officer. Similarly, the New Mexico Environment Department was included for air and water quality, and the New Mexico State Parks Division and the Department of Game and Fish were included in this coordination for input on habitat and species of concern.

31 A.1.2 Government-to-Government Consultation

The NHPA and its regulations at 36 CFR Part 800 direct federal agencies to consult with federally 32 recognized tribes when a proposed or alternative action may affect tribal lands or properties of religious 33 and cultural significance. Consistent with the NHPA, Department of Defense (DOD) Instruction 4710.02, 34 Interactions with Federally-Recognized Tribes, and Air Force Instruction (AFI) 90-2002, Air Force 35 Interaction with Federally-Recognized Tribes, federally recognized tribes that are historically affiliated with 36 lands in the vicinity of the Proposed Action and alternatives have been invited to consult on all proposed 37 undertakings that may affect properties of cultural, historical, or religious significance. The tribal consultation 38 process is distinct from the National Environmental Policy Act consultation or the interagency coordination 39 process, and it requires separate notifications to all relevant tribes. The timelines for tribal consultation are 40 also distinct from those of other consultations. The Holloman Air Force Base (AFB) point of contact for 41 Native American tribes is the Wing Commander. The Holloman AFB point of contact for consultation with 42 43 the Tribal Historic Preservation Officer and the Advisory Council on Historic Preservation is the Deputy Base Civil Engineer. Government-to-government consultation is included this Appendix. 44

45 A.2 PUBLIC AND AGENCY REVIEW OF THE ENVIRONMENTAL ASSESSMENT

A Notice of Availability (NOA) of the Draft EA and a Proposed Finding of No Significant Impact (FONSI) announcing the EA's availability to the public for review and comment will be published in the Alamogordo 1 Daily News. The public and agency review period will last a minimum of 30 days. The public and agency 2 comments are provided in this Appendix.

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Copies of the Draft EA and FONSI were also made available for review at the following locations:

- Ahrens Memorial Library, 596 West 4th Street, Holloman AFB, NM 88330
- Alamogordo Public Library, 920 Ogden Avenue, Alamogordo, NM 88310

The Air Force is aware that the ongoing coronavirus (COVID-19) pandemic may impact the usual methods of access to information and ability to communicate, such as the mass closure of local public libraries and challenges associated with an increasingly overburdened internet. The Air Force seeks to implement appropriate additional measures to ensure that the public and all interested stakeholders can participate fully in this EA process. Accordingly, please do not hesitate to contact the Holloman AFB Environmental Impact Analysis Process Program Manager directly at (575) 572-3931 to assist in resolving issues of access to the Draft EA and Proposed FONSI.

15

16 A.3 STAKEHOLDER MAILING LIST

17 Mr. Ken Lance

•

- 18 Airspace Manager
- 19 White Sands Missile Range
- 20 2506 East Ridge
- 21 Alamogordo NM 88310
- 22 23 Director
- 24 Alamogordo City Commission
- 25 1376 East 9th Street
- 26 Alamogordo NM 88310
- 27
- 28 Brigadier General Eric D. Little
- 29 White Sands Missile Range
- 30 Building 1510
- 31 White Sands Missile Range NM 88002
- 32
- 33 Mr. Michael Espiritu
- 34 OCEDC President/CEO
- 35 Alamogordo Chamber of Commerce
- 36 1301 North White Sands Blvd.
- 37 Alamogordo NM 88310
- 38
- 39 Ms. Barbara Mick
- 40 Chair
- 41 Alamogordo Chamber of Commerce
- 42 1301 North White Sands Blvd.
- 43 Alamogordo NM 88310
- 44
- 45 Director
- 46 Cloudcroft Chamber of Commerce
- 47 P.O. Box 1291
- 48 Cloudcroft NM 88317
- 49
- 50 Commissioner Dara Dana
- 51 Chaves County
- 52 1 Saint Mary's Place
- 53 Roswell NM 88203
- 54

- 55 Commissioner Gerald Matherly
- 56 Otero County
- 57 1101 New York Avenue
- 58 Alamogordo NM 88310
- 59
- 60 Mr. Stanton L. Riggs
- 61 County Manager
- 62 Chaves County
- 63 1 Saint Mary's Place
- 64 Roswell NM 88203
- 65
- 66 Mr. Fernando R. Macias
- 67 County Manager
- 68 Dona Ana County
- 69 845 North Motel Boulevard
- 70 Las Cruces NM 88007
- 71
- 72 Ms. Pamela Heltner
- 73 County Manager
- 74 Otero County
- 75 1101 New York Avenue, Room 106
- 76 Alamogordo NM 88310
- 77
- 78 Mr. Bruce Swingle
- 79 County Manager
- 80 Sierra County
- 81 855 Van Platten Street
- 82 Truth or Consequences NM 87901
- 83
- 84 Ms. Delilah Walsh
- 85 County Manager
- 86 Socorro County
- 87 PO Box I
- 88 Socorro NM 87801
- 89
- 90
- 91
- 92

- 1 Mr. Mike Sloane
- 2 Director
- 3 NM Dept of Game and Fish
- 4 One Wildlife Way
- 5 Santa Fe NM 87507
- 6
- 7 Chairman
- 8 Dona Ana County Commissioners
- 9 845 North Motel Boulevard
- 10 Las Cruces NM 88007
- 11
- 12 Field Manager
- 13 Bureau of Land Management
- 14 Roswell Field Office
- 15 2909 West Second St.
- 16 Roswell NM 88201
- 17
- 18 Mr. Mark Matthews
- 19 Field Manager
- 20 Bureau of Land Management
- 21 Socorro Field Office
- 22 901 S. Highway 85
- 23 Socorro NM 87801-4168
- 24
- 25 Director
- 26 Las Cruces Chamber of Commerce
- 27 150 E Lohman Ave
- 28 Las Cruces NM 88001
- 29
- 30 Director
- 31 Lincoln County Commissioners
- 32 Commission Chambers, 300 Central Ave.
- 33 P.O. Box 711
- 34 Carrizozo NM 88301
- 35
- 36 Mr. Travis Moseley
- 37 Superintendent
- 38 Lincoln National Forest
- 39 3463 Las Palomas
- 40 Alamogordo NM 88310
- 41
- 42 Honorable Richard Boss
- 43 Mayor
- 44 City of Alamogordo
- 45 1376 East 9th Street
- 46 Alamogordo NM 88310
- 47
- 48 Director
- 49 Socorro County Commission
- 50 Socorro NM 87801
- 51
- 52 Honorable Chris Ventura
- 53 Mayor
- 54 Town of Carrizozo
- 55 P.O. Box 247
- 56 Carrizozo NM 88301

OCTOBER 2022

- 57 Honorable Ken Miyagishima
- 58 Mayor
- 59 City of Las Cruces
- 60 PO Box 20000
- 61 Las Cruces NM 88004
- 62
- 63 Honorable Dennis Kintigh
- 64 Mayor
- 65 City of Roswell
- 66 425 N. Richardson Ave.
- 67 Roswell NM 88201
- 68
- 69 Honorable Gary Williams
- 70 Mayor
- 71 City of Ruidoso Downs
- 72 103 Acequia
- 73 Ruidoso Downs NM 88346
- 74
- 75 Honorable Sandy Whitehead
- 76 Mayor
- 77 City of Truth or Consequences
- 78 505 Sims Street
- 79 Truth or Consequences NM 87901
- 80
- 81 Honorable Lynn D. Crawford
- 82 Mayor
- 83 Village of Ruidoso
- 84 313 Cree Meadows Dr.
- 85 Ruidoso NM 88345
- 86

103

109

110

111

112

- 87 Ms. Deborah Hartell
- 88 NEPA Support Division
- 89 White Sands Missile Range
- 90 Building 163, Springfield Street
- 91 White Sands Missile Range NM 88002
- 92 93 Director
- 94 New Mexico Department of Energy
- 95 490 Old Santa Fe Trail Room 400
- 96 Santa Fe NM 87501
- 97

101 1305 Longworth HOB

102 Washington DC 20515

105 New Mexico Senator

108 Las Cruces NM 88001

106 U.S. Senate

104 Honorable Ben Ray Luján

98 Honorable Herrell Yvette

100 U.S. House of Representatives

107 201 N. Church Street, Suite 201B

A-5

99 New Mexico Representative, District 2

1	Honorable Martin Heinrich	42	Ms. Marie Sauter
2	New Mexico Senator	43	Superintendent
3	U.S. Senate	44	White Sands National Monument
4	201 N. Church Street, Suite 305	45	P.O. Box 1086
	Las Cruces NM 88001	46	Holloman AFB NM 88330
6		47	
	Mr. Ned Farquhar		Dr. Jeff Pappas
. 8	NM SPOC Energy and Environmental Policy	49	State Historic Preservation Officer
-	Advisor		NM Historic Preservation Division
	State Capitol Building, Suite 400	51	407 Galisteo Street, Suite 236
10	Santa Fe NM 87501	52	Santa Fe, NM 87501
12	Santa Fe NW 07501	52	Santa Fe, NW 07501
	Director	53 54	Ma Amy Luadora
		-	Ms. Amy Lueders
	Otero County Commissioners		Regional Director
	1101 New York Ave.		U.S. Fish and Wildlife Service, Southwest Region
	Alamogordo NM 88310	57	500 Gold Avenue SW
17		58	Albuquerque, NM 87102
	Ms. Jennifer Montoya	59	
	Planning and Environmental Coordinator	60	Chairman Lyman Guy
	Bureau of Land Management	61	Apache Tribe of Oklahoma
	New Mexico State Office Las Cruces		PO Box 1330
22	District Office	63	Anadarko OK 73005
23	1800 Marquess Street	64	
24	Las Cruces NM 88005	65	Chairman Jeff Haozous
25		66	Fort Sill Apache Tribe of Oklahoma
26	Director		43187 US Highway 281
27	Ruidoso Valley Chamber of Commerce	68	Apache OK 73006-8038
	720 Sudderth Dr.	69	
	Ruidoso NM 88345	70	President Arthur Blazer
30		71	Mescalero Apache Tribe
	Chairman		PO Box 227
	Sierra County Commissioners	73	Mescalero NM 88340-0227
	855 Van Platten Street	74	
34	Truth or Consequences NM 87901	75	
35		76	
	Mr. Robert Houston	70	
	Chief, Special Projects (NEPA)	78	
	U.S. Environmental Protection Agency, Region 6		
		79 80	
	1445 Ross Avenue, Ste. 1200		
40	Dallas TX 75202	81	
41		82	
83			
84			

State Historic Preservation Office (SHPO) Correspondence



STATE OF NEW MEXICO DEPARTMENT OF CULTURAL AFFAIRS HISTORIC PRESERVATION DIVISION

BATAAN MEMORIAL BUILDING 407 GALISTEO STREET, SUITE 236 SANTA FE, NEW MEXICO 87501 PHONE (505) 827-6320 – <u>NM.SHPO@state.nm.us</u>

June 23, 2022

Adam M. Kusmak, USAF Installation Management, Chief 49th Civil Engineer Squadron 550 Tabosa Avenue Holloman Airforce Base NM 83330

Mr. Kusmak,

The New Mexico State Historic Preservation Office has reviewed your proposed work in the Airfield East and Airfield West APEs and we concur with your assessment that no historic properties will be affected in these areas.

Please feel free to contact me at steven.moffson@state.nm.us if you have any questions.

Regards,

signed Steven Moffson State and National Register Coordinator

#117483

United States Fish and Wildlife Services (USFWS) Correspondence



DEPARTMENT OF THE AIR FORCE HEADQUARTERS 49TH WING (AETC) HOLLOMAN AIR FORCE BASE, NEW MEXICO



31 May 2022

Adam M. Kusmak Installation Management Chief, 49 CES 550 Tabosa Ave Holloman AFB NM 88330

Ms. Amy Lueders Regional Director U.S. Fish and Wildlife Service, Southwest Region 500 Gold Avenue SW Albuquerque, NM 87102

Dear Ms. Lueders

In accordance with the National Environmental Policy Act (NEPA) of 1969, the Council on Environmental Quality regulations, and the Department of Defense NEPA regulations, the United States Air Force (Air Force) is preparing an Environmental Assessment (EA) to evaluate the environmental impact of three projects at Holloman Air Force Base (AFB): airfield improvements, the repositioning of the Main Gate, and the relocation or repositioning of the La Luz Gate (also known as the North Gate). To take into account various environmental concerns, the Air Force is engaging early with the appropriate resource and regulatory agencies as it formulates the undertaking. The Proposed Action includes projects that would:

- 1. Expand the number of end of the runway (EOR) arm/dearm pads to increase stage, arm and launch volume; increase blast dissipation pavement; and provide shelter for EOR crews. Additionally, taxiway extensions would be constructed to improve airfield geometry. As part of the proposed taxiway extensions, several excess buildings located within and adjacent to the planned routes would be demolished.
- 2. Alter the configuration of the Main Gate to meet current and future Anti-Terrorism/Force Protection (AT/FP) standards, increase traffic flow, and reduce traffic congestion in the US Highway 70 deceleration lane.
- 3. Alter the location or configuration of the La Luz Gate to meet current and future AT/FP standards, increase traffic flow, reduce response time for Security Forces personnel, and increase safety.

The Proposed Action areas would only include land located on Holloman AFB as shown in Attachments 1 through 3. Information on the listed, proposed, and candidate species or designated or proposed critical habitat in the Proposed Action areas will be obtained from the United States Fish and Wildlife Service Environmental Conservation Online System,

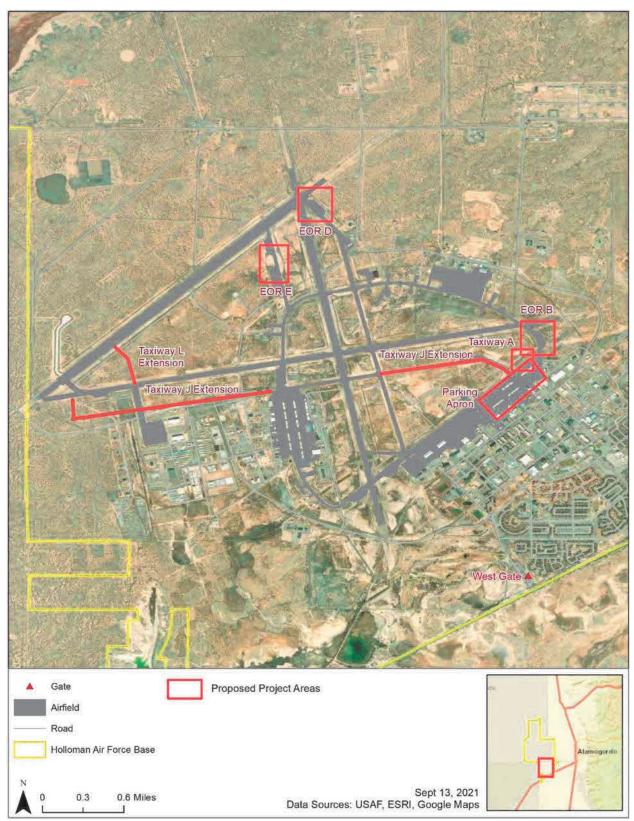
Information for Planning and Consultation. If you have additional information regarding potential impacts of the Proposed Actions on general or specific issues or areas of concern that should be addressed in the environmental analysis of which we may not be aware, we would appreciate receiving such information for inclusion and consideration during the NEPA compliance process.

Please respond within 30 days of receipt of this letter to ensure your concerns are adequately addressed in the EA. We intend to provide you with access to the Draft EA when the document is completed. Please inform us if someone else with your agency other than you should be notified of the availability of the Draft EA. Please send your written responses to Mr. Spencer Robison, Holloman NEPA Program Manager, 49 CES/CEIE, 550 Tabosa Ave, Holloman AFB NM 88330 or email spencer.robison@us.af.mil.

Sincerely KUSMAK.ADA M.M.1263331 806 ADAM KUSMAK, GS-13, USAF Installation Management Chief

3 Attachments:

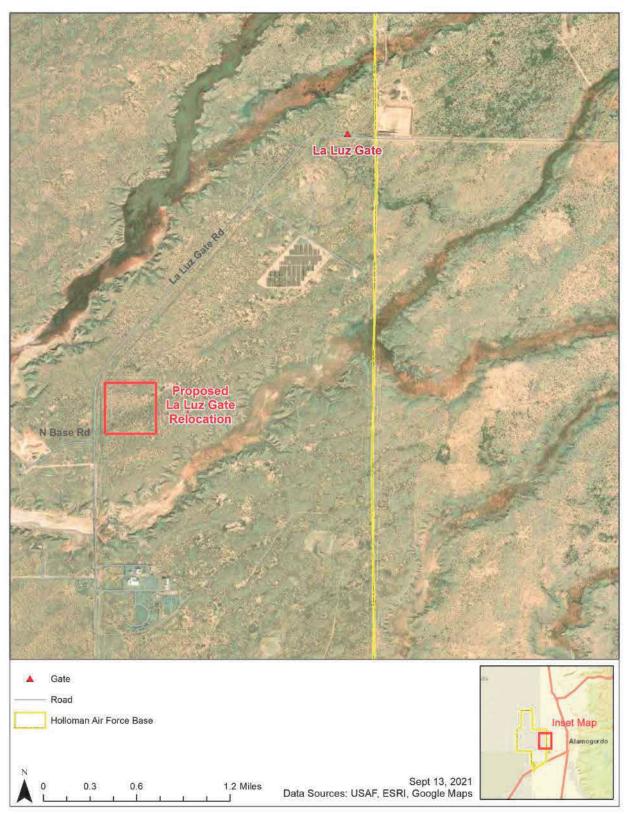
- 1. Location of the Proposed Actions for Airfield Improvement
- 2. Location of the Proposed Main Gate Repositioning
- 3. Location of the Proposed La Luz Gate Relocation



Attachment 1. Location of the Proposed Actions for Airfield Improvement



Attachment 2. Location of the Proposed Main Gate Repositioning



Attachment 3. Location of the Proposed La Luz Gate Relocation

1

Tribal Correspondence and Distribution List



DEPARTMENT OF THE AIR FORCE HEADQUARTERS 49TH WING (AETC) HOLLOMAN AIR FORCE BASE, NEW MEXICO

Colonel Ryan P. Keeney Commander, 49th Wing 490 First Street, Suite 1700 Holloman AFB NM 88330-8277

Chairman Lyman Guy Apache Tribe of Oklahoma PO Box 1330 Anadarko OK 73005

Dear Chairman Guy

The United States Air Force (Air Force) is preparing an Environmental Assessment (EA) under the National Environmental Policy Act (NEPA) to evaluate potential environmental impacts associated with the Airfield Improvements and Gate Repositioning at Holloman Air Force Base (AFB), New Mexico. Per Section 306108 of the National Historic Preservation Act (NHPA) of 1966, as amended, and 36 Code of Federal Regulation Part 800, *Protection of Historic Properties*, the Air Force is engaging early with tribal governments as it formulates this undertaking.

As part of the proposed undertaking, the Airfield Improvements and Gate Repositioning includes the following elements:

1. Expand the number of end of the runway (EOR) arm and dearm pads to increase stage, arm and launch volume; increase blast dissipation pavement and provide shelter for EOR crews. Additionally, taxiway extensions would be constructed to improve airfield geometry. As part of the proposed taxiway extensions, several excess buildings located within and adjacent to the planned routes would be demolished.

2. Alter the configuration of the Main Gate to meet current and future Antiterrorism and Force Protection (AT/FP) standards, increase traffic flow and reduce traffic congestion in the US Highway 70 deceleration lane.

3. Alter the location or configuration of the La Luz Gate to meet current and future AT/FP standards, increase traffic flow, reduce response time for Security Forces personnel and increase safety.

We have included attachments identifying the locations and limits of the Proposed Action and the working Area of Potential Effects for your review.

In accordance with the NHPA, the Air Force would like to initiate government-to-government consultation regarding the Airfield Improvements and Gate Repositioning project. The Air Force requests your input in identifying any issues or areas of concern you feel should be addressed in the environmental analysis. Additionally, please let us know if you believe this undertaking might adversely affect any historic properties of religious and cultural significance to the Apache Tribe of Oklahoma.

COMBAT AIRPOWER STARTS HERE

At your earliest convenience, please provide any information, comments or requests for additional information to Mr. Spencer Robison, Holloman NEPA Program Manager, 49 CES/CEIE, 550 Tabosa Ave, Holloman AFB NM 88330, or e-mail: spencer.robison@us.af.mil. This will ensure we can address them during the environmental impact analysis process. Thank you for your assistance.

Sincerely

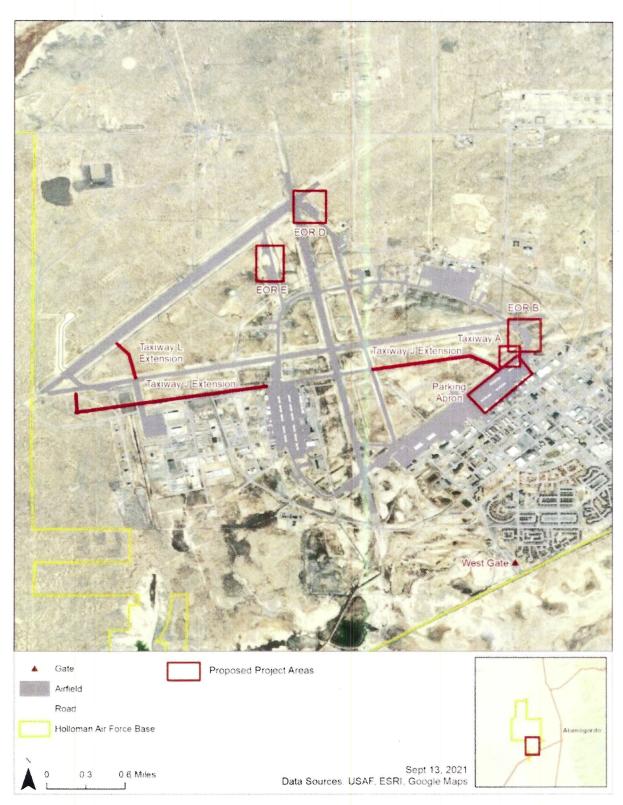
RYAN P. KEENEY, Colonel, USAF

3 Attachments:

1. Location of the Proposed Area of Potential Effect for Airfield Improvement

2. Location of the Proposed Area of Potential Effect for Main Gate Repositioning

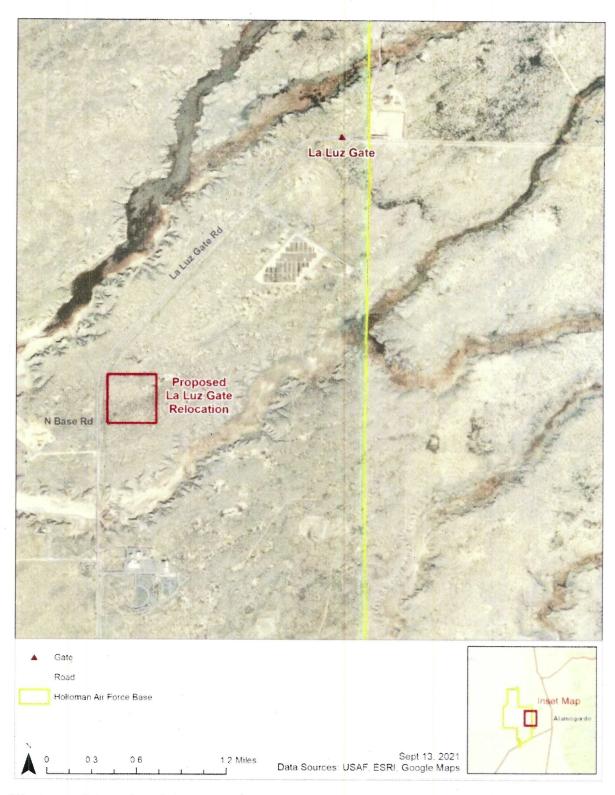
3. Location of the Proposed Area of Potential Effect for La Luz Gate Relocation



Attachment 1. Location of the Proposed Area of Potential Effect for Airfield Improvement



Attachment 2. Location of the Proposed Area of Potential Effect for Proposed Main Gate Repositioning



Attachment 3. Location of the Proposed Area of Potential Effect for La Luz Gate Relocation

1

Government Agency Correspondence and Distribution List

16 Jun 2022

Adam M. Kusmak, USAF Installation Management, Chief 49th Civil Engineer Squadron 550 Tabosa Ave. Holloman Air Force Base NM 88330

Mr. Mike Sloane Director NM Dept of Game and Fish One Wildlife Way Santa Fe NM 87507

Dear Mr. Sloane

In accordance with the National Environmental Policy Act (NEPA) of 1969, the Council on Environmental Quality regulations, and the Department of Defense NEPA regulations, the United States Air Force (USAF) is preparing an Environmental Assessment (EA) to evaluate the environmental impact of three projects at Holloman Air Force Base (AFB): airfield improvements, the repositioning of the Main Gate, and the relocation or repositioning of the La Luz Gate (also known as the North Gate). The Proposed Action includes projects that would:

- 1. Expand the number of end of the runway (EOR) arm/dearm pads to increase stage, arm and launch volume; increase blast dissipation pavement; and provide shelter for EOR crews. Additionally, taxiway extensions would be constructed to improve airfield geometry. As part of the proposed taxiway extensions, several excess buildings located within and adjacent to the planned routes would be demolished.
- 2. Alter the configuration of the Main Gate to meet current and future Anti-Terrorism/Force Protection (AT/FP) standards, increase traffic flow, and reduce traffic congestion in the US Highway 70 deceleration lane.
- 3. Alter the location or configuration of the La Luz Gate to meet current and future AT/FP standards, increase traffic flow, reduce response time for Security Forces personnel, and increase safety.

If you have additional information regarding the impacts of the Proposed Actions on the natural environment or other environmental aspects of which we are unaware, we would appreciate receiving such information for inclusion and consideration during the NEPA

compliance process. Please respond within 30 days of receipt of this letter to ensure your concerns are adequately addressed in the EA.

Please send your written responses to Mr. Spencer Robison, Holloman NEPA Program Manager, 49 CES/CEIE, 550 Tabosa Ave, Holloman AFB NM 88330 or via email to spencer.robison@us.af.mil.

Sincerely KUSMAK.ADA Digitally signed by KUSMAK.ADAM.M.12633 M.M.12633318 31806 Date: 2022.06.16 11:20:48 -06'00' ADAM KUSMAK, GS-13, USAF Installation Management Chief



PROJECT INFORMATION

Project Title:	Holloman Air Force Base Environmental Assessment Airfield and Gate Improvements
Project Type:	MILITARY, GENERAL (OPERATIONS, INFRASTURCTURE), MAINTENANCE OR
	CONTINUING OPERATIONS, INFRASTRUCTURE
Latitude/Longitude (DMS):	32.918257 / -106.133730
County(s):	OTERO
Project Description:	The U.S. Air Force is preparing an Environmental Assessment to evaluate the
	environmental impacts of three projects at Holloman Air Force Base. These include
	airfield improvements, the repositioning of the Main Gate, and the relocation or
	repositioning of the La Luz Gate (also known as the North Gate).

REQUESTOR INFORMATION

US DOD - AIR FORCE
Virginia Seamster
virginia.seamster@state.nm.us
New Mexico Department of Game and Fish
1 Wildlife Way, Santa Fe NM 87507
5056297738

OVERALL STATUS

This report contains an initial list of recommendations regarding potential impacts to wildlife or wildlife habitats from the proposed project; see the Project Recommendations section below for further details. Your project proposal is being forwarded to a New Mexico Department of Game and Fish (Department) biologist for review to determine whether there are any additional recommendations regarding the proposed actions. A Department biologist will be in touch within 30 days if there are further recommendations regarding this project proposal.

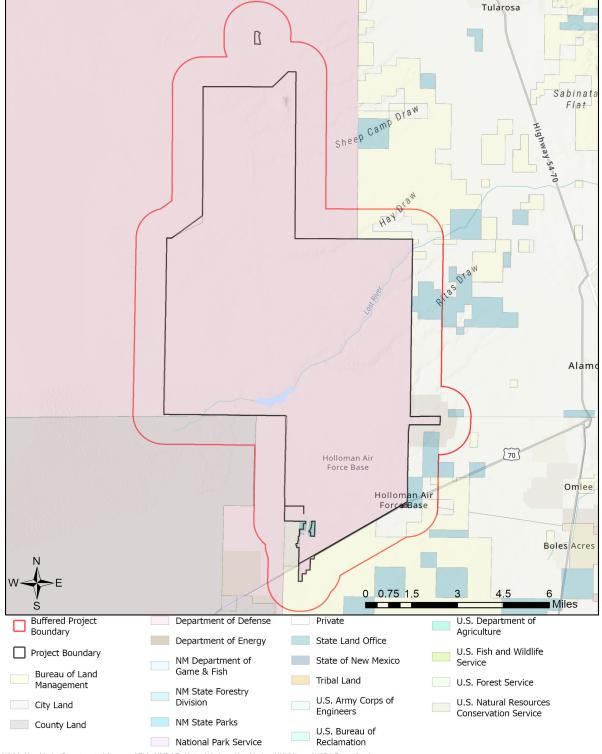


About this report:

- This environmental review is based on the project description and location that was entered. The report must be updated if the project type, area, or operational components are modified.
- This is a preliminary environmental screening assessment and report. It is not a substitute for the potential wildlife knowledge gained by having a biologist conduct a field survey of the project area. Federal status and plant data are provided as a courtesy to users. The review is also not intended to replace consultation required under the federal Endangered Species Act (ESA), including impact analyses for federal resources from the U.S. Fish and Wildlife Service (USFWS) using their Information for Planning and Consultation tool.
- The New Mexico Environmental Review Tool (ERT) utilizes species observation locations and species distribution models, both of which are subject to ongoing change and refinement. Inclusion or omission of a species within a report can not guarantee species presence or absence at a precise point location, as might be indicated through comprehensive biological surveys. Specific questions regarding the potential for adverse impacts to vulnerable wildlife populations or habitats, especially in areas with a limited history of biological surveys, may require further on-site assessments.
- The Department encourages use of the ERT to modify proposed projects for avoidance, minimization, or mitigation of wildlife impacts. However, the ERT is not intended to be used in a repeatedly iterative fashion to adjust project attributes until a previously determined recommendation is generated. The ERT serves to asses impacts once project details are developed. The <u>New Mexico Crucial Habitat Assessment Tool</u> is the appropriate system for advising early-stage project planning and design to avoid areas of anticipated wildlife concerns and associated regulatory requirements.



In Air Force Base Environmental Assessment Airfield and Gate Improv



USGS, New Mexico Department of Game and Fish (NMDGF), Natural Heritage New Mexico (NHNM), and USDA Forest Service,

Compiled by Richard Norwood of NHNM over the period 2020 to 2021. Sources: Esri, Airbus DS, USGS, NGA, NASA, CGIAR, N Robinson, NCEAS, NLS, OS, NMA, Geodatastyrelsen, Rijkswaterstaat, GSA, Geoland, FEMA, Intermap and the GIS user community



Sp	ecial Status Animal Species within 1	Miles of Project	Area	
Common Name	Scientific Name	USFWS (ESA)	NMDGF (WCA)	NMDGF SGCN/SERI
Northern Leopard Frog	Lithobates pipiens			SGCN
Eared Grebe	Podiceps nigricollis			SGCN
American Bittern	Botaurus lentiginosus			SGCN
Bald Eagle	Haliaeetus leucocephalus		Т	SGCN
Common Black-Hawk	Buteogallus anthracinus		т	SGCN
Aplomado Falcon	Falco femoralis		E	SGCN
Northern Aplomado Falcon	Falco femoralis septentrionalis	LE	E	SGCN
Peregrine Falcon	Falco peregrinus		Т	SGCN
American Peregrine Falcon	Falco peregrinus anatum		т	SGCN
Snowy Plover	Charadrius nivosus nivosus			SGCN
Mountain Plover	Charadrius montanus			SGCN
Long-Billed Curlew	Numenius americanus			SGCN
Interior Least Tern	Sternula antillarum athalassos	LE	E	SGCN
Western Burrowing Owl	Athene cunicularia hypugaea			SGCN
Lewis's Woodpecker	Melanerpes lewis			SGCN
<u>Pinyon Jay</u>	Gymnorhinus cyanocephalus			SGCN
<u>Juniper Titmouse</u>	Baeolophus ridgwayi			SGCN
Pygmy Nuthatch	Sitta pygmaea			SGCN
Bendire's Thrasher	Toxostoma bendirei			SGCN
Sprague's Pipit	Anthus spragueii			SGCN
Loggerhead Shrike	Lanius Iudovicianus			SGCN
<u>Bell's Vireo</u>	Vireo bellii		Т	SGCN
<u>Gray Vireo</u>	Vireo vicinior		т	SGCN
Cassin's Sparrow	Peucaea cassinii			SGCN
Baird's Sparrow	Ammodramus bairdii		т	SGCN
Mccown's Longspur	Rhynchophanes mccownii			SGCN
Chestnut-Collared Longspur	Calcarius ornatus			SGCN
White Sands Pupfish	Cyprinodon tularosa		Т	SGCN
Spotted Bat	Euderma maculatum		Т	SGCN
Black-Tailed Prairie Dog	Cynomys Iudovicianus			SGCN
<u>Cougar</u>	Puma concolor			SERI
Mule Deer	Odocoileus hemionus			SERI
Pronghorn	Antilocapra americana americana			SERI

ESA = Endangered Species Act, WCA = Wildlife Conservation Act, SGCN = Species of Greatest Conservation Need, SERI = Species of Economic and Recreational Importance



Project Recommendations

With implementation of the applicable mitigation or avoidance measures included in the project description, and incorporation of the guidance listed below, the Department does not anticipate significant impacts to wildlife or sensitive wildlife habitats from the proposed project activities. See the "OVERALL STATUS" section above to determine the likelihood that your project will be reviewed further based on its location. If a Department biologist determines that additional conservation measures are needed, then you should expect to receive notification and/or any additional project recommendations within 30 days of your project submission.

Burrowing owl (*Athene cunicularia*) is known to occur within or near your project area. Before any ground disturbing activities occur, the Department recommends that a preliminary survey be conducted by a qualified biologist using the Department's <u>burrowing owl survey protocol</u>. Should burrowing owls be documented in the project area, please contact the Department or USFWS for further recommendations regarding relocation or avoidance of impacts.

The proposed project occurs within or near a riparian area. Because riparian areas are important wildlife habitats, the project footprint should avoid removing any riparian vegetation or creating ground disturbance either directly within or affecting the riparian area, unless the project is intended to restore riparian habitat through non-native plant removal and replanting with native species. If your project involves removal of non-native riparian trees or planting of native riparian vegetation, please refer to the Department's habitat handbook guideline for <u>Restoration and Management of Native and Non-native Trees in Southwestern Riparian Ecosystems</u>.

Your proposed project occurs within an area where springs or other important natural water features occur. This may result in the presence of a high use area for wildlife relative to the surrounding landscape. To ensure continued function of these important wildlife habitats, your project should consider measures to avoid the following.

- Altering surface or groundwater flow or hydrology,
- Disturbance to soil that modifies geomorphic properties or facilitates invasion of non-native vegetation.
- Affecting local surface or groundwater quality.
- Creating disturbance to wildlife utilizing these water features. Disturbance to wildlife can be reduced through practices including clustering infrastructure and activity wherever possible, avoiding large visual obstructions around water features, and limiting nighttime project operations or activities.

Department biologists are available for site-specific consultation regarding measures to assist with management and conservation of these habitat resources.





Disclaimers regarding recommendations:

- The Department provides technical guidance to support the persistence of all protected species of native fish and wildlife, including game and nongame wildlife species. Species listed within this report include those that have been documented to occur within the project area, and others that may not have been documented but are projected to occur within the project vicinity.
- Recommendations are provided by the Department under the authority of § 17-1-5.1 New Mexico Statutes Annotated 1978, to provide "communication and consultation with federal and other state agencies, local governments and communities, private organizations and affected interests responsible for habitat, wilderness, recreation, water quality and environmental protection to ensure comprehensive conservation services for hunters, anglers and nonconsumptive wildlife users".
- The Department has no authority for management of plants or Important Plant Areas. The <u>New Mexico</u> <u>Endangered Plant Program</u>, under the Energy, Minerals, and Natural Resources Department's Forestry Division, identifies and develops conservation measures necessary to ensure the survival of plant species within New Mexico. Plant status information is provided within this report as a courtesy to users. Recommendations provided within the ERT may not be sufficient to preclude impacts to rare or sensitive plants, unless conservation measures are identified in coordination with the Endangered Plant Program.
- Additional coordination may also be necessary under the federal ESA or National Environmental Policy Act (NEPA). Further site-specific recommendations may be proposed during ESA and/or NEPA analyses, or through coordination with affected federal agencies.

APPENDIX B REASONABLY FORESEEABLE FUTURE ACTIONS This page intentionally left blank

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Table B-1.
Reasonably Foreseeable Future Actions
Reasonably Foreseeable Future Projects at Holloman Air Force Ba

Reasonably Foreseeable Future Projects at Holloman Air Force Base

Scheduled Project	Project Summary	Implementation Date	Relevance to Proposed Action	Interaction with Resources
Holloman Air Force Base				
NC3 Shipping/Storage Facility	MILCON project includes a 67,000-square-foot warehouse in the Basic Expeditionary Airfield Resources Base.	Construction anticipated 2021	Potential construction overlap with the Proposed Action	Noise, Air Quality, Land Use
F-16 Formal Training Unit Permanent Beddown and Relocation	Project at Holloman AFB includes the permanent beddown of additional F-16 FTU squadrons in support of the Formal Training Unit Permanent Beddown and Relocation Plan. The beddown would include adding either 1 or 2 F-16 squadrons and minor construction on and renovation of existing facilities. Improvements include projects on the airfield and in the Administration and Aircraft Operations and Maintenance land use areas.	Anticipated 2022	Potential construction overlap with the Proposed Action.	Infrastructure, Safety, Transportation, Air Quality

Scheduled Project	Project Summary	Implementation Date	Relevance to Proposed Action	Interaction with Resources
Holloman High Speed Test Track (HHSTT) Operations	Project at the 846th Test Squadron to continue operations of the HHSTT including minor modifications within the existing built environment and processes. Facility modifications are limited to extension of the rain field system attached to the track and modernization of the controls, valves, pumps, and pipes. Operational process modifications are limited to updated best management practices and standard operating procedures that are intended to further avoid adverse impacts on human health and the environment.	Anticipated 2023	Potential construction overlap with the Proposed Action	Noise, Air Quality, Infrastructure, Safety
MILCON = Military construction: EA = Environme	ontal Accoccmont			

Reasonably Foreseeable Future Projects at Holloman Air Force Base

MILCON = Military construction; EA = Environmental Assessment

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APPENDIX C SUPPLEMENTAL RESOURCE MATERIAL This page intentionally left blank

1 C.1 Noise

2 The following sections describe input data used in the noise modeling process. This data was developed 3 in coordination with Holloman Air Force Base (AFB) personnel.

4 C.1.1 Sound

Sound is a series of vibrations (energy) transmitted through a medium (such as air or water) that is 5 perceived by a receiver (e.g., humans and animals). It is measured by accounting for the energy level 6 represented by the amplitude (volume) and frequency (pitch) of those vibrations and comparing that to a 7 baseline standard. The unit measurement of the intensity of sound is the decibel (dB). The dB is a 8 9 logarithmic ratio of the increase in atmospheric pressure a sound event causes compared to a defined 10 reference pressure, which is the lowest detectible pressure recognized by the human ear. The sound pressure level represented by a given decibel value is usually adjusted to make it more relevant to 11 sounds that the human ear hears especially well; for example, an "A-weighted" decibel (dBA) is derived 12 by emphasizing mid-range frequencies to which the human ear responds especially well and de-13 emphasizing lower- and higher-range frequencies. In addition to weighting based on frequency, sound 14 15 levels are further differentiated by factoring in the effect of time (duration), since sound levels normally 16 vary in intensity and are not continuous. 17 Sound levels fluctuate over time. For example, the sound increases as an aircraft approaches, then diminishes and blends into the ambient, or background, noise as the aircraft recedes into the distance. 18

Because of this variation, it is often convenient to describe a given noise event by its highest or maximum sound level (L_{max}). It should be noted that L_{max} describes only one dimension of an event and provides no

information on the cumulative noise exposure generated by a sound source. In fact, two events with

identical L_{max} may produce very different total noise exposures. One may be of very short duration, while

the other may last much longer.

Human perception of sound and noise varies and largely depends on the frequency or frequencies an

event produces. Several different scales are used to quantify sound depending on the purpose of the
 measurement taken. Sound can be quantified with instrumentation that records instantaneous sound
 levels in dB. The threshold of audibility is generally within the range of 10 to 25 dBA for normal hearing.

The threshold of pain occurs at the upper boundary of audibility, which is normally in the region of 135

29 dBA (USEPA, 1981a).

Table C-1 compares common sounds and shows how they correspond to potential auditory impacts. As shown, a whisper is normally 30 dBA and considered to be very quiet, while an air conditioning unit 20 feet away is considered an intrusive noise at 60 dBA. Noise levels can become irritating at 80 dBA and very annoying at 90 dBA. As sound pressure level is measured on a logarithmic scale, every increase of 3 dB is twice as loud (e.g., 80 dBA is twice as loud as 77 dBA); however, humans do not typically perceive sound to be twice as loud until an increase of at least 10 dB, which can result in inadvertent

36 exposure to hazardous noise levels (USEPA, 1981b).

Noise Level (dBA)	Common Sounds	Effect ^a	T _{Max} b
10	Just audible	Negligible	n/a
30	Soft whisper (15 feet)	Very quiet	n/a
50	Light auto traffic (100 feet)	Quiet	n/a
60	Air conditioning unit (20 feet)	Intrusive	n/a
70	Noisy restaurant or freeway traffic	Telephone use difficult	n/a
80	Alarm clock (2 feet)	Annoying	n/a
90	Heavy truck (50 feet) or city traffic	Very annoying	8 hours
100	Garbage truck	Very annoying	2 hours

Table C-1. Typical Sound Levels from Example Activities

Noise Level (dBA)	Common Sounds	Effect ^a	T _{Max} b
110	Pile drivers	Strained vocal effort	30 minutes
120	Jet takeoff (200 feet) or auto horn (3 feet)	Maximum vocal effort	7.5 minutes
140	Carrier deck jet operation	Painfully loud	28 seconds

Table C-1. Typical Sound Levels from Example Activities

^a Source: USEPA. 1981b 1

2 ^b Source: Occupational Safety and Health Administration, 2017

dBA = A-weighted decibel(s); n/a = not applicable; T_{Max} = maximum time prior to hearing damage 3

4 A variety of sounds are emitted from loaders, trucks, graders, and other common construction equipment.

5 Table C-2 presents noise levels associated with common types of construction equipment, which can

exceed the ambient sound levels by 20 to 25 dBA in an urban environment. Unobstructed sound pressure 6

7 levels decrease according to the inverse square law, or approximately 6 dB for every doubling of distance from the source of noise; therefore, as seen in Table C-2, impacts from construction noise are typically

8

confined to within 0.5 miles of a project area. 9

Table C-2. Estimated Noise Levels for Common Construction Equipment

Construction Equipment	L _{max} ^a 50 ft (dBA)	L _{max} ^b 100 ft (dBA)	L _{max} ^b 250 ft (dBA)	L _{max} ^b 500 ft (dBA)	L _{max} ^b 1,000 ft (dBA)	L _{max} ^b 1,500 ft (dBA)	L _{max} ^b 0.5 mi (dBA)
Backhoe	78	72	64	58	52	48	44
Chain Saw	84	78	70	64	58	54	50
Ground Compactor	83	77	69	63	57	53	49
Concrete Mixer Truck	79	73	65	59	53	49	45
Concrete Pump Truck	81	75	67	61	55	51	47
Crane	81	75	67	61	55	51	47
Dozer	82	76	68	62	56	52	48
Excavator	81	75	67	61	55	51	47
Front End Loader	79	73	65	59	53	49	45
Grapple (Backhoe)	87	81	73	67	61	57	53
Jackhammer	89	83	75	69	63	59	55
Pneumatic Tools	85	79	71	65	59	55	51
Vacuum Excavator	85	79	71	65	59	55	51

^a Source: United States Department of Transportation, 2006 10

^b Derived values utilizing the inverse square law $\left\{L_{p2} = L_{p1} + 20 \log_{10}\left(\frac{r_1}{r_1}\right)\right\}$ and published values at $L_{p1} = L_{50}$. 11

dBA = A-weighted decibel(s); ft = feet; L_{max} = maximum sound level; mi = mile(s) 12

1 C.1.2 References

- Occupational Safety and Health Administration. 2017. Technical Manual Section III, Chapter 5: Noise
 (Revised 8/15/13). https://www.osha.gov/dts/osta/otm/new_noise/
- 4 index.html>. Accessed 1 May 2019.
- United States Department of Transportation. 2006. FHWA Highway Construction Noise Handbook.
 FHWA-HEP-06-015. DOT-VNTSC-FHWA-06-02. NTIS No. PB2006-109012. August.
- USEPA. 1981a. Noise Effects Handbook: A Desk Reference to Health and Welfare Effects of Noise.
 Office of Noise Abatement and Control. October 1979, Revised July 1981.
- 9 USEPA. 1981b. Noise and its Measurement. January.

1 **C.2 AIR QUALITY**

2 C.2.1 Detailed Air Conformity Applicability Model Report

3 Airfield

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4 1. General Information

- 56 Action Location
 - Base: HOLLOMAN AFB
 - State: New Mexico
 - County(s): Otero
 - Regulatory Area(s): NOT IN A REGULATORY AREA
- 12 Action Title: Airfield Improvements
- 13
 14 Project Number/s (if applicable):

16 - Projected Action Start Date: 1 / 2025

18 - Action Purpose and Need:

- 19 The purpose and need for action include enhancing airfield efficiency to alleviate safety, operational 20 and training shortfalls, as
- well as decrease the need to frequently use Runway 07/25 for taxiing during certain weather conditions.
 Taxiway extensions would allow for improved F-16 recovery and taxiway circulation and overall airfield
 efficiency.

2425 - Action Description:

- The airfield improvements would consist of expanding the number of end of the runway (EOR) arm/dearm pads from 23 to 48 to increase stage, arm, and launch volume; increasing blast dissipation pavement; providing shelter for EOR crews; and extending two taxiways to improve airfield geometry. In addition, excess buildings
- 30 located within and adjacent to the planned routes for the taxiway extensions would be demolished.

32 - Point of Contact

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34	Title:	Env. Scientist
35	Organization:	HazAir
36	Email:	jessie.moore@hazair.com
37	Phone Number:	5057025632
38		

- Activity List:

	Activity Type	Activity Title
2.	Construction / Demolition	Taxiway A Parking Pavement
3.	Construction / Demolition	Taxiway A Shoulder Pavement
4.	Construction / Demolition	EOR B Parking Pavement and Demo
5.	Construction / Demolition	EOR B Shoulder Pavement
6.	Construction / Demolition	EOR D Parking Pavement and Demo
7.	Construction / Demolition	EOR D Shoulder Pavement
8.	Construction / Demolition	EOR E Parking Pavement and Demo
9.	Construction / Demolition	EOR E Parking Shoulder and Demo
10.	Construction / Demolition	Extend Taxiway L Parking Pavement and Demo
11.	Construction / Demolition	Taxiway L Shoulder Pavement and Demo
12.	Construction / Demolition	Extended Taxiway J Parking Pavement and Demo
13.	Construction / Demolition	Extend Taxiway J Parking Shoulder and Demo

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14. Construction / Demolition **Building Demo**

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

Construction / Demolition

General Information & Timeline Assumptions

tivity Location

County: Otero

Regulatory Area(s): NOT IN A REGULATORY AREA

tivity Title: Taxiway A Parking Pavement

tivity Description:

Taxiway A - Increase F-16 arming positions from 4 to 6: Remove degraded pavement; add new and additional pavement; install taxiway and parking spot markings; construct EOR crew shelter

tivity Start Date

- Start Month: 1
- Start Month: 2025

tivity End Date

Indefinite:	False
End Month:	12
End Month:	2025

tivity Emissions:

Pollutant	Total Emissions (TONs)
VOC	0.074774
SOx	0.001053
NOx	0.390648
CO	0.499423
PM 10	1.546632

Pollutant	Total Emissions (TONs)
PM 2.5	0.017824
Pb	0.000000
NH ₃	0.000342
CO ₂ e	103.7

Site Grading Phase

1 Site Grading Phase Timeline Assumptions

- Phase Start Date Start Month: 37
 - Start Quarter: 1
- 38 Start Year: 2025
- 39 40

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- Phase Duration 41
 - Number of Month: 1
 - Number of Days: 0
- 43 44

2.1.2 Site Grading Phase Assumptions 45

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46 - General Site Grading Information 47

Area of Site to be Graded (ft²): 48 153677

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2.1.3 Si - Constru Graders Emission Other C Emission Rubber Emission Tractors Emission - Vehicle LDGV	LD 50. te Gradin uction Exh s Composi n Factors ionstruction n Factors Tired Doz n Factors s/Loaders/ n Factors Exhaust & VOC 000.309	GV I 00 00 g Phase aust Emis aust Emis te VOC 0.0676 on Equipm VOC 0.0442 ers Comp VOC 0.1671 Backhoes VOC 0.0335 Worker SO _× 000.002	LDGT 50.00 Emission ssion Factor ssion Factor solution	0 Factor(s) ors (lb/hou NOx 0.3314 osite NOx 0.2021 NOx 1.0824 te NOx 0.1857 sion Facto CO 003.421	0 r) (default) CO 0.5695 CO 0.3473 CO 0.6620 CO 0.3586 ors (grams PM 10 000.007	PM 10 0.0147 PM 10 0.0068 PM 10 0.0418 PM 10 0.0458 PM 10 0.0058 PM 2.5 000.006	PM 2.3 0.014 PM 2.3 0.0068 PM 2.3 0.0418 PM 2.3 0.0058	0 5 CH 7 0.006 5 CH 3 0.003 5 CH 3 0.003 5 CH 3 0.003	4 CC 51 132 4 CC 39 122 4 CC 50 239 4 CC 30 66.3 00318 00411.
2.1.3 Si Graders Emission Other C Emission Rubber Emission Tractors Emission Tractors Emission UDGV LDGV LDGV LDDV	LD 50. te Gradin uction Exh s Composi n Factors constructio n Factors s/Loaders/ n Factors s/Loaders/ n Factors Exhaust & VOC 000.309 000.374 000.696 000.115	GV I 00 00 g Phase aust Emis aust Emis te VOC 0.0676 on Equipm VOC VOC 0.0442 ers Comp VOC 0.1671 Backhoes VOC 0.0335 & Worker SOx 000.002 000.003 000.005 000.003	LDGT 50.00 Emission sion Factor SOx 0.0014 eent Comp SOx 0.0012 osite SOx 0.0024 s Composi SOx 0.0007 Trips Emis 000.239 000.418 001.076 000.139	0 Factor(s) ors (lb/hou NOx 0.3314 osite NOx 0.2021 NOx 1.0824 te NOx 0.1857 sion Factor 003.421 004.700 015.187 002.492	0 r) (default) CO 0.5695 CO 0.3473 CO 0.6620 CO 0.3586 ors (grams PM 10 000.007 000.009 000.021 000.004	PM 10 0.0147 PM 10 0.0068 PM 10 0.0418 PM 10 0.0418 PM 10 0.0058 /mile) PM 2.5 000.006 000.019 000.004	PM 2.3 0.014 PM 2.3 0.0068 PM 2.3 0.0418 PM 2.3 0.0058	0 5 CH. 7 0.006 5 CH. 3 0.003 5 CH. 3 0.015 5 CH. 3 0.015 5 CH. 3 0.003 8 0.003 9 0.003 9 00.023 000.024 000.044 000.008	0 4 CC 51 132 4 CC 39 122 4 CC 50 239 4 CC 30 66.4 00318 00411 00758 00309
2.1.3 Si - Constru Graders Emission Other C Emission Rubber Emission Tractors Emission - Vehicle LDGV LDGV LDGV LDGV LDDV LDDV LDDT	LD 50. te Gradin s Composi n Factors constructio n Factors Tired Doz n Factors s/Loaders/ n Factors Exhaust & VOC 000.309 000.374 000.696 000.115 000.250	GV I 00 00 g Phase aust Emis aust Emis te VOC 0.0676 on Equipm VOC 0.0442 ers Comp VOC 0.1671 /Backhoes VOC 0.0335 Worker & Worker 000.002 000.003 000.003 000.003 000.004	LDGT 50.00 Emission sion Factor sion Factor solution solution <td< td=""><td>0 Factor(s) ors (lb/hou NOx 0.3314 osite NOx 0.2021 NOx 1.0824 te NOx 0.1857 sion Factor 003.421 004.700 015.187 002.492 004.238</td><td>0 r) (default) CO 0.5695 CO 0.3473 CO 0.6620 CO 0.3586 ors (grams PM 10 000.007 000.021 000.004 000.007</td><td>PM 10 0.0147 PM 10 0.0068 PM 10 0.0068 PM 10 0.0418 PM 10 0.0058 /mile) PM 2.5 000.006 000.008 000.019 000.004 000.006</td><td>PM 2.3 0.014 PM 2.3 0.0068 PM 2.3 0.0418 PM 2.3 0.0058</td><td>0 5 CH. 7 0.006 5 CH. 3 0.001 5 CH. 3 0.011 5 CH. 3 0.011 5 CH. 3 0.001 6 0.001 7 0.001 8 0.001 9 0.0023 0 0.024 0 00.024 0 00.024 0 00.024 0 00.024 0 00.024</td><td>4 CC 61 132 4 CC 39 122 4 CC 50 239 4 CC 30 66.3 00318 00411 00758 00309 00438.</td></td<>	0 Factor(s) ors (lb/hou NOx 0.3314 osite NOx 0.2021 NOx 1.0824 te NOx 0.1857 sion Factor 003.421 004.700 015.187 002.492 004.238	0 r) (default) CO 0.5695 CO 0.3473 CO 0.6620 CO 0.3586 ors (grams PM 10 000.007 000.021 000.004 000.007	PM 10 0.0147 PM 10 0.0068 PM 10 0.0068 PM 10 0.0418 PM 10 0.0058 /mile) PM 2.5 000.006 000.008 000.019 000.004 000.006	PM 2.3 0.014 PM 2.3 0.0068 PM 2.3 0.0418 PM 2.3 0.0058	0 5 CH. 7 0.006 5 CH. 3 0.001 5 CH. 3 0.011 5 CH. 3 0.011 5 CH. 3 0.001 6 0.001 7 0.001 8 0.001 9 0.0023 0 0.024 0 00.024 0 00.024 0 00.024 0 00.024 0 00.024	4 CC 61 132 4 CC 39 122 4 CC 50 239 4 CC 30 66.3 00318 00411 00758 00309 00438.
2.1.3 Si Graders Emission Other C Emission Rubber Emission Tractors Emission Tractors Emission UDGV LDGV LDGV LDDV	LD 50. te Gradin uction Exh s Composi n Factors constructio n Factors s/Loaders/ n Factors s/Loaders/ n Factors Exhaust & VOC 000.309 000.374 000.696 000.115	GV I 00 00 g Phase aust Emis aust Emis te VOC 0.0676 on Equipm VOC 0.0442 ers Comp VOC 0.1671 Backhoes VOC 0.0335 Worker SO∗ 000.002 000.003 000.003 000.005 000.003	LDGT 50.00 Emission sion Factor SOx 0.0014 eent Comp SOx 0.0012 osite SOx 0.0024 s Composi SOx 0.0007 Trips Emis 000.239 000.418 001.076 000.139	0 Factor(s) ors (lb/hou NOx 0.3314 osite NOx 0.2021 NOx 1.0824 te NOx 0.1857 sion Factor 003.421 004.700 015.187 002.492	0 r) (default) CO 0.5695 CO 0.3473 CO 0.6620 CO 0.3586 ors (grams PM 10 000.007 000.009 000.021 000.004	PM 10 0.0147 PM 10 0.0068 PM 10 0.0418 PM 10 0.0418 PM 10 0.0058 /mile) PM 2.5 000.006 000.019 000.004	PM 2.3 0.014 PM 2.3 0.0068 PM 2.3 0.0418 PM 2.3 0.0058	0 5 CH. 7 0.006 5 CH. 3 0.003 5 CH. 3 0.015 5 CH. 3 0.015 5 CH. 3 0.003 8 0.003 9 0.003 9 00.023 000.024 000.044 000.008	0 4 61 132 4 60 39 122 4 60 239 30 66.3 00318 00411 00758 00309 00438 01506

1	
2	2.1.4 Site Grading Phase Formula(s)
3 4	- Fugitive Dust Emissions per Phase
4 5	$PM10_{FD} = (20 * ACRE * WD) / 2000$
6	
7	PM10 _{FD} : Fugitive Dust PM 10 Emissions (TONs)
8	20: Conversion Factor Acre Day to pounds (20 lb / 1 Acre Day)
9	ACRE: Total acres (acres)
10	WD: Number of Total Work Days (days)
11	2000: Conversion Factor pounds to tons
12	
13	- Construction Exhaust Emissions per Phase
14	CEE _{POL} = (NE * WD * H * EF _{POL}) / 2000
15 16	CEE-at: Construction Exhaust Emissions (TONs)
16 17	CEE _{POL} : Construction Exhaust Emissions (TONs) NE: Number of Equipment
18	WD: Number of Total Work Days (days)
19	H: Hours Worked per Day (hours)
20	EF _{POL} : Emission Factor for Pollutant (lb/hour)
21	2000: Conversion Factor pounds to tons
22	
23	- Vehicle Exhaust Emissions per Phase
24	VMT _{VE} = (HA _{OnSite} + HA _{OffSite}) * (1 / HC) * HT
25	
26	VMT _{VE} : Vehicle Exhaust Vehicle Miles Travel (miles)
27	HA_{OnSite} : Amount of Material to be Hauled On-Site (yd ³)
28	HA _{offSite} : Amount of Material to be Hauled Off-Site (yd ³)
29	HC: Average Hauling Truck Capacity (yd ³) (1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd ³)
30 31	HT: Average Hauling Truck Round Trip Commute (mile/trip)
32	TT. Average flading fluck flound the commute (mile/inp)
33	V _{POL} = (VMT _{VE} * 0.002205 * EF _{POL} * VM) / 2000
34	
35	V _{POL} : Vehicle Emissions (TONs)
36	VMT _{VE} : Vehicle Exhaust Vehicle Miles Travel (miles)
37	0.002205: Conversion Factor grams to pounds
38	EFPOL: Emission Factor for Pollutant (grams/mile)
39	VM: Vehicle Exhaust On Road Vehicle Mixture (%)
40	2000: Conversion Factor pounds to tons
41	Western Trine Freieriege von Dheer
42	- Worker Trips Emissions per Phase
43 44	VMT _{WT} = WD * WT * 1.25 * NE
44 45	VMT _{wt} : Worker Trips Vehicle Miles Travel (miles)
46	WD: Number of Total Work Days (days)
47	WD: Average Worker Round Trip Commute (mile)
48	1.25: Conversion Factor Number of Construction Equipment to Number of Works
49	NE: Number of Construction Equipment
50	
51	V _{POL} = (VMT _{WT} * 0.002205 * EF _{POL} * VM) / 2000
52	
53	V _{POL} : Vehicle Emissions (TONs)
54	VMT _{WT} : Worker Trips Vehicle Miles Travel (miles)
55	0.002205: Conversion Factor grams to pounds
56	EF _{POL} : Emission Factor for Pollutant (grams/mile)

	ker Trips On Ro Inversion Factor		· · · ·							
2.2 Paving	Phase									
2.2.1 Pavin	g Phase Time	line Assu	mptions							
- Phase Start Start Mo Start Qua Start Yea	nth: 2 arter: 1									
	ition of Month: 2 of Days: 0									
2.2.2 Pavin	g Phase Assı	Imptions								
	ving Informatio rea (ft²): 1536									
Average	ettings Used: Day(s) worked	per week: {	Yes 5 (default)							
- Constructio	on Exhaust (def	ault) ment Name	0		Nun	nber Of	Hours	Per Day		
	Equip		6			ipment	liours	i ei Day		
	Mortar Mixers (Composite				4		6		
Pavers Com		to.				1		7 6		
Rollers Com	pment Composi posite	le				2		0 7		
•	naust Hauling Truck naust Vehicle M LDGV	-	O Commute	e (mile):	20 (defa	, 		МС		
POVs	0	0	0	0	0	10	0.00	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		0	0			0	0		
POVs 50.00 50.00 0 0 0 0 0 2.2.3 Paving Phase Emission Factor(s) - Construction Exhaust Emission Factors (lb/hour) (default) Graders Composite										
	VOC	SOx	NOx	CO	PM 10	PM 2.5	CH₄	CO ₂ e		
Emission Fa		0.0014	0.3314	0.5695	0.0147	0.0147	0.0061	132.89		
Other Cons	truction Equip						<u></u>			
1	VOC	SOx	NOx	CO	PM 10	PM 2.5	CH₄	CO ₂ e		

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Emission Factors	0.0442	0.0012	0.2021	0.3473	0.0068	0.0068	0.0039	122.60		
Rubber Tired Dozers Composite										
	VOC	SOx	NOx	CO	PM 10	PM 2.5	CH₄	CO ₂ e		
Emission Factors	0.1671	0.0024	1.0824	0.6620	0.0418	0.0418	0.0150	239.45		
Tractors/Loaders/	Backhoes	Composit	te		•					
	VOC	SOx	NOx	СО	PM 10	PM 2.5	CH₄	CO ₂ e		
Emission Factors	0.0335	0.0007	0.1857	0.3586	0.0058	0.0058	0.0030	66.872		

1 2

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

	VOC	SOx	NOx	CO	PM 10	PM 2.5	Pb	NH ₃	CO ₂ e			
LDGV	000.309	000.002	000.239	003.421	000.007	000.006		000.023	00318.896			
LDGT	000.374	000.003	000.418	004.700	000.009	800.000		000.024	00411.188			
HDGV	000.696	000.005	001.076	015.187	000.021	000.019		000.044	00758.535			
LDDV	000.115	000.003	000.139	002.492	000.004	000.004		800.000	00309.094			
LDDT	000.250	000.004	000.394	004.238	000.007	000.006		800.000	00438.938			
HDDV	000.572	000.013	005.669	001.917	000.170	000.156		000.030	01506.304			
MC	002.734	000.003	000.845	013.302	000.027	000.023		000.055	00396.858			

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7 8

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2.2.4 Paving Phase Formula(s)

- Construction Exhaust Emissions per Phase

- CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000
 - CEEPOL: Construction Exhaust Emissions (TONs)
- 10 NE: Number of Equipment
- 11 WD: Number of Total Work Days (days)
- 12 H: Hours Worked per Day (hours)
- 13 EF_{POL}: Emission Factor for Pollutant (lb/hour)
- 14 2000: Conversion Factor pounds to tons

16 - Vehicle Exhaust Emissions per Phase

- 17 VMT_{VE} = PA * 0.25 * (1 / 27) * (1 / HC) * HT
- 18 19

15

- VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
- 20 PA: Paving Area (ft²)
- 21 0.25: Thickness of Paving Area (ft)
- 22 (1 / 27): Conversion Factor cubic feet to cubic yards (1 yd³ / 27 ft³)
- 23 HC: Average Hauling Truck Capacity (yd³)
- 24 (1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd³)
- 25 HT: Average Hauling Truck Round Trip Commute (mile/trip)26
- 27 V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000
- 28
 29 V_{POL}: Vehicle Emissions (TONs)
- 30 VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
- 31 0.002205: Conversion Factor grams to pounds
- 32 EF_{POL}: Emission Factor for Pollutant (grams/mile)
- 33 VM: Vehicle Exhaust On Road Vehicle Mixture (%)
- 34 2000: Conversion Factor pounds to tons

36 - Worker Trips Emissions per Phase

37	VMT _{wT} = WD * WT * 1.25 * NE
57	

38

- 39 VMTwt: Worker Trips Vehicle Miles Travel (miles)
- 40 WD: Number of Total Work Days (days)

		in Commute (m	ile)	
	Worker Round Tri			
			on Equipment to Num	ber of Works
NE: NUMBER	of Construction Eq	Juipment		
V _{POL} = (VMT _{WT} * C	.002205 * EF _{POL} *	VM) / 2000		
VPOL: Vehicle	Emissions (TONs	;)		
	er Trips Vehicle M		es)	
	nversion Factor g			
	ion Factor for Pollu			
	rips On Road Veh			
2000: Conver	sion Factor pound	is to tons		
- Off-Gassing Em VOC _P = (2.62 * PA	hissions per Phas	3e		
	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,			
	y VOC Emissions	(TONs)		
	n Factor (lb/acre)			
PA: Paving A		ro footto corre	(12560 #2 /)2 /	
43560: CONVE	Histor Factor squa	ire reet to acre ((43560 ft2 / acre)² / ac	ле)
3 Construct	ion / Demoliti	ion		
J. Construct				
	ormation & Tim	eline Assum	otions	
3.1 General Inf - Activity Locatio County: Ote	ormation & Tim n ero			
3.1 General Inf - Activity Locatio County: Ote	ormation & Tim			
3.1 General Inf - Activity Locatio County: Ot Regulatory A	ormation & Tim n ero	NREGULATOR		
 3.1 General Inf Activity Locatio County: Ota Regulatory A Activity Title: 	ormation & Tim on ero rea(s): NOT IN A Taxiway A Should	NREGULATOR		
 3.1 General Inf Activity Location County: Other Regulatory A Activity Title: Activity Descrip 	ormation & Tim ero rea(s): NOT IN A Taxiway A Should otion:	REGULATOR	Y AREA	egraded pavement: add new
 3.1 General Inf Activity Location County: Other Regulatory A Activity Title: Activity Descript Taxiway A - In 	ormation & Tim ero rea(s): NOT IN A Taxiway A Should otion: ncrease F-16 armi	REGULATOR der Pavement ing positions fro	Y AREA om 4 to 6: Remove de	egraded pavement; add new truct EOR crew shelter.
 3.1 General Inf Activity Location County: Other Regulatory A Activity Title: Activity Descript Taxiway A - In 	ormation & Tim ero rea(s): NOT IN A Taxiway A Should otion: ncrease F-16 armi ement; install taxiv	REGULATOR der Pavement ing positions fro	Y AREA om 4 to 6: Remove de	
 3.1 General Inf Activity Location County: Other Regulatory A Activity Title: Activity Descript Taxiway A - In additional pav Activity Start Day Start Month: 	ormation & Tim ero rea(s): NOT IN A Taxiway A Should otion: ncrease F-16 armi ement; install taxiv	REGULATOR der Pavement ing positions fro	Y AREA om 4 to 6: Remove de	
 3.1 General Inf Activity Location County: Other Regulatory A Activity Title: Activity Descrip Taxiway A - In additional pav Activity Start Data Contemport 	ormation & Tim ero rea(s): NOT IN A Taxiway A Should otion: ncrease F-16 armi ement; install taxiv	REGULATOR der Pavement ing positions fro	Y AREA om 4 to 6: Remove de	
 3.1 General Inf Activity Location County: Oth Regulatory A Activity Title: Activity Descript Taxiway A - In additional pav Activity Start Data Start Month: Start Month: 	ormation & Tim ero rea(s): NOT IN A Taxiway A Should otion: ncrease F-16 armi ement; install taxiv ate 1 2025	REGULATOR der Pavement ing positions fro	Y AREA om 4 to 6: Remove de	
 3.1 General Inf Activity Location County: Other Regulatory A Activity Title: Activity Descript Taxiway A - International pay Activity Start Date Start Month: Start Month: Activity End Date 	ormation & Tim ero rea(s): NOT IN A Taxiway A Should otion: ncrease F-16 armi ement; install taxiv ate 1 2025 te	REGULATOR der Pavement ing positions fro	Y AREA om 4 to 6: Remove de	
 3.1 General Inf Activity Location County: Oth Regulatory A Activity Title: Activity Descript Taxiway A - In additional pav Activity Start Data Start Month: Start Month: 	ormation & Tim ero rea(s): NOT IN A Taxiway A Should otion: ncrease F-16 armi ement; install taxiv ate 1 2025	REGULATOR der Pavement ing positions fro	Y AREA om 4 to 6: Remove de	
 3.1 General Inf Activity Location County: Oth Regulatory A Activity Title: Activity Descript Taxiway A - In additional pav Activity Start Da Start Month: Start Month: Activity End Da Indefinite: 	ormation & Tim ero rea(s): NOT IN A Taxiway A Should otion: ncrease F-16 armi ement; install taxiv ate 1 2025 te False	REGULATOR der Pavement ing positions fro	Y AREA om 4 to 6: Remove de	
 3.1 General Inf Activity Location County: Other Regulatory A Activity Title: Activity Descript Taxiway A - International pav Activity Start Descript Start Month: Start Month: Activity End Date Indefinite: End Month: End Month: 	ormation & Tim ero rea(s): NOT IN A Taxiway A Should otion: ncrease F-16 armi ement; install taxiv ate 1 2025 te False 12 2025	REGULATOR der Pavement ing positions fro	Y AREA om 4 to 6: Remove de	
 3.1 General Inf Activity Location County: Other Regulatory A Activity Title: Activity Descript Taxiway A - International pay Activity Start Descript Start Month: Start Month: Activity End Date Indefinite: End Month: End Month: Activity Emission 	ormation & Tim ero rea(s): NOT IN A Taxiway A Should otion: ncrease F-16 armi ement; install taxiv ate 1 2025 te False 12 2025	A REGULATOR	Y AREA om 4 to 6: Remove de g spot markings; cons	truct EOR crew shelter.
 3.1 General Inf Activity Location County: Other Regulatory A Activity Title: Activity Descript Taxiway A - International pay Activity Start Descript Start Month: Start Month: Activity End Date Indefinite: End Month: End Month: Activity Emission Activity Emission Activity Emission Activity Emission Activity Emission Activity Emission 	ormation & Tim ero rea(s): NOT IN A Taxiway A Should otion: ncrease F-16 armi ement; install taxiv ate 1 2025 te False 12 2025 ons: Total Emission	A REGULATOR der Pavement ing positions fro way and parking	Y AREA om 4 to 6: Remove de g spot markings; cons	truct EOR crew shelter.
 3.1 General Inf Activity Location County: Other Regulatory A Activity Title: Activity Descript Taxiway A - International pay Activity Start Dastart Month: Start Month: Start Month: Activity End Dastart Month: Activity End Dastart Month: Activity End Dastart Month: Activity End Month: Activity Emission Pollutant VOC 	ormation & Tim ero rea(s): NOT IN A Taxiway A Should otion: ncrease F-16 armi ement; install taxiv ate 1 2025 te False 12 2025	A REGULATOR' der Pavement ing positions fro way and parking way and parking	Y AREA om 4 to 6: Remove de g spot markings; cons Pollutant PM 2.5	truct EOR crew shelter. Total Emissions (TON 0.016865
 3.1 General Inf Activity Location County: Oth Regulatory A Activity Title: Activity Descript Taxiway A - In additional pav Activity Start Da Start Month: Start Month: Activity End Da Indefinite: End Month: End Month: Activity Emission Pollutant VOC SO_x 	ormation & Tim ero rea(s): NOT IN A Taxiway A Should otion: ncrease F-16 armi ement; install taxiv ate 1 2025 te False 12 2025 ons: Total Emission 0.07058	A REGULATOR' der Pavement ing positions fro way and parking way and parking	Y AREA om 4 to 6: Remove de g spot markings; cons	truct EOR crew shelter. Total Emissions (TON 0.016865 0.000000
 3.1 General Inf Activity Location County: Other Regulatory A Activity Title: Activity Descript Taxiway A - International pay Activity Start Dastart Month: Start Month: Start Month: Activity End Dastart Month: Activity End Dastart Month: Activity End Dastart Month: Activity End Month: Activity Emission Pollutant VOC 	ormation & Tim ero rea(s): NOT IN A Taxiway A Should otion: ncrease F-16 armi ement; install taxiv ate 1 2025 te False 12 2025 ons: Total Emission 0.07058 0.00108	A REGULATOR' der Pavement ing positions fro way and parking way and parking s <u>5</u> 52 9	Y AREA om 4 to 6: Remove de g spot markings; cons <u>Pollutant</u> PM 2.5 Pb	truct EOR crew shelter. Total Emissions (TON 0.016865

48 **3.1 Site Grading Phase**

3.1.1 Site Grading Phase Timeline Assumptions 1 2 3 - Phase Start Date 4 Start Month: 1 5 Start Quarter: 1 2025 Start Year: 6 7 8 - Phase Duration Number of Month: 1 9 Number of Days: 0 10 11 3.1.2 Site Grading Phase Assumptions 12 13 14 - General Site Grading Information 277582 15 Area of Site to be Graded (ft²): Amount of Material to be Hauled On-Site (yd³): 16 0 Amount of Material to be Hauled Off-Site (yd³): 17 0 18 - Site Grading Default Settings 19 Default Settings Used: Yes 20 Average Day(s) worked per week: 5 (default) 21 22 23 - Construction Exhaust (default) **Equipment Name** Number Of **Hours Per Day** Equipment Graders Composite 1 8 Other Construction Equipment Composite 1 8 Rubber Tired Dozers Composite 1 8 Tractors/Loaders/Backhoes Composite 2 7 24 25 - Vehicle Exhaust 26 Average Hauling Truck Capacity (yd³): 20 (default) 27 Average Hauling Truck Round Trip Commute (mile): 20 (default) 28 29 - Vehicle Exhaust Vehicle Mixture (%) LDGV LDGT HDGV LDDV LDDT **HDDV** MC POVs 0 0 0 100.00 0 0 0 30 - Worker Trips 31 Average Worker Round Trip Commute (mile): 20 (default) 32 33 - Worker Trips Vehicle Mixture (%) 34 LDGV LDGT **HDGV** LDDV LDDT HDDV MC POVs 50.00 50.00 0 0 0 0 0 35 3.1.3 Site Grading Phase Emission Factor(s) 36 37 38 Construction Exhaust Emission Factors (lb/hour) (default) **Graders Composite** PM 2.5 VOC SO_x NO_x CO **PM 10** CH₄ CO₂e Emission Factors 0.0676 0.0014 0.3314 0.5695 0.0147 0.0147 0.0061 132.89 **Other Construction Equipment Composite** CO PM 10 PM 2.5 CH₄ CO₂e VOC SO_x NO_x Emission Factors 0.0442 0.0012 0.2021 0.3473 0.0068 0.0068 0.0039 122.60 **Rubber Tired Dozers Composite**

	VOC	SOx	NOx	CO	PM 10	PM 2.5	CH₄	CO ₂ e
Emission Factors	0.1671	0.0024	1.0824	0.6620	0.0418	0.0418	0.0150	239.45
Tractors/Loaders/	Backhoes	Composit	te					
	VOC	SOx	NOx	CO	PM 10	PM 2.5	CH₄	CO ₂ e
Emission Factors	0.0335	0.0007	0.1857	0.3586	0.0058	0.0058	0.0030	66.872

1 2

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

	VOC	SOx	NOx	CO	PM 10	PM 2.5	Pb	NH ₃	CO ₂ e
LDGV	000.309	000.002	000.239	003.421	000.007	000.006		000.023	00318.896
LDGT	000.374	000.003	000.418	004.700	000.009	800.000		000.024	00411.188
HDGV	000.696	000.005	001.076	015.187	000.021	000.019		000.044	00758.535
LDDV	000.115	000.003	000.139	002.492	000.004	000.004		800.000	00309.094
LDDT	000.250	000.004	000.394	004.238	000.007	000.006		800.000	00438.938
HDDV	000.572	000.013	005.669	001.917	000.170	000.156		000.030	01506.304
MC	002.734	000.003	000.845	013.302	000.027	000.023		000.055	00396.858

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13 14

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3.1.4 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) 11
 - WD: Number of Total Work Days (days)
 - 2000: Conversion Factor pounds to tons

15 - Construction Exhaust Emissions per Phase

CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000 16

- 18 CEEPOL: Construction Exhaust Emissions (TONs)
- NE: Number of Equipment 19
- WD: Number of Total Work Days (days) 20
- 21 H: Hours Worked per Day (hours)
- EFPOL: Emission Factor for Pollutant (lb/hour) 22
- 2000: Conversion Factor pounds to tons 23

25 - Vehicle Exhaust Emissions per Phase

- VMT_{VE} = (HA_{OnSite} + HA_{OffSite}) * (1 / HC) * HT 26
- 27 VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles) 28
- 29 HA_{OnSite}: Amount of Material to be Hauled On-Site (yd³)
- 30 HA_{OffSite}: Amount of Material to be Hauled Off-Site (yd³)
- HC: Average Hauling Truck Capacity (yd³) 31
- 32 (1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd³) 33
 - HT: Average Hauling Truck Round Trip Commute (mile/trip)
- 34 V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000 35
- 36
- VPOL: Vehicle Emissions (TONs) 37
- VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles) 38
- 0.002205: Conversion Factor grams to pounds 39
- EF_{POL}: Emission Factor for Pollutant (grams/mile) 40
- VM: Vehicle Exhaust On Road Vehicle Mixture (%) 41
- 2000: Conversion Factor pounds to tons 42

1										
2	- Worker Trips Emissions per Phase									
3	VMT _{WT} = WD * WT * 1.25 * NE									
4										
5	VMTwr: Worker Trips Vehicle Miles Travel (miles)									
6	WD: Number of Total Work Days (days)									
7	WT: Average Worker Round Trip Commute (mile)									
8	1.25: Conversion Factor Number of Construction Equipment	to Number of Works								
9	NE: Number of Construction Equipment									
10										
11	V _{POL} = (VMT _{WT} * 0.002205 * EF _{POL} * VM) / 2000									
12										
13	VPOL: Vehicle Emissions (TONs)									
14	VMTwr: Worker Trips Vehicle Miles Travel (miles)									
15	0.002205: Conversion Factor grams to pounds									
16	EF _{POL} : Emission Factor for Pollutant (grams/mile)									
17	VM: Worker Trips On Road Vehicle Mixture (%)									
18	2000: Conversion Factor pounds to tons									
19										
20	3.2 Paving Phase									
21										
22	3.2.1 Paving Phase Timeline Assumptions									
23										
24	- Phase Start Date									
25	Start Month: 2									
26	Start Quarter: 1									
27	Start Year: 2025									
28										
29	- Phase Duration									
30	Number of Month: 2									
31	Number of Days: 0									
32										
33	3.2.2 Paving Phase Assumptions									
34	Concret Deving Information									
35	- General Paving Information									
36 37	Paving Area (ft²): 27582									
38	- Paving Default Settings									
39	Default Settings Used: Yes									
40	Average Day(s) worked per week: 5 (default)									
41										
42	- Construction Exhaust (default)									
	Equipment Name	Number Of	Hours Per Day							
		Equipment	-							
	Cement and Mortar Mixers Composite	4	6							
	Pavers Composite	1	7							
	Paving Equipment Composite	1	8							
	Rollers Composite	1	7							
	Tractors/Loaders/Backhoes Composite	1	7							
43	Malala Falance									
44	- Vehicle Exhaust	20 (default)								
45 46	Average Hauling Truck Round Trip Commute (mile):	20 (default)								
40 47	- Vehicle Exhaust Vehicle Mixture (%)									
	LDGV LDGT HDGV LDDV	LDDT HD	DV MC							

POVs	0	0	0	0	0	100.00	0

- Worker Trips

- Average Worker Round Trip Commute (mile): 20 (default)
- Worker Trips Vehicle Mixture (%)

		IX(UIC (70)					
	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

6 7 8

9

1 2

3

4

5

3.2.3 Paving Phase Emission Factor(s)

0.

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

Graders Composi	Graders Composite							
	VOC	SOx	NOx	СО	PM 10	PM 2.5	CH₄	CO ₂ e
Emission Factors	0.0676	0.0014	0.3314	0.5695	0.0147	0.0147	0.0061	132.89
Other Construction	n Equipm	ent Comp	osite					
	VOC	SOx	NOx	СО	PM 10	PM 2.5	CH₄	CO ₂ e
Emission Factors	0.0442	0.0012	0.2021	0.3473	0.0068	0.0068	0.0039	122.60
Rubber Tired Doz	ers Compo	osite						
	VOC	SOx	NOx	СО	PM 10	PM 2.5	CH₄	CO ₂ e
Emission Factors	0.1671	0.0024	1.0824	0.6620	0.0418	0.0418	0.0150	239.45
Tractors/Loaders/Backhoes Composite								
	VOC	SOx	NOx	CO	PM 10	PM 2.5	CH ₄	CO ₂ e
Emission Factors	0.0335	0.0007	0.1857	0.3586	0.0058	0.0058	0.0030	66.872

10 11

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

10111010					le (graine	///////////////////////////////////////			
	VOC	SOx	NOx	CO	PM 10	PM 2.5	Pb	NH ₃	CO ₂ e
LDGV	000.309	000.002	000.239	003.421	000.007	000.006		000.023	00318.896
LDGT	000.374	000.003	000.418	004.700	000.009	800.000		000.024	00411.188
HDGV	000.696	000.005	001.076	015.187	000.021	000.019		000.044	00758.535
LDDV	000.115	000.003	000.139	002.492	000.004	000.004		800.000	00309.094
LDDT	000.250	000.004	000.394	004.238	000.007	000.006		800.000	00438.938
HDDV	000.572	000.013	005.669	001.917	000.170	000.156		000.030	01506.304
MC	002.734	000.003	000.845	013.302	000.027	000.023		000.055	00396.858

12

13 **3.2.4 Paving Phase Formula(s)**

14

15 - Construction Exhaust Emissions per Phase

- 16 CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000
- 17 18
- CEEPOL: Construction Exhaust Emissions (TONs)
- 19 NE: Number of Equipment
- 20 WD: Number of Total Work Days (days)
- 21 H: Hours Worked per Day (hours)
- 22 EF_{POL}: Emission Factor for Pollutant (lb/hour)
 - 2000: Conversion Factor pounds to tons
- 23 24

25 - Vehicle Exhaust Emissions per Phase

26 VMT_{VE} = PA * 0.25 * (1 / 27) * (1 / HC) * HT

- 27
 28 VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
- 29 PA: Paving Area (ft²)
- 30 0.25: Thickness of Paving Area (ft)
- 31 (1 / 27): Conversion Factor cubic feet to cubic yards (1 yd³ / 27 ft³)
- 32 HC: Average Hauling Truck Capacity (yd³)

1 2	(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd ³) HT: Average Hauling Truck Round Trip Commute (mile/trip)
3 4	V _{POL} = (VMT _{VE} * 0.002205 * EF _{POL} * VM) / 2000
5 6 7 8 9 10	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
12 13 14	- Worker Trips Emissions per Phase VMT _{WT} = WD * WT * 1.25 * NE
15 16 17 18 19 20 21	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
22 23	V _{POL} = (VMT _{WT} * 0.002205 * EF _{POL} * VM) / 2000
24 25 26 27 28 29	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 31 32	- Off-Gassing Emissions per Phase VOC _P = (2.62 * PA) / 43560
33 34 35 36 37 38	VOC _P : Paving VOC Emissions (TONs) 2.62: Emission Factor (Ib/acre) PA: Paving Area (ft ²) 43560: Conversion Factor square feet to acre (43560 ft2 / acre) ² / acre)
39 10	4. Construction / Demolition
11 12	4.1 General Information & Timeline Assumptions
13 14	- Activity Location
15 16	County: Otero Regulatory Area(s): NOT IN A REGULATORY AREA
17 18 19	- Activity Title: EOR B Parking Pavement and Demo
50 51 52 53	 Activity Description: Increase F-16 arming positions from 8 to 12: Remove degraded pavement; add new and additional pavement; install taxiway and parking spot markings; construct EOR crew shelter.
54 55	- Activity Start Date Start Month: 1

1	Start Month:	2025						
2		4.						
3 4	- Activity End Da Indefinite:	False						
4 5	End Month:	12						
6	End Month:	2025						
7		2020						
8	- Activity Emissi	ons:						
	Pollutant		missions (T	ONs)	Pol	lutant 1	Fotal Emissi	ions (TONs)
	VOC		0.076659		PM 2.	5	0.018	8182
	SOx		0.001083		Pb		0.000	
	NOx		0.403657		NH ₃		0.000	
	CO		0.503822		CO ₂ e		107	7.2
9	PM 10		2.120373					
 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 	 Phase Start Data Start Month: Start Quarter Start Year: Phase Duration Number of M Number of D 4.1.2 Site Grad General Site Grad General Site Grad General Site Grad Site Grading De Default Settin Average Day Construction E 	2 r: 1 2025 lonth: 1 ays: 0 ling Phas rading Infe to be Grae laterial to laterial to laterial to laterial to efault Sett ngs Used (s) worke	ormation ded (ft ²): be Hauled be Hauled tings : d per weeks	On-Site (yd ³ Off-Site (yd ³ Yes				
34			ipment Nan	ne		Number		urs Per Day
	Ore days O	- :4 -				Equipmo	ent	0
	Graders Compos		nont Comm	oito		1		8
	Other Construct			sile		1		8
	Rubber Tired Do Tractors/Loaders			2		2		8 7
35	Tradiora/Luauers			,		۷.		1
36	- Vehicle Exhaus	st						
37	Average Hau	-	k Capacity	(vd³):	20 (de	fault)		
38	Average Hau					20 (default)		
39	U	U		•	. /	、 /		
40	- Vehicle Exhaus	<u>st Vehicl</u> e	Mixture (%)					
		.DGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
	POVs	0	0	0	0	0	100.00	0
/1								

- Worker Trips

1

2

3

4

5

6 7 8 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 Site Grading Phase Emission Factor(s)

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

Graders Composite

Graders Composi	ie							
	VOC	SOx	NOx	со	PM 10	PM 2.5	CH₄	CO ₂ e
Emission Factors	0.0676	0.0014	0.3314	0.5695	0.0147	0.0147	0.0061	132.89
Other Construction	n Equipm	ent Comp	osite					
	VOC	SOx	NOx	со	PM 10	PM 2.5	CH₄	CO ₂ e
Emission Factors	0.0442	0.0012	0.2021	0.3473	0.0068	0.0068	0.0039	122.60
Rubber Tired Doz	ers Compo	osite						
	VOC	SOx	NOx	со	PM 10	PM 2.5	CH₄	CO ₂ e
Emission Factors	0.1671	0.0024	1.0824	0.6620	0.0418	0.0418	0.0150	239.45
Tractors/Loaders/Backhoes Composite								
	VOC	SOx	NOx	со	PM 10	PM 2.5	CH₄	CO ₂ e
Emission Factors	0.0335	0.0007	0.1857	0.3586	0.0058	0.0058	0.0030	66.872

9 10

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

	VOC	SOx	NOx	CO	PM 10	PM 2.5	Pb	NH ₃	CO ₂ e
LDGV	000.309	000.002	000.239	003.421	000.007	000.006		000.023	00318.896
LDGT	000.374	000.003	000.418	004.700	000.009	800.000		000.024	00411.188
HDGV	000.696	000.005	001.076	015.187	000.021	000.019		000.044	00758.535
LDDV	000.115	000.003	000.139	002.492	000.004	000.004		800.000	00309.094
LDDT	000.250	000.004	000.394	004.238	000.007	000.006		800.000	00438.938
HDDV	000.572	000.013	005.669	001.917	000.170	000.156		000.030	01506.304
MC	002.734	000.003	000.845	013.302	000.027	000.023		000.055	00396.858

11 12 13

16

18

4.1.4 Site Grading Phase Formula(s)

14 - Fugitive Dust Emissions per Phase

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

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

21 22

23 - Construction Exhaust Emissions per Phase

- 24 CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000
- 25
- CEEPOL: Construction Exhaust Emissions (TONs)
- 26 CEE_{POL}: Construction Exha
 27 NE: Number of Equipment
- 28 WD: Number of Total Work Days (days)
- 29 H: Hours Worked per Day (hours)
- 30 EF_{POL}: Emission Factor for Pollutant (lb/hour)
- 31 2000: Conversion Factor pounds to tons
- 32
- 33 Vehicle Exhaust Emissions per Phase

```
VMT<sub>VE</sub> = (HA<sub>OnSite</sub> + HA<sub>OffSite</sub>) * (1 / HC) * HT
 1
 2
 3
           VMT<sub>VE</sub>: Vehicle Exhaust Vehicle Miles Travel (miles)
 4
           HA<sub>OnSite</sub>: Amount of Material to be Hauled On-Site (yd<sup>3</sup>)
           HAoffsite: Amount of Material to be Hauled Off-Site (vd<sup>3</sup>)
 5
          HC: Average Hauling Truck Capacity (yd<sup>3</sup>)
 6
           (1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd<sup>3</sup>)
 7
           HT: Average Hauling Truck Round Trip Commute (mile/trip)
 8
 9
      VPOL = (VMTVE * 0.002205 * EFPOL * VM) / 2000
10
11
           V<sub>POL</sub>: Vehicle Emissions (TONs)
12
           VMT<sub>VE</sub>: Vehicle Exhaust Vehicle Miles Travel (miles)
13
          0.002205: Conversion Factor grams to pounds
14
          EF<sub>POL</sub>: Emission Factor for Pollutant (grams/mile)
15
          VM: Vehicle Exhaust On Road Vehicle Mixture (%)
16
17
           2000: Conversion Factor pounds to tons
18
19
      - Worker Trips Emissions per Phase
20
      VMT<sub>WT</sub> = WD * WT * 1.25 * NE
21
22
           VMT<sub>WT</sub>: Worker Trips Vehicle Miles Travel (miles)
           WD: Number of Total Work Days (days)
23
          WT: Average Worker Round Trip Commute (mile)
24
           1.25: Conversion Factor Number of Construction Equipment to Number of Works
25
          NE: Number of Construction Equipment
26
27
      VPOL = (VMTwt * 0.002205 * EFPOL * VM) / 2000
28
29
          V<sub>POL</sub>: Vehicle Emissions (TONs)
30
          VMT<sub>WT</sub>: Worker Trips Vehicle Miles Travel (miles)
31
          0.002205: Conversion Factor grams to pounds
32
           EF<sub>POL</sub>: Emission Factor for Pollutant (grams/mile)
33
34
           VM: Worker Trips On Road Vehicle Mixture (%)
          2000: Conversion Factor pounds to tons
35
36
      4.2 Paving Phase
37
38
      4.2.1 Paving Phase Timeline Assumptions
39
40
      - Phase Start Date
41
          Start Month: 3
42
43
           Start Quarter: 1
          Start Year:
                           2025
44
45
46
      - Phase Duration
           Number of Month: 2
47
           Number of Days: 0
48
49
      4.2.2 Paving Phase Assumptions
50
51
      - General Paving Information
52
          Paving Area (ft<sup>2</sup>): 172729
53
54
      - Paving Default Settings
55
          Default Settings Used:
56
                                                 Yes
```

Average Day(s) worked per week: 5 (default) 1 2 3 - Construction Exhaust (default) **Equipment Name** Number Of Hours Per Day Equipment Cement and Mortar Mixers Composite 4 6 Pavers Composite 1 7 Paving Equipment Composite 2 6 Rollers Composite 1 7 4 5 - Vehicle Exhaust 6 Average Hauling Truck Round Trip Commute (mile): 20 (default) 7 8 - Vehicle Exhaust Vehicle Mixture (%) **HDGV** LDDV LDDT LDGV LDGT **HDDV** MC POVs 0 0 0 0 0 100.00 0 9 10 - Worker Trips Average Worker Round Trip Commute (mile): 20 (default) 11 12 - Worker Trips Vehicle Mixture (%) 13 HDGV LDDV LDDT LDGV LDGT HDDV MC POVs 50.00 50.00 0 0 0 0 0 14 4.2.3 Paving Phase Emission Factor(s) 15 16 - Construction Exhaust Emission Factors (lb/hour) (default) 17 **Graders Composite** voc SOx NOx CO **PM 10** PM 2.5 CH₄ CO₂e Emission Factors 0.0676 0.0014 0.3314 0.5695 0.0147 0.0147 0.0061 132.89 Other Construction Equipment Composite CO₂e 122.60

		••••••••••••••••••••••••••••••••••••••							
	VOC	SOx	NOx	CO	PM 10	PM 2.5	CH₄		
Emission Factors	0.0442	0.0012	0.2021	0.3473	0.0068	0.0068	0.0039		
Rubber Tired Dozers Composite									
	VOC	SOx	NOx	СО	PM 10	PM 2.5	CH₄		
Emission Factors	0.1671	0.0024	1.0824	0.6620	0.0418	0.0418	0.0150		
Tractors/Loaders/	Backhoes	Composit	te						
	VOC	SOx	NOx	СО	PM 10	PM 2.5	CH₄		
Emission Factors	0.0335	0.0007	0.1857	0.3586	0.0058	0.0058	0.0030		

18 19

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

	VOC	SOx	NOx	CO	PM 10	PM 2.5	Pb	NH3	CO ₂ e
LDGV	000.309	000.002	000.239	003.421	000.007	000.006		000.023	00318.896
LDGT	000.374	000.003	000.418	004.700	000.009	800.000		000.024	00411.188
HDGV	000.696	000.005	001.076	015.187	000.021	000.019		000.044	00758.535
LDDV	000.115	000.003	000.139	002.492	000.004	000.004		800.000	00309.094
LDDT	000.250	000.004	000.394	004.238	000.007	000.006		800.000	00438.938
HDDV	000.572	000.013	005.669	001.917	000.170	000.156		000.030	01506.304
MC	002.734	000.003	000.845	013.302	000.027	000.023		000.055	00396.858

20 21

4.2.4 Paving Phase Formula(s)

22 23 - Construction Exhaust Emissions per Phase

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

25

CO2e 239.45

CO₂e 66.872

1	CEEPOL: Construction Exhaust Emissions (TONs)
2	NE: Number of Equipment
3	WD: Number of Total Work Days (days)
4	H: Hours Worked per Day (hours)
5	EF _{POL} : Emission Factor for Pollutant (lb/hour)
6	2000: Conversion Factor pounds to tons
7	
8	- Vehicle Exhaust Emissions per Phase
9	VMT _{VE} = PA * 0.25 * (1 / 27) * (1 / HC) * HT
10	
11	VMTve: Vehicle Exhaust Vehicle Miles Travel (miles)
12	PA: Paving Area (ft ²)
13	0.25: Thickness of Paving Area (ft)
14	(1 / 27): Conversion Factor cubic feet to cubic yards (1 yd ³ / 27 ft ³)
15	HC: Average Hauling Truck Capacity (yd ³)
16	(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd ³)
17	HT: Average Hauling Truck Round Trip Commute (mile/trip)
18	
19	V _{POL} = (VMT _{VE} * 0.002205 * EF _{POL} * VM) / 2000
20	
20 21	V _{POL} : Vehicle Emissions (TONs)
22	VMTve: Vehicle Exhaust Vehicle Miles Travel (miles)
23	0.002205: Conversion Factor grams to pounds
24	EF _{POL} : Emission Factor for Pollutant (grams/mile)
25	VM: Vehicle Exhaust On Road Vehicle Mixture (%)
26	2000: Conversion Factor pounds to tons
27	
28	- Worker Trips Emissions per Phase
29	VMT _{WT} = WD * WT * 1.25 * NE
30	
31	VMTwr: Worker Trips Vehicle Miles Travel (miles)
32	WD: Number of Total Work Days (days)
33	WT: Average Worker Round Trip Commute (mile)
34	1.25: Conversion Factor Number of Construction Equipment to Number of Works
35	NE: Number of Construction Equipment
36	
37	V _{POL} = (VMT _{WT} * 0.002205 * EF _{POL} * VM) / 2000
38	
39	V _{POL} : Vehicle Emissions (TONs)
40	VMT _{VE} : Worker Trips Vehicle Miles Travel (miles)
41	0.002205: Conversion Factor grams to pounds
42	EF_{POL} : Emission Factor for Pollutant (grams/mile)
43	VM: Worker Trips On Road Vehicle Mixture (%)
44	2000: Conversion Factor pounds to tons
45	Off One size England and Direct
46	- Off-Gassing Emissions per Phase
47	$VOC_P = (2.62 * PA) / 43560$
48	
49	VOC _P : Paving VOC Emissions (TONs)
50	2.62: Emission Factor (lb/acre)
51	PA: Paving Area (ft ²)
52	43560: Conversion Factor square feet to acre (43560 ft2 / acre) ² / acre)
53	
53 54	
	E Construction / Demolition
55	5. Construction / Demolition

1				
2	5.1 General In	formation & Timeline Assu	umptions	
3 4	- Activity Location	on		
5	County: Of			
6		Area(s): NOT IN A REGULAT	ORY AREA	
7 8 9	- Activity Title:	EOR B Shoulder Pavement		
10	- Activity Descri	ption:		
11 12 13		6 arming positions from 8 to 1 stall taxiway and parking spot i		ment; add new and additional ew shelter.
14	- Activity Start D	ate		
15	Start Month:			
16 17	Start Month:	2025		
17	- Activity End Da	ate		
19	Indefinite:	False		
20	End Month:	12		
21	End Month:	2025		
22 23	- Activity Emissi	ons:		
20	Pollutant	Total Emissions (TONs)	Pollutant	Total Emissions (TONs)
	VOC	0.063275	PM 2.5	0.015220
	SOx	0.000947	Pb	0.000000
	NOx	0.339014	NH ₃	0.000294
	CO	0.460727	CO ₂ e	92.8
24	CO PM 10	0.460727 0.433430	CO ₂ e	92.8
25 26 27 28 29 30 31	PM 10 5.1 Site Gradin 5.1.1 Site Grad - Phase Start Da Start Month: Start Quarte	0.433430 ng Phase ding Phase Timeline Assu te 2 r: 1		92.8
25 26 27 28 29 30 31 32	PM 10 5.1 Site Gradin 5.1.1 Site Grad - Phase Start Da Start Month:	0.433430 ng Phase ding Phase Timeline Assu te 2		92.8
25 26 27 28 29 30 31	PM 10 5.1 Site Gradin 5.1.1 Site Grad - Phase Start Da Start Month: Start Quarte	0.433430 ng Phase ting Phase Timeline Assur te 2 r: 1 2025 n Ionth: 1		92.8
25 26 27 28 29 30 31 32 33 34 35 36 37 38 39	 PM 10 5.1 Site Gradin 5.1.1 Site Gradin Phase Start Da Start Month: Start Quarte Start Year: Phase Duration Number of M Number of D 5.1.2 Site Grad 	0.433430 ng Phase ding Phase Timeline Assurt te 2 r: 1 2025 n lonth: 1 bays: 0 ding Phase Assumptions		92.8
25 26 27 28 29 30 31 32 33 34 35 36 37 38	 PM 10 5.1 Site Gradin 5.1.1 Site Gradin 5.1.1 Site Gradin Start Gradin Start Month: Start Quarte Start Year: Phase Duration Number of N Number of D 5.1.2 Site Grading General Site Grading General Site Grading General Site Grading Area of Site Amount of N 	0.433430 ng Phase ding Phase Timeline Assurt 2 r: 1 2025 n Ionth: 1 Days: 0	42038 (yd³): 0	92.8
25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43	 PM 10 5.1 Site Gradin 5.1.1 Site Gradin 5.1.1 Site Gradin 5.1.1 Site Gradin Start Month: Start Quarte Start Year: Phase Duration Number of M Number of D 5.1.2 Site Grading Area of Site Amount of M Amount of M Site Grading D Default Setti 	0.433430 ng Phase ling Phase Timeline Assur- te 2 r: 1 2025 n lonth: 1 bays: 0 ding Phase Assumptions rading Information to be Graded (ft ²): laterial to be Hauled On-Site laterial to be Hauled Off-Site laterial to be Hauled Off-Site	42038 (yd ³): 0 (yd ³): 0	92.8

		Equipn	nent Name	•			nber Of ipment	Hou	rs Per Day
	s Composite						1		6
Other C	onstruction	Equipmen	t Composi	te			1		8
	Tired Doze						1		6
Tractors	s/Loaders/B	ackhoes C	omposite				1		7
Aver Aver	e Exhaust age Haulin age Haulin	g Truck R	ound Trip			default) 20 (defau	ult)		
venicie	Exhaust V		DGT	HDGV	LDDV	LDD	אר בי	HDDV	MC
POVs	0		0	0	0	0		00.00	0
Worker	· Trips Vehi						-		
		21/ 1	DGT	HDGV				INNV	МС
.1.3 Si	ite Gradin	00 t g Phase I		. ,				HDDV 0	0 0
5.1.3 Si Constru	50. ite Gradin uction Exh	00 ह g Phase I aust Emis	50.00 Emission	0 Factor(s)	0	0			
Constru	50. ite Gradin	00 ह g Phase I aust Emis	50.00 Emission	0 Factor(s)	0	0	PM 2.5		0
5.1.3 Si Constru Graders	50. ite Gradin uction Exh	00 5 g Phase I aust Emis te	50.00 Emission sion Facto	0 Factor(s) ors (lb/hou	0 r) (default)		0	0 CO26
5.1.3 Si Constru Graders Emissio	50. ite Gradin uction Exh s Composi	00 5 g Phase I aust Emis te VOC 0.0676	50.00 Emission sion Facto SO _x 0.0014	0 Factor(s) ors (lb/hou NO _x 0.3314	0 r) (default CO	0) PM 10	PM 2.5	0 CH4	0 CO26
5.1.3 Si Constru Graders Emissio	50. ite Gradin uction Exh s Composi	00 5 g Phase I aust Emis te VOC 0.0676	50.00 Emission sion Facto SO _x 0.0014	0 Factor(s) ors (lb/hou NO _x 0.3314	0 r) (default CO	0) PM 10	PM 2.5	0 CH4	0 CO26 132.8
5.1.3 Si Constru Graders Emissio Other C	50. ite Gradin uction Exh s Composi	00 E g Phase I aust Emis te VOC 0.0676 on Equipm	50.00 Emission sion Facto SO _x 0.0014 ent Comp	0 Factor(s) ors (lb/hou NO _x 0.3314 osite	0 r) (default CO 0.5695) PM 10 0.0147	PM 2.5 0.0147	0 CH4 0.0061	0 CO26 132.8 CO26
5.1.3 Si Constru Graders Emissio Other C Emissio	50. ite Gradin uction Exh s Composi on Factors Constructio	00 5 g Phase I aust Emis te VOC 0.0676 on Equipm VOC 0.0442	50.00 Emission sion Facto SO _x 0.0014 ent Comp SO _x 0.0012	0 Factor(s) ors (lb/hou NO _x 0.3314 osite NO _x	0 r) (default CO 0.5695 CO	0 0.0147 0.0147	PM 2.5 0.0147 PM 2.5	0 CH4 0.0061	0 CO26 132.8 CO26
5.1.3 Si Constru Graders Emissio Other C Emissio	50. ite Gradiny uction Exh s Composi on Factors Construction on Factors	00 5 g Phase I aust Emis te VOC 0.0676 on Equipm VOC 0.0442	50.00 Emission sion Facto SO _x 0.0014 ent Comp SO _x 0.0012	0 Factor(s) ors (lb/hou NO _x 0.3314 osite NO _x	0 r) (default CO 0.5695 CO	0 0.0147 0.0147	PM 2.5 0.0147 PM 2.5	0 CH4 0.0061	0 CO26 132.8 CO26 122.6
5.1.3 Si Constru Graders Emissio Other C Emissio Rubber Emissio	50. ite Grading uction Exh s Composi on Factors Construction on Factors Tired Doze on Factors	00 5 g Phase I aust Emis te VOC 0.0676 n Equipm VOC 0.0442 ers Compo VOC 0.1671	50.00 Emission sion Facto SOx 0.0014 ent Comp SOx 0.0012 osite SOx 0.0024	0 Factor(s) ors (lb/hou NO _x 0.3314 osite NO _x 0.2021 NO _x 1.0824	0 r) (default CO 0.5695 CO 0.3473	 0 PM 10 0.0147 PM 10 0.0068 	PM 2.5 0.0147 PM 2.5 0.0068	0 CH4 0.0061 CH4 0.0039	0 CO26 132.8 CO26 122.6 CO26
5.1.3 Si Constru Graders Emissio Other C Emissio Rubber Emissio	50. ite Gradin uction Exh s Composi on Factors Constructio on Factors	00 5 g Phase I aust Emis te VOC 0.0676 n Equipm VOC 0.0442 ers Compo VOC 0.1671	50.00 Emission sion Facto SOx 0.0014 ent Comp SOx 0.0012 osite SOx 0.0024	0 Factor(s) ors (lb/hou NO _x 0.3314 osite NO _x 0.2021 NO _x 1.0824	0 r) (default CO 0.5695 CO 0.3473	 0 PM 10 0.0147 PM 10 0.0068 PM 10 	PM 2.5 0.0147 PM 2.5 0.0068 PM 2.5	0 CH4 0.0061 CH4 0.0039 CH4	0 CO26 132.8 CO26 122.6 CO26
5.1.3 Si Constru Graders Emissio Other C Emissio Rubber Emissio Tractor	50. ite Grading uction Exh s Composi on Factors Construction on Factors Tired Doze on Factors s'Loaders/	00 5 g Phase I aust Emis te VOC 0.0676 on Equipm VOC 0.0442 ers Compo VOC 0.1671 Backhoes VOC	50.00 Emission sion Factor SOx 0.0014 ent Comp SOx 0.0012 osite SOx 0.0024 Composi SOx	0 Factor(s) ors (lb/hou NOx 0.3314 osite NOx 0.2021 NOx 1.0824 te NOx	0 r) (default CO 0.5695 CO 0.3473 CO 0.6620 CO	 0 PM 10 0.0147 PM 10 0.0068 PM 10 	PM 2.5 0.0147 PM 2.5 0.0068 PM 2.5 0.0418 PM 2.5	0 CH4 0.0061 CH4 0.0039 CH4 0.0150 CH4	0 CO2e 132.8 CO2e 122.6 CO2e 239.4 CO2e
5.1.3 Si Constru Graders Emissio Other C Emissio Rubber Emissio Tractor	50. ite Grading uction Exh s Composi on Factors Construction on Factors Tired Doze on Factors	00 5 g Phase I aust Emis te VOC 0.0676 on Equipm VOC 0.0442 ers Compo VOC 0.1671 Backhoes	50.00 Emission sion Facto SOx 0.0014 ent Comp SOx 0.0012 osite SOx 0.0024 Composi	0 Factor(s) ors (lb/hou NOx 0.3314 osite NOx 0.2021 NOx 1.0824 te	0 r) (default CO 0.5695 CO 0.3473 CO 0.6620	0 0.0147 0.0147 0.0068 PM 10 0.0418	PM 2.5 0.0147 PM 2.5 0.0068 PM 2.5 0.0418	0 CH4 0.0061 CH4 0.0039 CH4 0.0150	0 CO2e 132.8 CO2e 122.6 CO2e 239.4 CO2e
5.1.3 Si Constru Graders Emissio Other C Emissio Rubber Emissio Tractor Emissio	50. ite Grading uction Exh s Composi on Factors Construction on Factors Tired Doze on Factors s'Loaders/	00 5 g Phase I aust Emis te VOC 0.0676 on Equipm VOC 0.0442 ers Compo VOC 0.1671 Backhoes VOC 0.0335	50.00 Emission sion Factor SOx 0.0014 ent Comp SOx 0.0012 osite SOx 0.0024 Composi SOx 0.0007	0 Factor(s) ors (lb/hou NOx 0.3314 osite NOx 0.2021 NOx 1.0824 te NOx 0.1857	0 r) (default CO 0.5695 CO 0.3473 CO 0.6620 CO 0.3586	● 0 ● M 10 0.0147 ● M 10 0.0068 ● M 10 0.0418 ■ M 10 0.0418	PM 2.5 0.0147 PM 2.5 0.0068 PM 2.5 0.0418 PM 2.5	0 CH4 0.0061 CH4 0.0039 CH4 0.0150 CH4	0 CO2e 132.8 CO2e 122.6 CO2e 239.4 CO2e
5.1.3 Si Constru Graders Emissio Other C Emissio Rubber Emissio Tractor Emissio	50. ite Gradiny uction Exhi- s Composi on Factors Construction on Factors Tired Doze on Factors s/Loaders/ on Factors	00 5 g Phase I aust Emis te VOC 0.0676 on Equipm VOC 0.0442 ers Compo VOC 0.1671 Backhoes VOC 0.0335	50.00 Emission sion Factor SOx 0.0014 ent Comp SOx 0.0012 osite SOx 0.0024 Composi SOx 0.0007	0 Factor(s) ors (lb/hou NOx 0.3314 osite NOx 0.2021 NOx 1.0824 te NOx 0.1857	0 r) (default CO 0.5695 CO 0.3473 CO 0.6620 CO 0.3586	● 0 ● M 10 0.0147 ● M 10 0.0068 ● M 10 0.0418 ■ M 10 0.0418	PM 2.5 0.0147 PM 2.5 0.0068 PM 2.5 0.0418 PM 2.5	0 CH4 0.0061 CH4 0.0039 CH4 0.0150 CH4	0 CO26 132.8 CO26 122.6 CO26 239.4 CO26
5.1.3 Si Constru Graders Emissio Other C Emissio Rubber Emissio Tractor Emissio	50. ite Grading uction Exhi- s Composi on Factors Construction on Factors Tired Doze on Factors s/Loaders/ on Factors e Exhaust 8	00 € g Phase I aust Emis te VOC 0.0676 on Equipm VOC 0.0442 ers Compo VOC 0.1671 Backhoes VOC 0.0335	50.00 Emission sion Factor SOx 0.0014 ent Comp SOx 0.0012 osite SOx 0.0024 Composi SOx 0.0007 Frips Emis	0 Factor(s) ors (lb/hou NOx 0.3314 osite NOx 0.2021 NOx 1.0824 te NOx 0.1857 sion Factor	0 r) (default CO 0.5695 CO 0.3473 CO 0.6620 CO 0.3586 prs (grams	0 0.0147 0.0147 0.0068 PM 10 0.0418 PM 10 0.0058 /mile)	PM 2.5 0.0147 PM 2.5 0.0068 PM 2.5 0.0418 PM 2.5 0.0058	0 CH4 0.0061 CH4 0.0039 CH4 0.0150 CH4 0.0030	0 CO26 132.8 CO26 122.6 CO26 239.4 CO26 66.87 CO26
5.1.3 Si Constru Graders Emissio Other C Emissio Rubber Emissio Tractor Emissio	50. ite Grading uction Exh s Composi on Factors Construction on Factors 'Tired Doze on Factors s/Loaders/ on Factors e Exhaust & VOC	00 € g Phase I aust Emis te VOC 0.0676 on Equipm VOC 0.0442 ers Compo VOC 0.1671 Backhoes VOC 0.1671 Backhoes	50.00 Emission sion Factor SOx 0.0014 ent Comp SOx 0.0012 osite SOx 0.0024 Composi SOx 0.0007 Trips Emis NOx	0 Factor(s) ors (lb/hou NO _x 0.3314 osite NO _x 0.2021 NO _x 1.0824 te NO _x 0.1857 sion Factor CO 003.421	0 r) (default CO 0.5695 CO 0.3473 CO 0.6620 CO 0.3586 prs (grams PM 10 000.007	PM 10 0.0147 PM 10 0.0068 PM 10 0.0058 PM 10 0.0058 /mile) PM 2.5	PM 2.5 0.0147 PM 2.5 0.0068 PM 2.5 0.0418 PM 2.5 0.0058	0 CH4 0.0061 CH4 0.0039 CH4 0.0150 CH4 0.0030 CH4 0.0030	0 CO26 132.8 CO26 122.6 CO26 239.4 CO26 0 66.87 CO26 0 66.87
5.1.3 Si Constru Graders Emissio Other C Emissio Rubber Emissio Tractor Emissio Vehicle	50. ite Grading uction Exh s Composi on Factors construction on Factors rired Doze on Factors s/Loaders/ on Factors e Exhaust 8 VOC 000.309	00 € g Phase I aust Emis te VOC 0.0676 n Equipm VOC 0.0442 ers Compo VOC 0.1671 Backhoes VOC 0.1671 Backhoes VOC 0.0335	50.00 Emission sion Factor SOx 0.0014 ent Comp SOx 0.0012 osite SOx 0.0024 Composi SOx 0.0007 Frips Emis NOx 000.239	0 Factor(s) ors (lb/hou NOx 0.3314 osite NOx 0.2021 NOx 1.0824 te NOx 0.1857 sion Factor	0 r) (default CO 0.5695 CO 0.3473 CO 0.6620 CO 0.3586 prs (grams PM 10	0 PM 10 0.0147 PM 10 0.0068 PM 10 0.0418 PM 10 0.0058 /mile) PM 2.5 000.006	PM 2.5 0.0147 PM 2.5 0.0068 PM 2.5 0.0418 PM 2.5 0.0058	0 CH4 0.0061 CH4 0.0039 CH4 0.0150 CH4 0.0030 NH3 000.023	0 CO26 132.8 CO26 122.6 CO26 239.4 CO26 0 66.87
.1.3 Si Constru Graders Emissio Other C Emissio Rubber Emissio Tractor Emissio Vehicle	50. ite Grading uction Exh s Composi on Factors construction on Factors rired Doze on Factors s/Loaders/ on Factors e Exhaust 8 VOC 000.309 000.374	00 € g Phase I aust Emis te VOC 0.0676 on Equipm VOC 0.0442 ers Compo VOC 0.1671 Backhoes VOC 0.1671 Backhoes VOC 0.0335	50.00 Emission sion Factor SOx 0.0014 ent Comp SOx 0.0012 osite SOx 0.0024 Composi SOx 0.0027 Frips Emis NOx 000.239 000.418	0 Factor(s) ors (lb/hou NO _x 0.3314 osite NO _x 0.2021 NO _x 1.0824 te NO _x 0.1857 sion Factor CO 003.421 004.700	0 r) (default CO 0.5695 CO 0.3473 CO 0.6620 CO 0.3586 ors (grams PM 10 000.007 000.009	 0 PM 10 0.0147 PM 10 0.0068 PM 10 0.0418 PM 10 0.058 /mile) PM 2.5 000.006 000.008 	PM 2.5 0.0147 PM 2.5 0.0068 PM 2.5 0.0418 PM 2.5 0.0058 PM 2.5 0.0058	0 CH4 0.0061 CH4 0.0039 CH4 0.0150 CH4 0.0030 NH3 000.023 000.024	0 CO26 132.8 CO26 122.6 CO26 239.4 CO26 0 239.4 CO26 0 66.87 CO26 0 0318.88 00411.18

1011010													
	VOC	SOx	NOx	CO	PM 10	PM 2.5	Pb	NH ₃	CO ₂ e				
LDGV	000.309	000.002	000.239	003.421	000.007	000.006		000.023	00318.896				
LDGT	000.374	000.003	000.418	004.700	000.009	800.000		000.024	00411.188				
HDGV	000.696	000.005	001.076	015.187	000.021	000.019		000.044	00758.535				
LDDV	000.115	000.003	000.139	002.492	000.004	000.004		000.008	00309.094				
LDDT	000.250	000.004	000.394	004.238	000.007	000.006		800.000	00438.938				
HDDV	000.572	000.013	005.669	001.917	000.170	000.156		000.030	01506.304				
MC	002.734	000.003	000.845	013.302	000.027	000.023		000.055	00396.858				

5.1.4 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)

1	ACRE: Total acres (acres)
2	WD: Number of Total Work Days (days)
3	2000: Conversion Factor pounds to tons
4	
5	- Construction Exhaust Emissions per Phase
6	$CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$
7	
	CEE-ast Construction Exhaust Emissions (TONs)
8	CEE _{POL} : Construction Exhaust Emissions (TONs)
9	NE: Number of Equipment
10	WD: Number of Total Work Days (days)
11	H: Hours Worked per Day (hours)
12	EF _{POL} : Emission Factor for Pollutant (lb/hour)
13	2000: Conversion Factor pounds to tons
14	
15	- Vehicle Exhaust Emissions per Phase
16	VMT _{VE} = (HA _{OnSite} + HA _{OffSite}) * (1 / HC) * HT
17	
18	VMT _{VE} : Vehicle Exhaust Vehicle Miles Travel (miles)
19	HA _{OnSite} : Amount of Material to be Hauled On-Site (yd ³)
20	HA _{Offsite} : Amount of Material to be Hauled Off-Site (yd ³)
21	HC: Average Hauling Truck Capacity (yd ³)
22	(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd ³)
23	HT: Average Hauling Truck Round Trip Commute (mile/trip)
24	
25	V _{POL} = (VMT _{VE} * 0.002205 * EF _{POL} * VM) / 2000
26	
27	V _{POL} : Vehicle Emissions (TONs)
28	VMTve: Vehicle Exhaust Vehicle Miles Travel (miles)
29	0.002205: Conversion Factor grams to pounds
30	EF _{POL} : Emission Factor for Pollutant (grams/mile)
31	VM: Vehicle Exhaust On Road Vehicle Mixture (%)
32	2000: Conversion Factor pounds to tons
33	
34	- Worker Trips Emissions per Phase
35	VMT _{WT} = WD * WT * 1.25 * NE
36	
37	VMTwt: Worker Trips Vehicle Miles Travel (miles)
38	WD: Number of Total Work Days (days)
39	WT: Average Worker Round Trip Commute (mile)
40	1.25: Conversion Factor Number of Construction Equipment to Number of Works
41	NE: Number of Construction Equipment
42	
43	V _{POL} = (VMT _{WT} * 0.002205 * EF _{POL} * VM) / 2000
44	
45	V _{POL} : Vehicle Emissions (TONs)
46	VMT _{wT} : Worker Trips Vehicle Miles Travel (miles)
47	0.002205: Conversion Factor grams to pounds
48	EF_{POL} : Emission Factor for Pollutant (grams/mile)
49	VM: Worker Trips On Road Vehicle Mixture (%)
50	2000: Conversion Factor pounds to tons
51	
52	5.2 Paving Phase
53	
54	5.2.1 Paving Phase Timeline Assumptions
55	
56	- Phase Start Date

						nonomu			
Start Mo	onth	3							
Start Qu		1							
Start Ye		2025							
Phase Dur	ation								
Number	[.] of Mon	th: 2							
Number	of Day	s: 0							
5.2.2 Pavi	ng Pha	se Assun	nptions						
General Pa		formation 2): 42038							
•	•	•							
Paving De			、						
Default				es					
Average	a Day(S)	worked p	er week: a	(delauit)					
Construct	ion Exh		ult) nent Name			Nun	nber Of	Hours	Per Day
				•			ipment	nours	ST CT Day
Cement an		Mixers Co	omposite				4		6
Pavers Cor Paving Equ		Composito					<u>1</u> 1		7 8
Rollers Cor		Composite					1		7
Tractors/Lo		ackhoes C	omnosite				1		7
Vehicle Ex									
	LDO	GV L	.DGT	HDGV	LDDV	LDD		DDV	MC
POVs	0		0	0	0	0	10	00.00	0
•		r Round T	rip Comm	ute (mile):	20 (default	.)			
worker Ir	1	icle Mixtur		HDCV					MC
		GV L	.DĠT	HDGV	LDDV)T H	DDV	MC
POVs	1	GV L		HDGV 0	LDDV	LDC)T H	DDV 0	MC 0
POVs	LD (50.0	GV L 00 5	.DGT 50.00	0	-	-)T H	-	
POVs 5.2.3 Pavi	LD(50.0	GV L 00 5 se Emiss	DGT 50.00 ion Facto	0 or(s)	0	0	DT H	-	
POVs 5.2.3 Pavi Construct	ng Pha	GV L 00 5 se Emiss aust Emis	DGT 50.00 ion Facto	0 or(s)	0	0	DT H	-	
POVs 5.2.3 Pavi	ng Pha	3V L 00 5 se Emiss aust Emis te	DGT 50.00 ion Facto sion Facto	0 or(s) ors (lb/hou	0 r) (default)	0		0	0
POVs 5.2.3 Pavin Construct Graders C	LD(50.1 ng Pha ion Exhi omposi	3V L 00 5 se Emiss aust Emis te VOC	DGT 50.00 ion Facto sion Facto SO _x	0 or(s) ors (lb/hou NO _x	0 r) (default) CO	PM 10	PM 2.5	0 CH₄	0 CO ₂ e
POVs 5.2.3 Pavin Construct Graders C Emission F	LD(50.1	3V L 00 5 se Emiss aust Emis te VOC 0.0676	.DGT 50.00 ion Facto sion Facto SO _x 0.0014	0 or(s) ors (lb/hou <u>NO_x</u> 0.3314	0 r) (default)	0		0	0 CO ₂ e
POVs 5.2.3 Pavin Construct Graders C	LD(50.1	GV L 00 5 se Emiss aust Emis te VOC 0.0676 n Equipm	DGT 50.00 ion Facto sion Facto SO _x 0.0014 ent Comp	0 or(s) ors (lb/hou NO _x 0.3314 osite	0 r) (default) CO 0.5695	PM 10 0.0147	PM 2.5 0.0147	0 CH4 0.0061	0 CO2e 132.89
POVs 5.2.3 Pavin Constructi Graders C Emission F Other Con	LD(50.1 ion Exha omposi actors structio	GV L 00 5 se Emiss aust Emis te VOC 0.0676 on Equipm VOC	DGT 50.00 ion Facto sion Facto SO _x 0.0014 ent Comp SO _x	0 or(s) ors (lb/hou NO _x 0.3314 osite NO _x	0 r) (default) CO 0.5695 CO	PM 10 0.0147 PM 10	PM 2.5 0.0147 PM 2.5	0 CH₄ 0.0061 CH₄	0 CO2e 132.89 CO2e
POVs 5.2.3 Pavin Constructi Graders C Emission F Other Con Emission F	LD(50.1 ng Pha ion Exha omposi actors structio actors	3V L 00 5 se Emiss aust Emis aust Emis te VOC 0.0676 on Equipm VOC VOC 0.0442	DGT 50.00 ion Factor sion Factor SOx 0.0014 ent Comp SOx 0.0012	0 or(s) ors (lb/hou NO _x 0.3314 osite	0 r) (default) CO 0.5695	PM 10 0.0147	PM 2.5 0.0147	0 CH4 0.0061	0 CO₂e 132.89
POVs 5.2.3 Pavin Constructi Graders C Emission F Other Con	LD(50.1 ng Pha ion Exha omposi actors structio actors	3V L 00 5 se Emiss aust Emis aust Emis te VOC 0.0676 on Equipm VOC VOC 0.0442	DGT 50.00 ion Factor sion Factor SOx 0.0014 ent Comp SOx 0.0012	0 or(s) ors (lb/hou NO _x 0.3314 osite NO _x	0 r) (default) CO 0.5695 CO	PM 10 0.0147 PM 10	PM 2.5 0.0147 PM 2.5	0 CH₄ 0.0061 CH₄	0 CO2e 132.89 CO2e
POVs 5.2.3 Pavin Constructi Graders C Emission F Other Con Emission F	LDC 50.1 ng Pha ion Exhi omposi actors structio actors actors red Doze	3V L 00 5 se Emiss aust Emis aust Emis te VOC 0.0676 on Equipm VOC 0.0442 ers Compo	DGT 50.00 ion Factor sion Factor SOx 0.0014 ent Comp SOx 0.0012 psite	0 or(s) ors (lb/hou NO _x 0.3314 osite NO _x 0.2021	0 r) (default) CO 0.5695 CO 0.3473	PM 10 0.0147 PM 10 0.0068	PM 2.5 0.0147 PM 2.5 0.0068	0 CH4 0.0061 CH4 0.0039	0 CO₂e 132.89 CO₂e 122.60

Emission Factors

Tractors/Loaders/Backhoes Composite

VOC

0.0335

SOx

0.0007

NOx

0.1857

СО

0.3586

PM 10

0.0058

PM 2.5

0.0058

CH₄

0.0030

CO₂e

66.872

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

- Venicie	Exhaust 0			31011 1 4010	na (grama	///////////////////////////////////////			
	VOC	SOx	NOx	CO	PM 10	PM 2.5	Pb	NH ₃	CO ₂ e
LDGV	000.309	000.002	000.239	003.421	000.007	000.006		000.023	00318.896
LDGT	000.374	000.003	000.418	004.700	000.009	800.000		000.024	00411.188
HDGV	000.696	000.005	001.076	015.187	000.021	000.019		000.044	00758.535
LDDV	000.115	000.003	000.139	002.492	000.004	000.004		000.008	00309.094
LDDT	000.250	000.004	000.394	004.238	000.007	000.006		000.008	00438.938
HDDV	000.572	000.013	005.669	001.917	000.170	000.156		000.030	01506.304
MC	002.734	000.003	000.845	013.302	000.027	000.023		000.055	00396.858

5.2.4 Paving Phase Formula(s)

- Construction Exhaust Emissions per Phase

7 CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000
8
9 CEE_{POL}: Construction Exhaust Emissions (TONs)

- 10 NE: Number of Equipment
- 11 WD: Number of Total Work Days (days)
- 12 H: Hours Worked per Day (hours)
- 13 EF_{POL}: Emission Factor for Pollutant (lb/hour)
- 14 2000: Conversion Factor pounds to tons

15- Vehicle Exhaust Emissions per Phase

17	VMT _{VE} = PA * 0.25 * (1 / 27) * (1 / HC) * HT
18	
19	VMT _{VE} : Vehicle Exhaust Vehicle Miles Travel (miles)
20	PA: Paving Area (ft²)
21	0.25: Thickness of Paving Area (ft)
22	(1 / 27): Conversion Factor cubic feet to cubic yards (1 yd ³ / 27 ft ³)
22	HC: Average Hauling Truck Capacity (vd ³)

- 23 HC: Average Hauling Truck Capacity (yd³)
- 24 (1 / HC): Conversion Factor cubic yards to trips $(1 \text{ trip } / HC \text{ yd}^3)$
- 25 HT: Average Hauling Truck Round Trip Commute (mile/trip)26
- 27 VPOL = (VMTVE * 0.002205 * EFPOL * VM) / 2000
- 2829 V_{POL}: Vehicle Emissions (TONs)
- 30 VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
- 31 0.002205: Conversion Factor grams to pounds
- 32 EF_{POL}: Emission Factor for Pollutant (grams/mile)
- 33 VM: Vehicle Exhaust On Road Vehicle Mixture (%)
- 34 2000: Conversion Factor pounds to tons35

36 - Worker Trips Emissions per Phase

- 37 VMT_{WT} = WD * WT * 1.25 * NE
- 3839 VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
- 40 WD: Number of Total Work Days (days)
- 41 WT: Average Worker Round Trip Commute (mile)
- 42 1.25: Conversion Factor Number of Construction Equipment to Number of Works
- 43 NE: Number of Construction Equipment
- 44 45 V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000
- 46 47 VPOL: Vehicle Emissions (TONs)
- 48 VMT_{VE}: Worker Trips Vehicle Miles Travel (miles)

1 2 3 4	EF _{POL} : Emiss VM: Worker	onversion Factor grams to pou sion Factor for Pollutant (grams Trips On Road Vehicle Mixture rsion Factor pounds to tons	s/mile)		
5 6 7 8	- Off-Gassing Er VOC _P = (2.62 * P	nissions per Phase A) / 43560			
9 10 11 12 13	2.62: Emissi PA: Paving A	g VOC Emissions (TONs) on Factor (Ib/acre) Area (ft ²) ersion Factor square feet to ac	cre (43560) ft2 / acre)² / acre)
14 15	6. Construc	tion / Demolition			
16 17 18	6.1 General Int	formation & Timeline Ass	umptions	5	
19 20 21 22	- Activity Locatio County: Of Regulatory A		ORY ARE	A	
23 24	- Activity Title:	EOR D Parking Pavement an	d Demo		
25 26 27 28					ement; add new and additional ew shelter.
29 30 31 32	- Activity Start D Start Month: Start Month:	1			
33 34 35 36	- Activity End Da Indefinite: End Month: End Month:	nte False 12 2025			
37 38	- Activity Emissi	ons:	_		
	Pollutant	Total Emissions (TONs)		Pollutant	Total Emissions (TONs)
	VOC	0.100651	-	PM 2.5	0.025173
	SOx	0.001398	-	Pb	0.000000
	NOx	0.530578	-	NH ₃	0.000454
	CO	0.676528	-	CO ₂ e	139.5
	PM 10	3.254763			
39 40 41 42	6.1 Site Gradir 6.1.1 Site Grad	ng Phase ling Phase Timeline Assu	mptions		
43 44 45 46 47	- Phase Start Da Start Month: Start Quarte Start Year:	3			
48 40	- Phaso Duration				

49 - Phase Duration

Number of	f Daver	:1							
	-								
6.1.2 Site Gr	ading I	Phase /	Assumpti	ons					
- General Site Area of Sit Amount of Amount of	te to be f Materia	Graded al to be	l (ft²): Hauled Oi						
Site Grading Default Se Average D	ettings L	Jsed:	Ϋ́Υ	∕es 5 (default)					
Construction	n Fxhau	st (defa	ult)						
	T EXITU		nent Name	•			nber Of ipment	Hour	s Per Day
Graders Com	posite						1		8
Other Constru				te			1		8
Rubber Tired							1		8
Tractors/Load	lers/Bac	khoes C	composite				2		7
- Vehicle Exha POVs - Worker Trips Average W	LDGV 0		.DGT 0	HDGV 0	LDDV 0	t)	DT	HDDV 100.00	MC 0
-	Vahial	o Mixtu	(0/)						
-				HDGV	LDDV)T	HDDV	MC
-	s Vehicle LDGV 50.00	/ L	re (%) _DGT 50.00	HDGV 0	LDDV	LD	T	HDDV 0	MC 0
- Worker Trips POVs 6.1.3 Site Gr	LDGV 50.00 rading I n Exhau	۲ الم Phase I st Emis	DGT 50.00 Emission sion Facto	0 Factor(s) ors (lb/hou	0 r) (default)		0	0
- Worker Trips POVs 6.1.3 Site Gr - Constructior Graders Con	LDGV 50.00 rading I n Exhau nposite	VOC	DGT 50.00 Emission sion Facto	0 Factor(s) ors (lb/hou NO _x	0 r) (default	0) PM 10	PM 2.5	0 CH4	0 CO2e
Worker Trips POVs 6.1.3 Site Gr Construction Graders Com Emission Fac	LDGV 50.00 rading I n Exhau nposite	L 5 Phase I st Emis VOC 0.0676	DGT 50.00 Emission sion Facto SO _x 0.0014	0 Factor(s) ors (lb/hou NO _x 0.3314	0 r) (default)		0 CH4	0
Worker Trips POVs 6.1.3 Site Gr Construction Graders Con	LDGV 50.00 rading I n Exhau nposite	Image: Phase l St Emis VOC 0.0676 Equipm	DGT 50.00 Emission sion Facto SO _x 0.0014 ent Comp	0 Factor(s) ors (lb/hou NO _x 0.3314 osite	0 r) (default CO 0.5695) PM 10 0.0147	PM 2.5 0.0147	0 CH 4 0.0061	0 CO2e 132.89
Worker Trips POVs 5.1.3 Site Gr Construction Graders Com Emission Fac	LDGV 50.00 rading I n Exhau nposite ctors (ruction I	L 5 Phase I st Emis VOC 0.0676	DGT 50.00 Emission sion Facto SO _x 0.0014	0 Factor(s) ors (lb/hou NO _x 0.3314	0 r) (default	0) PM 10	PM 2.5	0 CH4 0.0061	0 CO2e
Worker Trips POVs 6.1.3 Site Gr Construction Graders Con Emission Fac Other Constr	LDGV 50.00 rading I n Exhau nposite ctors (ruction I ctors (L Phase I Ist Emis VOC 0.0676 Equipm VOC 0.0442	DGT 50.00 Emission sion Factor SOx 0.0014 ent Comp SOx 0.0012	0 Factor(s) ors (lb/hou NOx 0.3314 osite NOx	0 r) (default CO 0.5695 CO	0 0.0147 0.0147	PM 2.5 0.0147 PM 2.5	0 CH4 0.0061	0 CO2e 132.89 CO2e
- Worker Trips POVs 6.1.3 Site Gr - Construction Graders Con Emission Fac Other Constr Emission Fac	LDGV 50.00 rading I n Exhau nposite tors (ruction I tors (d Dozers	L Phase I st Emis VOC 0.0676 Equipm VOC 0.0442 s Compo VOC	DGT 50.00 Emission sion Factor SOx 0.0014 ent Compo SOx 0.0012 osite SOx	0 Factor(s) ors (lb/hou NOx 0.3314 osite NOx 0.2021 NOx	0 r) (default CO 0.5695 CO	0 0.0147 0.0147	PM 2.5 0.0147 PM 2.5	0 CH ₄ 0.0061 CH ₄ 0.0039	0 CO2e 132.89 CO2e 122.60 CO2e
- Worker Trips POVs 6.1.3 Site Gr - Construction Graders Com Emission Fac Other Constr Emission Fac Rubber Tired Emission Fac	LDGV 50.00 rading I n Exhau nposite ctors (ruction I ctors (d Dozers	L Phase I st Emis VOC 0.0676 Equipm VOC 0.0442 s Compo VOC 0.0442 s Compo VOC 0.1671	DGT 50.00 Emission sion Factor SOx 0.0014 ent Comp SOx 0.0012 osite SOx 0.0024	0 Factor(s) ors (lb/hou NOx 0.3314 osite NOx 0.2021 NOx 1.0824	0 r) (default) CO 0.5695 CO 0.3473	PM 10 0.0147 PM 10 0.0068	PM 2.5 0.0147 PM 2.5 0.0068	0 CH ₄ 0.0061 CH ₄ 0.0039 CH ₄	0 CO₂e 132.89 CO₂e 122.60
- Worker Trips POVs 6.1.3 Site Gr - Construction Graders Com Emission Fac Other Constr Emission Fac Rubber Tired	LDGV 50.00 rading I n Exhau nposite ctors (ruction I ctors (d Dozers	L Phase I st Emis VOC 0.0676 Equipm VOC 0.0442 s Compo VOC 0.1671 ackhoes	DGT 50.00 Emission sion Factor SOx 0.0014 ent Composite SOx 0.0012 osite SOx 0.0024 Composite	0 Factor(s) ors (lb/hou NOx 0.3314 osite NOx 0.2021 NOx 1.0824 te	0 r) (default CO 0.5695 CO 0.3473 CO 0.6620	● 0 ● 0.0147 ● 0.0147 ● 0.0068 ● PM 10 0.0418	PM 2.5 0.0147 PM 2.5 0.0068 PM 2.5 0.0418	0 CH ₄ 0.0061 CH ₄ 0.0039 CH ₄ 0.0150	0 CO2e 132.89 CO2e 122.60 CO2e 239.45
- Worker Trips POVs 6.1.3 Site Gr - Construction Graders Com Emission Fac Other Constr Emission Fac Rubber Tired Emission Fac Tractors/Loa	LDGV 50.00 rading I n Exhau nposite ctors (ruction I ctors (d Dozers ctors (d Dozers	L Phase I st Emis VOC 0.0676 Equipm VOC 0.0442 s Compo VOC 0.1671 ackhoes VOC	DGT 50.00 Emission sion Factor SOx 0.0014 ent Compo SOx 0.0012 osite SOx 0.0024 Composite SOx 0.0024 SOx	0 Factor(s) ors (lb/hou NOx 0.3314 osite NOx 0.2021 NOx 1.0824 te NOx	0 r) (default) CO 0.5695 CO 0.3473 CO 0.6620 CO	0 0.0147 0.0147 0.0068 PM 10 0.0418 PM 10	PM 2.5 0.0147 PM 2.5 0.0068 PM 2.5 0.0418 PM 2.5	0 CH ₄ 0.0061 CH ₄ 0.0039 CH ₄ 0.0150 CH ₄	0 CO2e 132.89 CO2e 122.60 CO2e 239.45 CO2e
- Worker Trips POVs 6.1.3 Site Gr - Construction Graders Com Emission Fac Other Constr Emission Fac Rubber Tired Emission Fac	LDGV 50.00 rading I n Exhau nposite ctors (ruction I ctors (d Dozers ctors (d Dozers	L Phase I st Emis VOC 0.0676 Equipm VOC 0.0442 s Compo VOC 0.1671 ackhoes	DGT 50.00 Emission sion Factor SOx 0.0014 ent Composite SOx 0.0012 osite SOx 0.0024 Composite	0 Factor(s) ors (lb/hou NOx 0.3314 osite NOx 0.2021 NOx 1.0824 te	0 r) (default CO 0.5695 CO 0.3473 CO 0.6620	● 0 ● 0.0147 ● 0.0147 ● 0.0068 ● PM 10 0.0418	PM 2.5 0.0147 PM 2.5 0.0068 PM 2.5 0.0418	0 CH ₄ 0.0061 CH ₄ 0.0039 CH ₄ 0.0150 CH ₄	0 CO2e 132.89 CO2e 122.60 CO2e 239.45 CO2e

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- (1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd³)
- HT: Average Hauling Truck Round Trip Commute (mile/trip)
- 33 V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000
- 35 V_{POL}: Vehicle Emissions (TONs)

- 36 VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
- 37 0.002205: Conversion Factor grams to pounds
- 38 EF_{POL}: Emission Factor for Pollutant (grams/mile)
- 39 VM: Vehicle Exhaust On Road Vehicle Mixture (%)
- 40 2000: Conversion Factor pounds to tons 41
- 42 Worker Trips Emissions per Phase
- 43 VMT_{WT} = WD * WT * 1.25 * NE
- 44
 45 VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
- 46 WD: Number of Total Work Days (days)
- 47 WT: Average Worker Round Trip Commute (mile)
- 48 1.25: Conversion Factor Number of Construction Equipment to Number of Works
- 49 NE: Number of Construction Equipment

	wt * 0.002205	* EFPOL * VN	/) / 2000					
VPOL = (VMT								
	ehicle Emissio							
	Worker Trips			s)				
	5: Conversion			-)				
	Emission Facto orker Trips On							
	Conversion Fac							
6.2 Paving	Phase	·						
-								
6.2.1 Pavi	ng Phase Tir	neline Ass	umptions					
- Phase Sta								
Start Mo								
Start QL Start Ye	uarter: 1 ear: 2025							
2								
- Phase Dur								
	of Month: 3 of Days: 0							
Number								
6.2.2 Pavi	ng Phase As	sumptions	5					
. General Pa	aving Informa	tion						
	aving Informa Area (ft²): 26							
Paving A	Area (ft ²): 26	9096						
Paving A	Area (ft²): 26 fault Settings	9096	Yee					
Paving A Paving De Default	Area (ft²): 26 fault Settings Settings Used	9096 d:	Yes ;; 5 (default)					
Paving A - Paving De Default Average	Area (ft²): 26 fault Settings Settings Used Day(s) work	9096 d: ed per week						
Paving A - Paving De Default Average	Area (ft ²): 26 fault Settings Settings Used Day(s) work ion Exhaust (f	9096 d: ed per week default)	: 5 (default)		Number	Of	Hou	re D
Paving A - Paving De Default Average - Constructi	Area (ft²): 26 fault Settings Settings Used Day(s) work ion Exhaust (Eq	9096 d: ed per week	: 5 (default)		Number Equipme		Hou	rs Pe
Paving A - Paving De Default Average - Constructi Pavers Cor	Area (ft ²): 26 fault Settings Settings Used Day(s) work ion Exhaust (Eq mposite	9096 d: ed per week default) uipment Nai	: 5 (default)		Equipme 1		Hou	8
Paving A - Paving De Default Average - Constructi Pavers Cor Paving Equ	Area (ft ²): 26 fault Settings Settings Used Day(s) work ion Exhaust (Eq mposite upment Compo	9096 d: ed per week default) uipment Nai	: 5 (default)		Equipme 1 2		Hou	8 6
Paving A - Paving De Default Average - Constructi Pavers Cor	Area (ft ²): 26 fault Settings Settings Used Day(s) work ion Exhaust (Eq mposite upment Compo	9096 d: ed per week default) uipment Nai	: 5 (default)		Equipme 1		Hou	8
Paving A - Paving De Default Average - Construction Pavers Cor Paving Equ Rollers Cor - Vehicle Ex	Area (ft ²): 26 fault Settings Settings Used Day(s) work ion Exhaust (Eq mposite uipment Compo mposite	9096 d: ed per week default) uipment Nar osite	me		Equipme 1 2 2		Hou	8 6
Paving A Paving Default Average Construction Pavers Correst Paving Equent Rollers Correst Vehicle External	Area (ft ²): 26 fault Settings Settings Used Day(s) work ion Exhaust (Eq mposite uipment Compo mposite	9096 d: ed per week default) uipment Nar osite	me	(mile): 2	Equipme 1 2		Hou	8 6
Paving A - Paving De Default Average - Construction Pavers Cor Paving Equ Rollers Cor - Vehicle Ex Average	Area (ft ²): 26 fault Settings Settings Used a Day(s) work ion Exhaust (f Eq mposite uipment Compo- mposite chaust a Hauling Truck	9096 d: ed per week default) uipment Nar osite ck Round Tr Mixture (%	rip Commute		Equipme 1 2 2 20 (default)	ent		8 6
Paving A - Paving De Default Average - Construction Pavers Cor Paving Equ Rollers Cor - Vehicle Ex Average - Vehicle Ex	Area (ft ²): 26 fault Settings Settings Used Day(s) work ion Exhaust (f Eq mposite uipment Compo mposite chaust Hauling True chaust Vehicle	99096 d: ed per week default) uipment Nar osite ck Round Tr osite (% LDGT	rip Commute	LDDV	Equipme 1 2 2 20 (default)	ent HC		8 6
Paving A - Paving De Default Average - Construction Pavers Cor Paving Equ Rollers Cor - Vehicle Ex Average	Area (ft ²): 26 fault Settings Settings Used a Day(s) work ion Exhaust (f Eq mposite uipment Compo- mposite chaust a Hauling Truck	9096 d: ed per week default) uipment Nar osite ck Round Tr Mixture (%	rip Commute		Equipme 1 2 2 20 (default)	ent HC		8 6
Paving A - Paving Default Average - Construction Pavers Correst Paving Equest Rollers Correst - Vehicle Exc Average - Vehicle Exc POVs	Area (ft ²): 26 fault Settings Settings Used Day(s) work ion Exhaust (ion Exhaust Composite mposite chaust exhaust (ion E	99096 d: ed per week default) uipment Nar osite ck Round Tr osite (% LDGT	rip Commute	LDDV	Equipme 1 2 2 20 (default)	ent HC		8 6
Paving A - Paving Default Average - Construction Pavers Correst Pavers Correst Paving Equest Rollers Correst - Vehicle Ext Average - Vehicle Ext POVs - Worker Tri	Area (ft ²): 26 fault Settings Settings Used Day(s) work ion Exhaust (ion Exhaust Composite mposite chaust exhaust (ion E	99096 d: ed per week default) uipment Nar osite ck Round Tr osite (% LDGT 0	rip Commute	LDDV 0	Equipme 1 2 2 20 (default)	ent HC		8 6
Paving A - Paving Default Average - Construction Pavers Cor Paving Equ Rollers Cor - Vehicle Ex Average - Vehicle Ex POVs - Worker Tri Average	Area (ft ²): 26 fault Settings Settings Used a Day(s) work ion Exhaust (f Eq mposite uipment Compo mposite chaust a Hauling True chaust Vehicle LDGV 0 ips a Worker Rou	99096 d: ed per week default) uipment Nar osite ck Round Tr osite ck Round Tr o LDGT 0 nd Trip Cor	rip Commute	LDDV 0	Equipme 1 2 2 20 (default)	ent HC		8 6
Paving A Paving Default Average Construction Pavers Cor Paving Equ Rollers Cor Vehicle Ex Average Vehicle Ex POVs Worker Tri Average	Area (ft ²): 26 fault Settings Settings Used a Day(s) work ion Exhaust (f Eq mposite uipment Compo- mposite chaust a Hauling True chaust Vehicle LDGV 0	99096 d: ed per week default) uipment Nar osite ck Round Tr osite ck Round Tr o LDGT 0 nd Trip Cor	rip Commute	LDDV 0	Equipme 1 2 2 20 (default)	ent HE 100		8 6

- Construction Exhaust Emission Factors (lb/hour) (default) 1

Graders Composi	te							
	VOC	SOx	NOx	CO	PM 10	PM 2.5	CH₄	CO ₂ e
Emission Factors	0.0676	0.0014	0.3314	0.5695	0.0147	0.0147	0.0061	132.89
Other Construction	n Equipm	ent Comp	osite					
	VOC	SOx	NOx	CO	PM 10	PM 2.5	CH₄	CO ₂ e
Emission Factors	0.0442	0.0012	0.2021	0.3473	0.0068	0.0068	0.0039	122.60
Rubber Tired Doz	ers Compo	osite	•	•				
	VOC	SOx	NOx	CO	PM 10	PM 2.5	CH₄	CO ₂ e
Emission Factors	0.1671	0.0024	1.0824	0.6620	0.0418	0.0418	0.0150	239.45
Tractors/Loaders/	Backhoes	Composit	te					
	VOC	SOx	NOx	CO	PM 10	PM 2.5	CH₄	CO ₂ e
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)

	EXHLAUCT 0				i o (gi anio				
	VOC	SOx	NOx	CO	PM 10	PM 2.5	Pb	NH ₃	CO ₂ e
LDGV	000.309	000.002	000.239	003.421	000.007	000.006		000.023	00318.896
LDGT	000.374	000.003	000.418	004.700	000.009	800.000		000.024	00411.188
HDGV	000.696	000.005	001.076	015.187	000.021	000.019		000.044	00758.535
LDDV	000.115	000.003	000.139	002.492	000.004	000.004		800.000	00309.094
LDDT	000.250	000.004	000.394	004.238	000.007	000.006		800.000	00438.938
HDDV	000.572	000.013	005.669	001.917	000.170	000.156		000.030	01506.304
MC	002.734	000.003	000.845	013.302	000.027	000.023		000.055	00396.858

6

7

10

14

15 16

6.2.4 Paving Phase Formula(s)

- Construction Exhaust Emissions per Phase

CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000 8 9

- CEEPOL: Construction Exhaust Emissions (TONs)
- NE: Number of Equipment 11
- WD: Number of Total Work Days (days) 12
- H: Hours Worked per Day (hours) 13
 - EF_{POL}: Emission Factor for Pollutant (lb/hour)
 - 2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase 17

- 18 VMT_{VE} = PA * 0.25 * (1 / 27) * (1 / HC) * HT
- 19 VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles) 20
- PA: Paving Area (ft²) 21
- 0.25: Thickness of Paving Area (ft) 22
- (1 / 27): Conversion Factor cubic feet to cubic yards (1 yd³ / 27 ft³) 23
- HC: Average Hauling Truck Capacity (vd³) 24
- (1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd³) 25 26
 - HT: Average Hauling Truck Round Trip Commute (mile/trip)

27 VPOL = (VMTVE * 0.002205 * EFPOL * VM) / 2000 28

- 29 V_{POL}: Vehicle Emissions (TONs) 30
- VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles) 31
- 0.002205: Conversion Factor grams to pounds 32
- EF_{POL}: Emission Factor for Pollutant (grams/mile) 33
- VM: Vehicle Exhaust On Road Vehicle Mixture (%) 34
- 2000: Conversion Factor pounds to tons 35

1	Wedley Trine Fusieniene ver Dhees		
2	- Worker Trips Emissions per Phase VMT _{WT} = WD * WT * 1.25 * NE		
3 4	VVIIWI = VVD VVI 1.23 NE		
5	VMTwr: Worker Trips Vehicle Miles Travel (miles)	
6	WD: Number of Total Work Days (days)		
7	WT: Average Worker Round Trip Commute	(mile)	
8	1.25: Conversion Factor Number of Constru		r of Works
9	NE: Number of Construction Equipment		
10			
11	V _{POL} = (VMT _{WT} * 0.002205 * EF _{POL} * VM) / 2000		
12			
13	V _{POL} : Vehicle Emissions (TONs)		
14	VMT _{VE} : Worker Trips Vehicle Miles Travel (
15	0.002205: Conversion Factor grams to pour		
16	EF _{POL} : Emission Factor for Pollutant (grams		
17	VM: Worker Trips On Road Vehicle Mixture	(%)	
18 19	2000: Conversion Factor pounds to tons		
20	- Off-Gassing Emissions per Phase		
21	$VOC_P = (2.62 * PA) / 43560$		
22			
23	VOC _P : Paving VOC Emissions (TONs)		
24	2.62: Emission Factor (lb/acre)		
25	PA: Paving Area (ft ²)		
26	43560: Conversion Factor square feet to ac	re (43560 ft2 / acre) ² / acre)
27			
28			
29	7. Construction / Demolition		
30			
31	7.1 General Information & Timeline Assu	Imptions	
32			
33	- Activity Location		
34	County: Otero		
35 36	Regulatory Area(s): NOT IN A REGULAT	JRT AREA	
30 37	- Activity Title: EOR D Shoulder Pavement		
38	- Activity fille. LOND Shoulder Pavement		
39	- Activity Description:		
40	Increase F-16 arming positions from 8 to 1	2: Remove degraded pave	ment: add new and additional
41	pavement; install taxiway and parking spot r		
42		0	
43	- Activity Start Date		
44	Start Month: 1		
45	Start Month: 2025		
46			
47	- Activity End Date		
48	Indefinite: False		
49 50	End Month: 12		
50	End Month: 2025		
51 52	- Activity Emissions:		
52	Pollutant Total Emissions (TONs)	Pollutant	Total Emissions (TONs)
	VOC 0.083743	PM 2.5	0.020473
	SO _x 0.001215	Pb	0.000000
		L	

NOx	0.446465	NH ₃	0.000413
CO	0.617598	CO ₂ e	118.9
PM 10	0.662112		

PIVI TU		0.002112			
7.1 Site G	rading Phas	e			
	0 I' DI	.	• •		
7.1.1 Site	Grading Pha	ase Timeline	e Assumpti	ons	
- Phase Sta	rt Date				
Start Mo					
	arter: 1				
Start Ye					
- Phase Dur					
Number	of Month: 1				
Number	• of Days: 0				
		_			
7.1.2 Site	Grading Pha	ase Assump	otions		
Concret O		f ormer a t ¹ a			
	ite Grading Ir			64497	
	Site to be Gr		On Site (vel3)	• · · • ·	
		o be Hauled (
Amount	. Or waterial t	o be Hauled	On-Site (yu): 0	
- Site Gradi	ng Default Se	ottings			
	Settings Use		Yes		
		ked per week:			
, i i i i i i i i i i i i i i i i i i i					
- Constructi	ion Exhaust ((default)			
	Ec	uipment Nan	ne		Numbe Equipn
Graders Co					1
		oment Compo	site		1
	ed Dozers Co				1
Tractors/Lc	aders/Backho	pes Composite	9		1
	- b 4				
- Vehicle Ex		ok Consoit	(vd ³).	20 (4-	foult
		ick Capacity (ick Round Tri		20 (de (mile):	20 (default)
Average				(
Vehicle Ex	haust Vehicl	e Mixture (%))		
	LDGV	LDGT	HDGV	LDDV	LDDT
POVs	0	0	0	0	0
- Worker Tri				00 (1-511)	
Average	e worker Rol	Ind Trip Com	mute (mile):	∠∪ (default)	
Worker Tri	ips Vehicle N	lixturo (%)			
		LDGT	HDGV	LDDV	LDDT
POVs	50.00	50.00	0	0	
1013	00.00	00.00	0	U	U
7.1.3 Site	Grading Ph	ase Emissio	n Factor(s)		
				,	
Construct	ion Exhaust I	Emission Eac	tors (lb/bou	r) (default)	
CONSTRUCT		EIIIISSIUII FAU			

Graders Composite

Hours Per Day

MC

0

MC

0

HDDV

100.00

HDDV

Draft EA for Airfield and Access Control Points Improvements Holloman Air Force Base, New Mexico

	VOC	SOx	NOx	CO	PM 10	PM 2.5	CH ₄	CO ₂ e
Emission Factors	0.0676	0.0014	0.3314	0.5695	0.0147	0.0147	0.0061	132.89
Other Construction	n Equipm	ent Comp	osite	•	•		•	
	VOC	SOx	NOx	CO	PM 10	PM 2.5	CH ₄	CO ₂ e
Emission Factors	0.0442	0.0012	0.2021	0.3473	0.0068	0.0068	0.0039	122.60
Rubber Tired Doz	ers Compo	osite						
	VOC	SOx	NOx	CO	PM 10	PM 2.5	CH₄	CO ₂ e
Emission Factors	0.1671	0.0024	1.0824	0.6620	0.0418	0.0418	0.0150	239.45
Tractors/Loaders/	Backhoes	Composit	te	•	•		•	
	VOC	SOx	NOx	CO	PM 10	PM 2.5	CH ₄	CO ₂ e
Emission Factors	0.0335	0.0007	0.1857	0.3586	0.0058	0.0058	0.0030	66.872

1 2

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

1011010					le (graine	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,			
	VOC	SOx	NOx	CO	PM 10	PM 2.5	Pb	NH ₃	CO ₂ e
LDGV	000.309	000.002	000.239	003.421	000.007	000.006		000.023	00318.896
LDGT	000.374	000.003	000.418	004.700	000.009	800.000		000.024	00411.188
HDGV	000.696	000.005	001.076	015.187	000.021	000.019		000.044	00758.535
LDDV	000.115	000.003	000.139	002.492	000.004	000.004		800.000	00309.094
LDDT	000.250	000.004	000.394	004.238	000.007	000.006		800.000	00438.938
HDDV	000.572	000.013	005.669	001.917	000.170	000.156		000.030	01506.304
MC	002.734	000.003	000.845	013.302	000.027	000.023		000.055	00396.858

7.1.4 Site Grading Phase Formula(s)

- Fugitive Dust Emissions per Phase

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

- 9 PM10_{FD}: Fugitive Dust PM 10 Emissions (TONs)
- 10 20: Conversion Factor Acre Day to pounds (20 lb / 1 Acre Day)
- 11 ACRE: Total acres (acres)
- 12 WD: Number of Total Work Days (days)
- 13 2000: Conversion Factor pounds to tons

15 - Construction Exhaust Emissions per Phase

- 16 CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000
- 17
- CEEPOL: Construction Exhaust Emissions (TONs)
- CEE_{POL}: Construction Exha
 NE: Number of Equipment
- 20 WD: Number of Total Work Days (days)
- 21 H: Hours Worked per Day (hours)
- 22 EF_{POL}: Emission Factor for Pollutant (lb/hour)
- 23 2000: Conversion Factor pounds to tons

2425 - Vehicle Exhaust Emissions per Phase

- 26 VMT_{VE} = (HA_{OnSite} + HA_{OffSite}) * (1 / HC) * HT
- 2728 VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
- 29 HA_{OnSite}: Amount of Material to be Hauled On-Site (yd³)
- 30 HA_{offSite}: Amount of Material to be Hauled Off-Site (yd³)
- 31 HC: Average Hauling Truck Capacity (yd³)
- 32 (1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd³)
- 33 HT: Average Hauling Truck Round Trip Commute (mile/trip)
- 34 35 V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000

VPOL: Vehicle Emissions (TONs) 1 VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles) 2 0.002205: Conversion Factor grams to pounds 3 EFPOL: Emission Factor for Pollutant (grams/mile) 4 VM: Vehicle Exhaust On Road Vehicle Mixture (%) 5 2000: Conversion Factor pounds to tons 6 7 8 - Worker Trips Emissions per Phase 9 VMT_{WT} = WD * WT * 1.25 * NE 10 VMTwT: Worker Trips Vehicle Miles Travel (miles) 11 WD: Number of Total Work Days (days) 12 WT: Average Worker Round Trip Commute (mile) 13 1.25: Conversion Factor Number of Construction Equipment to Number of Works 14 NE: Number of Construction Equipment 15 16 17 VPOL = (VMTwt * 0.002205 * EFPOL * VM) / 2000 18 19 VPOL: Vehicle Emissions (TONs) 20 VMTwT: Worker Trips Vehicle Miles Travel (miles) 0.002205: Conversion Factor grams to pounds 21 EF_{POL}: Emission Factor for Pollutant (grams/mile) 22 VM: Worker Trips On Road Vehicle Mixture (%) 23 2000: Conversion Factor pounds to tons 24 25 7.2 Paving Phase 26 27 7.2.1 Paving Phase Timeline Assumptions 28 29 30 - Phase Start Date 31 Start Month: 4 32 Start Quarter: 1 Start Year: 2025 33 34 35 - Phase Duration Number of Month: 3 36 Number of Days: 0 37 38 7.2.2 Paving Phase Assumptions 39 40 41 - General Paving Information Paving Area (ft²): 64497 42 43 - Paving Default Settings 44 45 **Default Settings Used:** Yes Average Day(s) worked per week: 5 (default) 46 47 48 - Construction Exhaust (default) **Equipment Name** Number Of **Hours Per Day** Equipment Cement and Mortar Mixers Composite 4 **Pavers Composite** 1

Paving Equipment Composite

Tractors/Loaders/Backhoes Composite

Rollers Composite

OCTOBER 2022

6

7

8

7

7

1

1

PM 10

0.0147

PM 2.5

0.0147

CH₄

0.0061

CO₂e

132.89

- 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

11 12

1 2

3

4 5

6 7

8

9

10

7.2.3 Paving Phase Emission Factor(s)

13 14

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

Grauers Composi	le			
	VOC	SOx	NOx	СО
Emission Factors	0.0676	0.0014	0.3314	0.5695
Other Constructio	n Equipm	ent Comp	osite	
	VOC	SOx	NOx	СО
Emission Factors	0.0442	0.0012	0.2021	0.3473

	'ii Lyuipin	ent comp						
	VOC	SOx	NOx	CO	PM 10	PM 2.5	CH₄	CO ₂ e
Emission Factors	0.0442	0.0012	0.2021	0.3473	0.0068	0.0068	0.0039	122.60
Rubber Tired Doz	ers Compo	osite						
	VOC	SOx	NOx	СО	PM 10	PM 2.5	CH₄	CO ₂ e
Emission Factors	0.1671	0.0024	1.0824	0.6620	0.0418	0.0418	0.0150	239.45
Tractors/Loaders/	Backhoes	Composit	te	•	•			
	VOC	SOx	NOx	СО	PM 10	PM 2.5	CH₄	CO ₂ e
Emission Factors	0.0335	0.0007	0.1857	0.3586	0.0058	0.0058	0.0030	66.872

15 16

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

					le (graine	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,			
	VOC	SOx	NOx	CO	PM 10	PM 2.5	Pb	NH ₃	CO ₂ e
LDGV	000.309	000.002	000.239	003.421	000.007	000.006		000.023	00318.896
LDGT	000.374	000.003	000.418	004.700	000.009	000.008		000.024	00411.188
HDGV	000.696	000.005	001.076	015.187	000.021	000.019		000.044	00758.535
LDDV	000.115	000.003	000.139	002.492	000.004	000.004		800.000	00309.094
LDDT	000.250	000.004	000.394	004.238	000.007	000.006		000.008	00438.938
HDDV	000.572	000.013	005.669	001.917	000.170	000.156		000.030	01506.304
MC	002.734	000.003	000.845	013.302	000.027	000.023		000.055	00396.858

17 18

7.2.4 Paving Phase Formula(s)

1920 - Construction Exhaust Emissions per Phase

- 21 CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000
- 2223 CEE_{POL}: Construction Exhaust Emissions (TONs)
- 24 NE: Number of Equipment
- 25 WD: Number of Total Work Days (days)
- 26 H: Hours Worked per Day (hours)
- 27 EF_{POL}: Emission Factor for Pollutant (lb/hour)
- 28 2000: Conversion Factor pounds to tons
- 29

30 - Vehicle Exhaust Emissions per Phase

31 VMT_{VE} = PA * 0.25 * (1 / 27) * (1 / HC) * HT

1 2 VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles) 3 PA: Paving Area (ft²) 4 0.25: Thickness of Paving Area (ft) (1 / 27): Conversion Factor cubic feet to cubic vards (1 vd³ / 27 ft³) 5 HC: Average Hauling Truck Capacity (yd³) 6 (1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd³) 7 8 HT: Average Hauling Truck Round Trip Commute (mile/trip) 9 VPOL = (VMTVE * 0.002205 * EFPOL * VM) / 2000 10 11 V_{POL}: Vehicle Emissions (TONs) 12 VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles) 13 0.002205: Conversion Factor grams to pounds 14 EF_{POL}: Emission Factor for Pollutant (grams/mile) 15 VM: Vehicle Exhaust On Road Vehicle Mixture (%) 16 17 2000: Conversion Factor pounds to tons 18 19 - Worker Trips Emissions per Phase 20 VMT_{WT} = WD * WT * 1.25 * NE 21 22 VMT_{WT}: Worker Trips Vehicle Miles Travel (miles) WD: Number of Total Work Days (days) 23 WT: Average Worker Round Trip Commute (mile) 24 1.25: Conversion Factor Number of Construction Equipment to Number of Works 25 **NE: Number of Construction Equipment** 26 27 VPOL = (VMTwt * 0.002205 * EFPOL * VM) / 2000 28 29 V_{POL}: Vehicle Emissions (TONs) 30 VMT_{VE}: Worker Trips Vehicle Miles Travel (miles) 31 0.002205: Conversion Factor grams to pounds 32 EF_{POL}: Emission Factor for Pollutant (grams/mile) 33 34 VM: Worker Trips On Road Vehicle Mixture (%) 2000: Conversion Factor pounds to tons 35 36 - Off-Gassing Emissions per Phase 37 VOC_P = (2.62 * PA) / 43560 38 39 40 VOC_P: Paving VOC Emissions (TONs) 2.62: Emission Factor (lb/acre) 41 PA: Paving Area (ft²) 42 43560: Conversion Factor square feet to acre (43560 ft2 / acre)² / acre) 43 44 45 8. Construction / Demolition 46 47 8.1 General Information & Timeline Assumptions 48 49 - Activity Location 50 County: Otero 51 52 Regulatory Area(s): NOT IN A REGULATORY AREA 53 54 - Activity Title: EOR E Parking Pavement and Demo 55

- Activity Start Da	ate			
Start Month:	1			
Start Month:	2025			
- Activity End Dat				
Indefinite:	False			
End Month:	12			
End Month:	2025			
- Activity Emissio				
Pollutant	Total Emissions (TONs)	Pollutant		missions (TC
VOC	0.074844	PM 2.5		0.017847
SOx	0.001055	Pb		0.000000
NOx	0.391478	NH ₃		0.000346
CO	0.499703	CO ₂ e		104.0
PM 10	1.569756			
8.1.1 Site Grad - Phase Start Dat Start Month: Start Quarter Start Year:	4	ns		
 Phase Start Dat Start Month: Start Quarter Start Year: Phase Duration Number of Ma Number of Da 8.1.2 Site Grad General Site Grad 	e 4 1 2025 onth: 1 ays: 0 ing Phase Assumptions ading Information			
 Phase Start Dat Start Month: Start Quarter Start Year: Phase Duration Number of Ma Number of Da 8.1.2 Site Grad General Site Grad Area of Site t Amount of Ma 	e 4 1 2025 onth: 1 ays: 0 ing Phase Assumptions ading Information	55999 0		
 Phase Start Dat Start Month: Start Quarter Start Year: Phase Duration Number of Ma Number of Da 8.1.2 Site Grad General Site Grad General Site Grad Area of Site t Amount of Ma Amount of Ma Site Grading De Default Settin 	e 4 1 2025 onth: 1 ays: 0 ing Phase Assumptions ading Information o be Graded (ft ²): 1 aterial to be Hauled On-Site (yd ³): aterial to be Hauled Off-Site (yd ³): aterial to be Hauled Off-Site (yd ³):	55999 0		
 Phase Start Dat Start Month: Start Quarter Start Year: Phase Duration Number of Ma Number of Da 8.1.2 Site Grad General Site Grad General Site Grad Area of Site t Amount of Ma Amount of Ma Site Grading De Default Settin 	e 4 1 2025 onth: 1 ays: 0 ing Phase Assumptions ading Information o be Graded (ft ²): 1 aterial to be Hauled On-Site (yd ³): aterial to be Hauled Off-Site (yd ³): aterial to be Hauled Off-Site (yd ³): stault Settings ngs Used: Yes (s) worked per week: 5 (default) khaust (default)	55999 0 137		
 Phase Start Dat Start Month: Start Quarter Start Year: Phase Duration Number of Ma Number of Da 8.1.2 Site Grad General Site Grad General Site Grad Area of Site t Amount of Ma Amount of Ma Site Grading De Default Settin Average Day 	e 4 1 2025 onth: 1 ays: 0 ing Phase Assumptions ading Information o be Graded (ft ²): 1 aterial to be Hauled On-Site (yd ³): aterial to be Hauled Off-Site (yd ³): aterial to be Hauled Off-Site (yd ³): afault Settings mgs Used: Yes (s) worked per week: 5 (default)	55999 0 137 Num	nber Of	Hours Per
 Phase Start Dat Start Month: Start Quarter Start Year: Phase Duration Number of Ma Number of Da 8.1.2 Site Gradi General Site Grading General Site Grading De Amount of Ma Amount of Ma Site Grading De Default Settin Average Day Construction Ex 	e 4 1 2025 onth: 1 ays: 0 ing Phase Assumptions ading Information o be Graded (ft ²): 1 aterial to be Hauled On-Site (yd ³): aterial to be Hauled Off-Site (yd ³): aterial to be Hauled Off-Site (yd ³): offault Settings ngs Used: Yes (s) worked per week: 5 (default) khaust (default) Equipment Name	55999 0 137 Num	nber Of ipment	
 Phase Start Dat Start Month: Start Quarter Start Year: Phase Duration Number of Ma Number of Da 8.1.2 Site Grad General Site Grad General Site Grad General Site Grad Site Grading De Default Settin Average Day Construction Ex Graders Compose 	e 4 1 2025 onth: 1 ays: 0 ing Phase Assumptions ading Information o be Graded (ft ²): 1 aterial to be Hauled On-Site (yd ³): aterial to be Hauled Off-Site (yd ³): aterial to be Hauled Off-Site (yd ³): offault Settings ngs Used: Yes (s) worked per week: 5 (default) khaust (default) Equipment Name	55999 0 137 Num	ipment	Hours Per

- Vehicle Exhaust 42

- Activity Description:

1

Average Hauling Truck Capacity (yd³): 43

20 (default)

	Exhaust \		.DGT	HDGV	LDDV	LDD	Т	HDDV	Μ
POVs	C		0	0	0	0		100.00	(
	age Worke		•	ute (mile):	20 (defaul	t)			
- worker	Trips Veh		.DGT	HDGV	LDDV	LDD	т	HDDV	Μ
POVs	50.		50.00	0	0	0		0	(
- Constru	te Gradin uction Exh s Composi	aust Emis te	sion Facto	ors (Ib/hou	r) (default				
		VOC	SOx	NOx	CO	PM 10	PM 2.5		С
	n Factors	0.0676	0.0014	0.3314	0.5695	0.0147	0.0147	0.0061	13
Other C	onstructio			1	00	D11 40	B 14 A B		
F usia sia		VOC	SO _x	NO _x	CO	PM 10	PM 2.5		
	n Factors Tired Doz	0.0442	0.0012	0.2021	0.3473	0.0068	0.0068	0.0039) 12
Rubber	Tirea Doz	VOC	SO _x	NOx	CO	PM 10	PM 2.5	CH4	С
Emissio	n Factors	0.1671	0.0024	1.0824	0.6620	0.0418	0.0418		
	s/Loaders/				0.0020	0.0410	0.0410	0.0100	
		VOC	SOx	NOx	CO	PM 10	PM 2.5	CH4	С
Emissio	n Factors	0.0335	0.0007	0.1857	0.3586	0.0058	0.0058		
	-		·· <u>-</u> ·		,	, <u> </u>			
- Vehicle	Exhaust &	SO _x	rips Emis	SION Facto	PM 10	PM 2.5	Pb	NH ₃	CC
LDGV	000.309	000.002	000.239	003.421	000.007	000.006	FU	000.023	0031
LDGT	000.374	000.002	000.418	003.421	000.009	000.008		000.023	0041
HDGV	000.696	000.005	001.076	015.187	000.021	000.019		000.044	0075
LDDV	000.115	000.003	000.139	002.492	000.004	000.004		000.008	0030
LDDT	000.250	000.004	000.394	004.238	000.007	000.006		800.000	0043
HDDV	000.572	000.013	005.669	001.917	000.170	000.156		000.030	0150
MC	002.734	000.003	000.845	013.302	000.027	000.023		000.055	0039
	te Gradin	g Phase I	Formula(s r Phase	5)					

- venicie	- Venicle Exhaust & Worker Trips Emission Factors (grams/inne)										
	VOC	SOx	NOx	CO	PM 10	PM 2.5	Pb	NH ₃	CO ₂ e		
LDGV	000.309	000.002	000.239	003.421	000.007	000.006		000.023	00318.896		
LDGT	000.374	000.003	000.418	004.700	000.009	800.000		000.024	00411.188		
HDGV	000.696	000.005	001.076	015.187	000.021	000.019		000.044	00758.535		
LDDV	000.115	000.003	000.139	002.492	000.004	000.004		000.008	00309.094		
LDDT	000.250	000.004	000.394	004.238	000.007	000.006		800.000	00438.938		
HDDV	000.572	000.013	005.669	001.917	000.170	000.156		000.030	01506.304		
MC	002.734	000.003	000.845	013.302	000.027	000.023		000.055	00396.858		

- (1 -)
- CEE_{POL}: Construction Exhaust Emissions (TONs) NE: Number of Equipment

1	WD: Number of Total Work Days (days)
2	H: Hours Worked per Day (hours)
3	EF _{POL} : Emission Factor for Pollutant (lb/hour)
4	2000: Conversion Factor pounds to tons
5	
6	- Vehicle Exhaust Emissions per Phase
7	VMT _{VE} = (HA _{OnSite} + HA _{OffSite}) * (1 / HC) * HT
8	
9	VMT _{VE} : Vehicle Exhaust Vehicle Miles Travel (miles)
10	HA _{OnSite} : Amount of Material to be Hauled On-Site (yd ³)
	$HA_{OffSite}$: Amount of Material to be Hauled Off-Site (yd ³)
11	
12	HC: Average Hauling Truck Capacity (yd ³)
13	(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd ³)
14	HT: Average Hauling Truck Round Trip Commute (mile/trip)
15	
16	V _{POL} = (VMT _{VE} * 0.002205 * EF _{POL} * VM) / 2000
	VPOL - (VINITVE 0.002203 ELIPOL VINI)/2000
17	
18	V _{POL} : Vehicle Emissions (TONs)
19	VMTve: Vehicle Exhaust Vehicle Miles Travel (miles)
20	0.002205: Conversion Factor grams to pounds
21	EF _{POL} : Emission Factor for Pollutant (grams/mile)
22	
	VM: Vehicle Exhaust On Road Vehicle Mixture (%)
23	2000: Conversion Factor pounds to tons
24	
25	- Worker Trips Emissions per Phase
26	$VMT_{WT} = WD * WT * 1.25 * NE$
27	
28	VMTwr: Worker Trips Vehicle Miles Travel (miles)
29	WD: Number of Total Work Days (days)
30	WT: Average Worker Round Trip Commute (mile)
31	1.25: Conversion Factor Number of Construction Equipment to Number of Works
32	NE: Number of Construction Equipment
33	·· · · · · · · · · · · · · · · · · ·
34	V _{POL} = (VMT _{WT} * 0.002205 * EF _{POL} * VM) / 2000
	VPOL - (VIVITWI 0.002203 LI POL VIVI)/2000
35	
36	V _{POL} : Vehicle Emissions (TONs)
37	VMTwr: Worker Trips Vehicle Miles Travel (miles)
38	0.002205: Conversion Factor grams to pounds
39	EF _{POL} : Emission Factor for Pollutant (grams/mile)
40	VM: Worker Trips On Road Vehicle Mixture (%)
41	2000: Conversion Factor pounds to tons
42	
43	8.2 Paving Phase
44	
45	8.2.1 Paving Phase Timeline Assumptions
46	
47	- Phase Start Date
48	Start Month: 5
49	Start Quarter: 1
50	Start Year: 2025
51	
52	- Phase Duration
53	Number of Month: 2
53 54	Number of Days: 0
	Number of Days. 0
55	0.0.0 Devine Dhase Assumptions
56	8.2.2 Paving Phase Assumptions

Pavin Paving I Defau Avera	Paving Info ng Area (ft²) Default Set ult Settings age Day(s)): 153229 tings Used:	9 Y								
Defau Avera	ult Settings	Used:	-								
Avera			-								
	age Day(s)	worked p		'es							
Constru		-	er week: 5	(default)							
	ction Exha	ust (defa	ult)								
		Equipm	nent Name	•			iber Of ipment	Hou	Hours Per Day		
Cement	and Mortar	Mixers Co	mposite			4		6			
	Composite					1		7			
	Equipment C	Composite			2		6				
Rollers C	Composite						1		7		
Avera	Exhaust age Hauling <u>Exhaust Ve</u>	ehicle Mix	(ture (%)			20 (defau	,				
	LDG	V L	.DGT	HDGV	LDDV	LDD		HDDV	MC		
POVs	0		0	0	0	0		100.00	0		
POVs	LDG 50.0		. DGT	HDGV	LDDV	0	T	HDDV 0	MC		
.2.3 Pa	iving Phas	e Emiss	ion Facto	or(s)							
	ction Exha	und Emin		re (lb/bou	r) (default)						
Gradore			sion Facto			1					
Graders	Composite		SOx	NO _x	CO	PM 10	PM 2.5	CH4	CO ₂		
Emissior	n Factors	e VOC 0.0676	SO x 0.0014	NO x 0.3314			PM 2.5 0.0147	CH ₄ 0.0061			
Emissior	s Composite	e VOC 0.0676 n Equipme	SO _x 0.0014 ent Compo	NO _x 0.3314 osite	CO 0.5695	PM 10 0.0147	0.0147	0.0061			
Emissior Other C o	Composite	e VOC 0.0676 1 Equipmo VOC	SO _x 0.0014 ent Compo SO _x	NO _x 0.3314 osite NO _x	CO 0.5695 CO	PM 10 0.0147 PM 10	0.0147 PM 2.5	0.0061	132.8		
Emissior Other C o Emissior	a Composite n Factors onstruction n Factors	e VOC 0.0676 n Equipmo VOC 0.0442	SO _x 0.0014 ent Compo SO _x 0.0012	NO _x 0.3314 osite	CO 0.5695	PM 10 0.0147	0.0147	0.0061	132.8		
Emissior Other C o Emissior	Composite	e VOC 0.0676 n Equipmo VOC 0.0442 ers Compo	SO x 0.0014 ent Compo SO x 0.0012 osite	NO _x 0.3314 osite NO _x 0.2021	CO 0.5695 CO 0.3473	PM 10 0.0147 PM 10 0.0068	0.0147 PM 2.5 0.0068	0.0061 CH₄ 0.0039	132.8 CO2 122.6		
Emissior Other Co Emissior Rubber	a Composite n Factors onstruction n Factors	e VOC 0.0676 n Equipmo VOC 0.0442	SO _x 0.0014 ent Compo SO _x 0.0012	NO _x 0.3314 osite NO _x	CO 0.5695 CO	PM 10 0.0147 PM 10	0.0147 PM 2.5	0.0061 CH₄ 0.0039	132.8 CO24 2 122.6 CO24		
Emissior Other Co Emissior Rubber Emissior	a Composite In Factors onstruction In Factors Tired Doze	e VOC 0.0676 n Equipm VOC 0.0442 rs Compo VOC 0.1671 Backhoes	SOx 0.0014 ent Composite SOx 0.0012 osite SOx 0.0024 Composition	NOx 0.3314 osite NOx 0.2021 NOx 1.0824 te	CO 0.5695 CO 0.3473 CO 0.6620	PM 10 0.0147 PM 10 0.0068 PM 10 0.0418	0.0147 PM 2.5 0.0068 PM 2.5 0.0418	0.0061 CH₄ 0.0039 CH₄ 0.0150	1 132.8 CO24 122.6 CO24 239.4		
Emissior Other Co Emissior Rubber Emissior Tractors	a Composite on Factors onstruction n Factors Tired Doze n Factors s/Loaders/E	e VOC 0.0676 n Equipmo VOC 0.0442 rs Compo VOC 0.1671 Backhoes VOC	SOx 0.0014 ent Composite SOx 0.0012 osite SOx 0.0024 Composite SOx	NO _x 0.3314 osite NO _x 0.2021 NO _x 1.0824 te NO _x	CO 0.5695 CO 0.3473 CO 0.6620	PM 10 0.0147 PM 10 0.0068 PM 10 0.0418 PM 10	0.0147 PM 2.5 0.0068 PM 2.5 0.0418 PM 2.5	0.0061 CH₄ 0.0039 CH₄ 0.0150 CH₄	1 132.8 CO ₂ 122.6 CO ₂ 239.4 CO ₂		
Emissior Other Co Emissior Rubber Emissior Tractors	a Composite n Factors onstruction n Factors Tired Doze n Factors	e VOC 0.0676 n Equipm VOC 0.0442 rs Compo VOC 0.1671 Backhoes	SOx 0.0014 ent Composite SOx 0.0012 osite SOx 0.0024 Composition	NOx 0.3314 osite NOx 0.2021 NOx 1.0824 te	CO 0.5695 CO 0.3473 CO 0.6620	PM 10 0.0147 PM 10 0.0068 PM 10 0.0418	0.0147 PM 2.5 0.0068 PM 2.5 0.0418	0.0061 CH₄ 0.0039 CH₄ 0.0150	1 132.8 CO ₂ 122.6 CO ₂ 239.4 CO ₂		
Emissior Other Co Emissior Rubber Emissior Tractors Emissior	a Composite n Factors onstruction n Factors Tired Doze n Factors s/Loaders/E n Factors	e VOC 0.0676 n Equipme VOC 0.0442 ers Compe VOC 0.1671 Backhoes VOC 0.0335	SOx 0.0014 ent Compo SOx 0.0012 osite SOx 0.0024 Compositi SOx 0.0007	NOx 0.3314 osite NOx 0.2021 NOx 1.0824 te NOx 0.1857	CO 0.5695 CO 0.3473 CO 0.6620 CO 0.3586	PM 10 0.0147 PM 10 0.0068 PM 10 0.0418 PM 10 0.0058	0.0147 PM 2.5 0.0068 PM 2.5 0.0418 PM 2.5	0.0061 CH₄ 0.0039 CH₄ 0.0150 CH₄	1 132.8 CO2 122.6 CO2 239.4 CO2		
Emissior Other Co Emissior Rubber Emissior Tractors Emissior	a Composite on Factors onstruction n Factors Tired Doze n Factors s/Loaders/E	e VOC 0.0676 n Equipme VOC 0.0442 ers Compe VOC 0.1671 Backhoes VOC 0.0335	SOx 0.0014 ent Compo SOx 0.0012 osite SOx 0.0024 Compositi SOx 0.0007	NOx 0.3314 osite NOx 0.2021 NOx 1.0824 te NOx 0.1857	CO 0.5695 CO 0.3473 CO 0.6620 CO 0.3586	PM 10 0.0147 PM 10 0.0068 PM 10 0.0418 PM 10 0.0058	0.0147 PM 2.5 0.0068 PM 2.5 0.0418 PM 2.5	0.0061 CH₄ 0.0039 CH₄ 0.0150 CH₄	132.8 CO2 122.6 CO2 239.4 CO2 0 239.4 CO2 0 66.87		
Emissior Other Co Emissior Rubber Emissior Tractors Emissior Vehicle LDGV	a Composite n Factors onstruction n Factors Tired Doze n Factors s/Loaders/E n Factors Exhaust & VOC 000.309	e VOC 0.0676 n Equipme VOC 0.0442 rs Compo VOC 0.1671 Backhoes VOC 0.0335 Worker T SO _x 000.002	SOx 0.0014 ent Composite SOx 0.0012 osite SOx 0.0024 Compositi SOx 0.0007 rips Emiss NOx 000.239	NOx 0.3314 osite NOx 0.2021 NOx 1.0824 te NOx 0.1857 sion Factor 003.421	CO 0.5695 CO 0.3473 CO 0.6620 CO 0.3586 rs (grams PM 10 000.007	PM 10 0.0147 PM 10 0.0068 PM 10 0.0418 PM 10 0.0058 /mile) PM 2.5 000.006	0.0147 PM 2.5 0.0068 PM 2.5 0.0418 PM 2.5 0.0058 Pb	0.0061 CH4 0.0039 CH4 0.0150 CH4 0.0030 NH3 000.023	132.8 CO2 122.6 CO2 239.4 CO2 0 66.87 CO2e 00318.8		
Emissior Other Co Emissior Rubber Emissior Tractors Emissior Vehicle	Composite Factors onstruction Factors Tired Doze Factors S/Loaders/E Factors Exhaust & VOC 000.309 000.374	e VOC 0.0676 n Equipme VOC 0.0442 rs Compo VOC 0.1671 Backhoes VOC 0.0335 Worker T SO _×	SOx 0.0014 ent Compo SOx 0.0012 osite SOx 0.0024 Compositi SOx 0.0007 rips Emiss NOx	NOx 0.3314 osite NOx 0.2021 NOx 1.0824 te NOx 0.1857 sion Facto CO	CO 0.5695 CO 0.3473 CO 0.6620 CO 0.3586 ors (grams PM 10	PM 10 0.0147 PM 10 0.0068 PM 10 0.0418 PM 10 0.0058 /mile) PM 2.5	0.0147 PM 2.5 0.0068 PM 2.5 0.0418 PM 2.5 0.0058 Pb	0.0061 CH4 0.0039 CH4 0.0150 CH4 0.0030	1 132.8 CO ₂ 122.6 CO ₂ 239.4 CO ₂		

LDGV LDGI HDGV LDDV LDDI HDDV MO											
POVs 0 0 0 0 0 10000 0		LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC			
	POVs	0	0	0	0	0	100.00	0			

	VOC	SOx	NOx	CO	PM 10	PM 2.5	Pb	NH ₃	CO ₂ e
LDGV	000.309	000.002	000.239	003.421	000.007	000.006		000.023	00318.896
LDGT	000.374	000.003	000.418	004.700	000.009	000.008		000.024	00411.188
HDGV	000.696	000.005	001.076	015.187	000.021	000.019		000.044	00758.535
LDDV	000.115	000.003	000.139	002.492	000.004	000.004		800.000	00309.094
LDDT	000.250	000.004	000.394	004.238	000.007	000.006		800.000	00438.938
HDDV	000.572	000.013	005.669	001.917	000.170	000.156		000.030	01506.304
MC	002.734	000.003	000.845	013.302	000.027	000.023		000.055	00396.858

1	
2	8.2.4 Paving Phase Formula(s)
3	
4	- Construction Exhaust Emissions per Phase
5	CEE _{POL} = (NE * WD * H * EF _{POL}) / 2000
6	CEE Construction Exhaust Emissions (TONs)
7 8	CEE _{POL} : Construction Exhaust Emissions (TONs) NE: Number of Equipment
о 9	WD: Number of Total Work Days (days)
10	H: Hours Worked per Day (hours)
11	EF_{POL} : Emission Factor for Pollutant (lb/hour)
12	2000: Conversion Factor pounds to tons
13	
14	- Vehicle Exhaust Emissions per Phase
15	VMT _{VE} = PA * 0.25 * (1 / 27) * (1 / HC) * HT
16	
17	VMTve: Vehicle Exhaust Vehicle Miles Travel (miles)
18	PA: Paving Area (ft²)
19	0.25: Thickness of Paving Area (ft)
20	(1 / 27): Conversion Factor cubic feet to cubic yards (1 yd ³ / 27 ft ³)
21	HC: Average Hauling Truck Capacity (yd ³)
22	(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd ³)
23	HT: Average Hauling Truck Round Trip Commute (mile/trip)
24 25	\/(\/\/\T*0.002205 * EE*\/\/\) / 2000
25 26	V _{POL} = (VMT _{VE} * 0.002205 * EF _{POL} * VM) / 2000
20	V _{POL} : Vehicle Emissions (TONs)
28	VMTve: Vehicle Exhaust Vehicle Miles Travel (miles)
29	0.002205: Conversion Factor grams to pounds
30	EF _{POL} : Emission Factor for Pollutant (grams/mile)
31	VM: Vehicle Exhaust On Road Vehicle Mixture (%)
32	2000: Conversion Factor pounds to tons
33	
34	- Worker Trips Emissions per Phase
35	$VMT_{WT} = WD * WT * 1.25 * NE$
36	
37	VMTwT: Worker Trips Vehicle Miles Travel (miles)
38	WD: Number of Total Work Days (days)
39 40	WT: Average Worker Round Trip Commute (mile)
40 41	1.25: Conversion Factor Number of Construction Equipment to Number of Works NE: Number of Construction Equipment
41	
43	V _{POL} = (VMT _{WT} * 0.002205 * EF _{POL} * VM) / 2000
44	
45	V _{POL} : Vehicle Emissions (TONs)
46	VMTve: Worker Trips Vehicle Miles Travel (miles)
47	0.002205: Conversion Factor grams to pounds
48	EF _{POL} : Emission Factor for Pollutant (grams/mile)
49	VM: Worker Trips On Road Vehicle Mixture (%)
50	2000: Conversion Factor pounds to tons
51	
52	- Off-Gassing Emissions per Phase
53	$VOC_P = (2.62 * PA) / 43560$
54 55	VOC_{a} : Poving VOC Emissions (TONs)
55 56	VOC _P : Paving VOC Emissions (TONs) 2.62: Emission Factor (Ib/acre)
00	

5 7 9.1 3 9 - Ac	General Info ctivity Locatio County: Ote		Imptions								
7 9.1 8 9 - A a 0 1	ctivity Locatio County: Ote	n	Imptions								
9 - Ac 10 11	County: Ote			•							
10 11 12											
	Regulatory Area(s): NOT IN A REGULATORY AREA										
	ctivity Title:	EOR E Parking Shoulder and	Demo								
		tion: arming positions from 8 to 1 tall taxiway and parking spot r									
9 - A	ctivity Start Da										
20 21 22	Start Month: Start Month:	1 2025									
3 - A	ctivity End Dat										
24 25	Indefinite: End Month:	False 12									
26 27	End Month:	2025									
28 <u>- Ac</u>	ctivity Emissic										
	Pollutant DC	Total Emissions (TONs) 0.065046		Pollutant PM 2.5	Total Emissions (TONs) 0.015604						
SC		0.000979		Pb	0.000000						
NC	D _x	0.352969		NH ₃	0.000367						
CO	О И 10	0.465446 0.981235		CO ₂ e	96.5						
29	Site Gradin										
	.1 Site Gradi	ng Phase Timeline Assur	nptions								
	nase Start Date	9									
35	Start Month:	4									
36 37	Start Quarter: Start Year:	2025									
38											
40 41	nase Duration Number of Mo Number of Da										
2 3 9.1 4	.2 Site Gradi	ng Phase Assumptions									
45 - Ge	Area of Site to Amount of Ma	ading Information o be Graded (ft ²): aterial to be Hauled On-Site aterial to be Hauled Off-Site									

- Site Grading Default Settings 1 2

- 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

6 7

3 4 5

8 9

10

11

12 13

14 15

16

- Vehicle Exhaust Average Hauling Truck Capacity (yd³): 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 18

9.1.3 Site Grading Phase Emission Factor(s)

19 20

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

Credere Commercit

Graders Composi	te	Graders Composite											
	VOC	SOx	NOx	СО	PM 10	PM 2.5	CH₄	CO ₂ e					
Emission Factors	0.0676	0.0014	0.3314	0.5695	0.0147	0.0147	0.0061	132.89					
Other Construction Equipment Composite													
	VOC	SOx	NOx	СО	PM 10	PM 2.5	CH₄	CO ₂ e					
Emission Factors	0.0442	0.0012	0.2021	0.3473	0.0068	0.0068	0.0039	122.60					
Rubber Tired Dozers Composite													
	VOC	SOx	NOx	СО	PM 10	PM 2.5	CH₄	CO ₂ e					
Emission Factors	0.1671	0.0024	1.0824	0.6620	0.0418	0.0418	0.0150	239.45					
Tractors/Loaders/Backhoes Composite													
	VOC	SOx	NOx	СО	PM 10	PM 2.5	CH₄	CO ₂ e					
Emission Factors	0.0335	0.0007	0.1857	0.3586	0.0058	0.0058	0.0030	66.872					

21 22

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

	VOC	SOx	NOx	CO	PM 10	PM 2.5	Pb	NH ₃	CO ₂ e
LDGV	000.309	000.002	000.239	003.421	000.007	000.006		000.023	00318.896
LDGT	000.374	000.003	000.418	004.700	000.009	000.008		000.024	00411.188
HDGV	000.696	000.005	001.076	015.187	000.021	000.019		000.044	00758.535
LDDV	000.115	000.003	000.139	002.492	000.004	000.004		800.000	00309.094
LDDT	000.250	000.004	000.394	004.238	000.007	000.006		800.000	00438.938
HDDV	000.572	000.013	005.669	001.917	000.170	000.156		000.030	01506.304
MC	002.734	000.003	000.845	013.302	000.027	000.023		000.055	00396.858

23

24 9.1.4 Site Grading Phase Formula(s)

1	- Fugitive Dust Emissions per Phase PM10 _{FD} = (20 * ACRE * WD) / 2000
2 3	$FINITO_{FD} = (20 \ ACRE \ WD)/2000$
4 5	PM10 _{FD} : Fugitive Dust PM 10 Emissions (TONs) 20: Conversion Factor Acre Day to pounds (20 lb / 1 Acre Day)
6	ACRE: Total acres (acres)
7	WD: Number of Total Work Days (days) 2000: Conversion Factor pounds to tons
8 9	
10 11 12	- Construction Exhaust Emissions per Phase CEE _{POL} = (NE * WD * H * EF _{POL}) / 2000
13	CEEPOL: Construction Exhaust Emissions (TONs)
14	NE: Number of Equipment
15	WD: Number of Total Work Days (days)
16 17	H: Hours Worked per Day (hours)
17 18	EF _{POL} : Emission Factor for Pollutant (lb/hour) 2000: Conversion Factor pounds to tons
19	
20	- Vehicle Exhaust Emissions per Phase
21	$VMT_{VE} = (HA_{OnSite} + HA_{OffSite}) * (1 / HC) * HT$
22)///T)/abiala Exhaviat)/abiala Milaa Travial (milaa)
23 24	VMT _{VE} : Vehicle Exhaust Vehicle Miles Travel (miles) HA _{OnSite} : Amount of Material to be Hauled On-Site (yd ³)
25	HAOnshe. Amount of Material to be Hauled Off-Site (yd ³) HAOnffsite: Amount of Material to be Hauled Off-Site (yd ³)
26	HC: Average Hauling Truck Capacity (yd^3)
27	(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd ³)
28	HT: Average Hauling Truck Round Trip Commute (mile/trip)
29	
30 31	V _{POL} = (VMT _{VE} * 0.002205 * EF _{POL} * VM) / 2000
32	V _{POL} : Vehicle Emissions (TONs)
33	VMT _{VE} : Vehicle Exhaust Vehicle Miles Travel (miles)
34	0.002205: Conversion Factor grams to pounds
35	EF _{POL} : Emission Factor for Pollutant (grams/mile)
36 37	VM: Vehicle Exhaust On Road Vehicle Mixture (%) 2000: Conversion Factor pounds to tons
38	
39	- Worker Trips Emissions per Phase
40	VMT _{WT} = WD * WT * 1.25 * NE
41	
42	VMT _{WT} : Worker Trips Vehicle Miles Travel (miles)
43	WD: Number of Total Work Days (days)
44	WT: Average Worker Round Trip Commute (mile)
45 46	1.25: Conversion Factor Number of Construction Equipment to Number of Works NE: Number of Construction Equipment
40 47	
48	V _{POL} = (VMT _{WT} * 0.002205 * EF _{POL} * VM) / 2000
49	
50	VPOL: Vehicle Emissions (TONs)
51	VMT _{wt} : Worker Trips Vehicle Miles Travel (miles)
52	0.002205: Conversion Factor grams to pounds
53	EF _{POL} : Emission Factor for Pollutant (grams/mile)
54	VM: Worker Trips On Road Vehicle Mixture (%)
55 56	2000: Conversion Factor pounds to tons
56	

9.2 Paving Phase								
0.2.1 Doving Dha	oo Timoli	no Acour	nntiono					
9.2.1 Paving Pha	ise i imeli	ne Assur	nptions					
- Phase Start Date								
••••••	4							
Start Quarter: Start Year:	1 2025							
otart rour.	2020							
- Phase Duration	410							
Number of Mor Number of Day								
9.2.2 Paving Pha	ise Assur	nptions						
- General Paving Ir Paving Area (ft								
- Paving Default Se	ettings							
Default Setting			/es					
Average Day(s) worked p	er week: 5	5 (default)					
- Construction Exh								
	Equipn	nent Name	•			nber Of Iipment	Hours	Per Da
Cement and Morta		omposite				4		6 7
								/
Pavers Composite						1		
Paving Equipment	Composite)				1		8
Paving Equipment Rollers Composite Tractors/Loaders/E	Composite							
Paving Equipment Rollers Composite Tractors/Loaders/E - Vehicle Exhaust Average Haulir - Vehicle Exhaust V	Composite Backhoes C Ing Truck R Vehicle Miz	Composite	Commute	(mile):	20 (defa	1 1 1 ult)		8 7
Paving Equipment Rollers Composite Tractors/Loaders/E - Vehicle Exhaust Average Haulir - Vehicle Exhaust V	Composite Backhoes C ng Truck R Vehicle Mix GV L	Composite Cound Trip				1 1 1 ult) DT H	IDDV 00.00	8 7 7
Paving Equipment Rollers Composite Tractors/Loaders/E - Vehicle Exhaust Average Haulir - Vehicle Exhaust V POVs (- Worker Trips Average Worke - Worker Trips Veh	Composite Backhoes C Ing Truck R Vehicle Mix GV L D Per Round T icle Mixtur	Composite Cound Trip xture (%) _DGT 0	HDGV 0	LDDV 0	t)	1 1 1 ult) DT H 10		8 7 7 MC
Paving Equipment Rollers Composite Tractors/Loaders/E - Vehicle Exhaust Average Haulir - Vehicle Exhaust V POVs (- Worker Trips Average Worke - Worker Trips Veh	Composite Backhoes C Ing Truck R Vehicle Mix GV L D er Round T icle Mixtur GV L	Composite Cound Trip xture (%) _DGT 0 Trip Comm	HDGV 0 nute (mile):	LDDV 0	t)	1 1 1 ult) DT H 10	00.00	8 7 7 0
Paving Equipment Rollers Composite Tractors/Loaders/E - Vehicle Exhaust Average Haulir - Vehicle Exhaust V POVs (- Worker Trips Average Worke - Worker Trips Veh DPOVs 50. 9.2.3 Paving Pha - Construction Exh	Composite Backhoes C Ing Truck R Vehicle Mix GV L O er Round T icle Mixtur GV L 00 5 ise Emiss naust Emis	Composite Cound Trip xture (%) _DGT 0 Trip Comm re (%) _DGT 50.00 Sion Facto	HDGV 0 nute (mile): HDGV 0 pr(s)	LDDV 0 20 (defaul LDDV 0	t)	1 1 1 ult) DT H 10	00.00	8 7 7 MC 0
Paving Equipment Rollers Composite Tractors/Loaders/E - Vehicle Exhaust Average Haulir - Vehicle Exhaust V POVs 0 - Worker Trips Average Worke - Worker Trips Veh DPOVs 50. 9.2.3 Paving Pha	Composite Backhoes C Ing Truck R Vehicle Mix GV L O Er Round T icle Mixtur GV L 00 S ise Emiss naust Emis ite	Composite Cound Trip Ature (%) DGT 0 Trip Comm re (%) DGT 50.00 Sion Factor sion Factor	HDGV 0 hute (mile): HDGV 0 or(s) ors (lb/hou	LDDV 0 20 (defaul 0 10 0	t)	1 1 1 ult) DT H 0T H	00.00	8 7 7 0 0
Paving Equipment Rollers Composite Tractors/Loaders/E - Vehicle Exhaust Average Haulir - Vehicle Exhaust V POVs (- Worker Trips Average Worke - Worker Trips Veh DPOVs 50. 9.2.3 Paving Pha - Construction Exh	Composite Backhoes C ng Truck R Vehicle Mix GV L O Er Round T icle Mixtur GV L 00 S ise Emiss naust Emis ite VOC	Composite Cound Trip Ature (%) DGT 0 Trip Comm re (%) DGT 50.00 Sion Factor sion Factor SOx	HDGV 0 hute (mile): HDGV 0 or(s) ors (lb/hou NO _x	LDDV 0 20 (defaul LDDV 0 ur) (default	t) PM 10	1 1 1 0T H 0T H 0T H	00.00	8 7 7 0 0 MC 0
Paving Equipment Rollers Composite Tractors/Loaders/E - Vehicle Exhaust Average Haulir - Vehicle Exhaust V POVs (- Worker Trips Average Worke - Worker Trips Veh DOVS 50. 9.2.3 Paving Pha - Construction Exh Graders Composi	Composite Backhoes C ng Truck R Vehicle Mix GV L D er Round T icle Mixtur GV L .00 S nse Emiss naust Emis ite VOC 0.0676	Composite Cound Trip xture (%) _DGT 0 - Trip Comm re (%) _DGT 50.00 sion Facto sion Facto sion Facto sox 0.0014	HDGV 0 hute (mile): HDGV 0 or(s) ors (lb/hou NO _x 0.3314	LDDV 0 20 (defaul 0 10 0	t)	1 1 1 ult) DT H 0T H	00.00	8 7 7 0 0
Paving Equipment Rollers Composite Tractors/Loaders/E - Vehicle Exhaust Average Haulir - Vehicle Exhaust V POVs (- Worker Trips Average Worke - Worker Trips Veh DPOVs 50. 9.2.3 Paving Pha - Construction Exh	Composite Backhoes C ng Truck R Vehicle Mix GV L D er Round T icle Mixtur GV L .00 S nse Emiss naust Emis ite VOC 0.0676	Composite Cound Trip xture (%) _DGT 0 - Trip Comm re (%) _DGT 50.00 sion Facto sion Facto sion Facto sox 0.0014	HDGV 0 hute (mile): HDGV 0 or(s) ors (lb/hou NO _x 0.3314	LDDV 0 20 (defaul LDDV 0 ur) (default	t) PM 10	1 1 1 0T H 0T H 0T H	00.00	8 7 7 0 0 MC 0
Paving Equipment Rollers Composite Tractors/Loaders/E - Vehicle Exhaust Average Haulir - Vehicle Exhaust V POVs (- Worker Trips Average Worke - Worker Trips Veh DOVS 50. 9.2.3 Paving Pha - Construction Exh Graders Composi	Composite Backhoes C ng Truck R Vehicle Mix GV L O Er Round T icle Mixtur GV L 00 S ise Emiss haust Emis ite VOC 0.0676 on Equipm	Composite Cound Trip Ature (%) DGT 0 Trip Comm re (%) DGT 50.00 Sion Factor sion Factor SOx 0.0014 ent Comp	HDGV 0 hute (mile): HDGV 0 or(s) ors (lb/hou NO _x 0.3314 osite	LDDV 0 20 (defaul LDDV 0 ir) (default 0.5695	t) PM 10 0.0147	1 1 1 0T H 10 0T H 0T H 0T H	00.00	8 7 7 0 0 MC 0

	VOC	SOx	NOx	CO	PM 10	PM 2.5	CH₄	CO ₂ e
Emission Factors	0.1671	0.0024	1.0824	0.6620	0.0418	0.0418	0.0150	239.45
Tractors/Loaders/	Backhoes	Composit	e					
	VOC	SOx	NOx	CO	PM 10	PM 2.5	CH₄	CO ₂ e
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	SOx	NOx	CO	PM 10	PM 2.5	Pb	NH ₃	CO ₂ e
LDGV	000.309	000.002	000.239	003.421	000.007	000.006		000.023	00318.896
LDGT	000.374	000.003	000.418	004.700	000.009	800.000		000.024	00411.188
HDGV	000.696	000.005	001.076	015.187	000.021	000.019		000.044	00758.535
LDDV	000.115	000.003	000.139	002.492	000.004	000.004		800.000	00309.094
LDDT	000.250	000.004	000.394	004.238	000.007	000.006		800.000	00438.938
HDDV	000.572	000.013	005.669	001.917	000.170	000.156		000.030	01506.304
MC	002.734	000.003	000.845	013.302	000.027	000.023		000.055	00396.858

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9.2.4 Paving Phase Formula(s)

- Construction Exhaust Emissions per Phase

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

16 - Vehicle Exhaust Emissions per Phase

- 17 VMT_{VE} = PA * 0.25 * (1 / 27) * (1 / HC) * HT
- 18
 19 VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
- 20 PA: Paving Area (ft^2)
- 21 0.25: Thickness of Paving Area (ft)
- 22 (1 / 27): Conversion Factor cubic feet to cubic yards (1 yd³ / 27 ft³)
- 23 HC: Áverage Hauling Truck Capacity (yd³)
 - (1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd³)
 - HT: Average Hauling Truck Round Trip Commute (mile/trip)
- 26 27 VPOL = (VMTVE * 0.002205 * EFPOL * VM) / 2000
- 28
 29 V_{POL}: Vehicle Emissions (TONs)
- 30 VMTve: Vehicle Exhaust Vehicle Miles Travel (miles)
- 31 0.002205: Conversion Factor grams to pounds
- 32 EF_{POL}: Emission Factor for Pollutant (grams/mile)
- 33 VM: Vehicle Exhaust On Road Vehicle Mixture (%)
- 34 2000: Conversion Factor pounds to tons35
- 36 Worker Trips Emissions per Phase
- 37 VMT_{WT} = WD * WT * 1.25 * NE
- 38
 39 VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
- 40 WD: Number of Total Work Days (days)
- 41 WT: Average Worker Round Trip Commute (mile)
- 42 1.25: Conversion Factor Number of Construction Equipment to Number of Works

	NE: Number of Construction Equipment		
1 2			
3 4	V _{POL} = (VMT _{WT} * 0.002205 * EF _{POL} * VM) / 2000		
5 6 7 8 9 10	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		
11 12 13	- Off-Gassing Emissions per Phase VOC _P = (2.62 * PA) / 43560		
14 15 16 17 18 19 20	VOC _P : Paving VOC Emissions (TONs) 2.62: Emission Factor (Ib/acre) PA: Paving Area (ft ²) 43560: Conversion Factor square feet to acre (43	3560 ft2 / acre)² / acre	e)
21	10. Construction / Demolition		
24 25 26 27 28 29 30 31 32	 Activity Location County: Otero Regulatory Area(s): NOT IN A REGULATORY A Activity Title: Extend Taxiway L Parking Pavement Activity Description: Taxiway L: Extend taxiway from 		
33	Runway 7-25 to Runway 04-22		
34 35 36 37 38	- Activity Start Date Start Month: 1 Start Month: 2025		
35 36 37 38 39 40 41 42	Start Month: 1		
35 36 37 38 39 40 41	Start Month: 1 Start Month: 2025 - Activity End Date Indefinite: False End Month: 12 End Month: 2025 - Activity Emissions:		
35 36 37 38 39 40 41 42 43	Start Month:1Start Month:2025- Activity End DateIndefinite:FalseEnd Month:12End Month:2025- Activity Emissions:PollutantTotal Emissions (TONs)	Pollutant	Total Emissions (TONs)
35 36 37 38 39 40 41 42 43	Start Month:1Start Month:2025- Activity End DateIndefinite:Indefinite:FalseEnd Month:12End Month:2025- Activity Emissions:PollutantVOC0.333171	PM 2.5	0.077076
35 36 37 38 39 40 41 42 43	Start Month: 1 Start Month: 2025 - Activity End Date Indefinite: Indefinite: False End Month: 12 End Month: 2025 - Activity Emissions: Pollutant Total Emissions (TONs) VOC 0.333171 SO _x 0.004861	PM 2.5 Pb	0.077076
35 36 37 38 39 40 41 42 43	Start Month:1Start Month:2025- Activity End Date Indefinite:False End Month:End Month:12 End Month:2025- Activity Emissions:PollutantTotal Emissions (TONs) 0.004861 NOxVOc0.333171 0.004861 NOx	PM 2.5 Pb NH ₃	0.077076 0.000000 0.001367
35 36 37 38 39 40 41 42 43	Start Month: 1 Start Month: 2025 - Activity End Date Indefinite: Indefinite: False End Month: 12 End Month: 2025 - Activity Emissions: Pollutant Total Emissions (TONs) VOC 0.333171 SO _x 0.004861	PM 2.5 Pb	0.077076

- 45 46
- 47

10.1 Site Grading Phase

10.1.1 Site Grading Phase Timeline Assumptions 48

49

Number of 10.1.2 Site G General Site Area of Sit Amount of	ion f Month: 2 f Days: 0 Grading Phase Grading Inform	e Assump	otions						
Number of Number of 10.1.2 Site G - General Site Area of Sit Amount of	f Month: 2 f Days: 0 Grading Phase Grading Inform	e Assump	ntions						
Number of 10.1.2 Site G General Site Area of Sit Amount of	f Days: 0 Grading Phase Grading Inform	e Assump	ntions						
10.1.2 Site G General Site Area of Sit Amount of	Grading Phase Grading Inform	e Assump	ntions						
- General Site Area of Sit Amount o	Grading Infor	e Assump	ntions						
Area of Si Amount of		motion							
Amount of	te to be Grade			1245500					
	f Material to be	e Hauled O							
Amount of	f Material to be	Hauled O	off-Site (yd ³): 10570					
- Site Grading	Default Settin	as							
Default Se	ettings Used:	-	Yes						
Average D	Day(s) worked	per week:	5 (default)						
	n Exhaust (defa	ault)							
		ment Nam	e			nber Of Jipment	Hour	s Per	
Excavators C					-40	1		8	
Graders Com						1		8	
	uction Equipme Dozers Compo		ite		1			8	
		ISILE			1 3		8		
	ders/Backhoes (Composite	Scrapers Composite						
Vehicle Exha	iust	<u> </u>				3 3		8	
Average H Average H	lauling Truck (lauling Truck F aust Vehicle M	Capacity (y Round Trip ixture (%)	o Commute	(mile):	default) 20 (defa	3 ult)		8	
Average H - Vehicle Exha	lauling Truck (lauling Truck F aust Vehicle M LDGV	Capacity (y Round Trip ixture (%) LDGT	Commute HDGV	(mile):	20 (defa	3 ult) DT I	IDDV	8	
Average H Average H - Vehicle Exha POVs	Hauling Truck (Hauling Truck F aust Vehicle Mi LDGV 0	Capacity (y Round Trip ixture (%)	o Commute	(mile):	20 (defa	3 ult) DT I	HDDV 00.00	8	
Average H Average H - Vehicle Exha POVs - Worker Trips Average V	Hauling Truck (Hauling Truck F Aust Vehicle M LDGV 0 S Vorker Round T S Vehicle Mixtu	Capacity (y Round Trip ixture (%) LDGT 0 Trip Comn	D Commute	(mile):	20 (defa	3 ult) DT I 1			
Average H Average H - Vehicle Exha POVs - Worker Trips Average V	Hauling Truck (Hauling Truck F aust Vehicle M LDGV 0 s Vorker Round T s Vehicle Mixtu	Capacity (y Round Trip ixture (%) LDGT 0 Trip Comn ure (%)	D Commute	(mile): LDDV 0 20 (defaul	20 (defa LDI 0	3 ult) DT I 1 DT I	00.00	8	
Average H Average H Vehicle Exha POVs Worker Trips Average V Worker Trips POVs 10.1.3 Site G	Hauling Truck (Hauling Truck F Aust Vehicle Mi DGV 0 S Vorker Round 7 S S Vehicle Mixtu LDGV 50.00 Grading Phase n Exhaust Emis	Capacity (y Round Trip ixture (%) LDGT 0 Trip Comn ure (%) LDGT 50.00 e Emissio	Definition of the formation of the forma	(mile): LDDV 0 20 (default LDDV 0 \$)	20 (defa LDI 0 1) LDI 0	3 ult) DT I 1 DT I	00.00	8	
Average H Average H Vehicle Exha POVs Worker Trips Average V Worker Trips POVs 10.1.3 Site G	Hauling Truck (Hauling Truck F Aust Vehicle Mi LDGV 0 S Vorker Round S Vorker Round 50.00 Grading Phase n Exhaust Emis Composite	Capacity (y Round Trip ixture (%) LDGT 0 Trip Comn ure (%) LDGT 50.00 e Emissio ssion Fact	D Commute HDGV 0 nute (mile): HDGV 0 on Factor(s ors (lb/hou	(mile): LDDV 0 20 (default LDDV 0 s) r) (default	20 (defa LDI 0 t) LDI 0	3 ult) DT 1 DT 1	00.00	8 N	
Average H Average H Vehicle Exha POVs Worker Trips Average V Worker Trips POVs 10.1.3 Site G Construction Excavators (Hauling Truck G Hauling Truck F Aust Vehicle Mi LDGV 0 s Vorker Round s Vorker Round 50.00 Grading Phase n Exhaust Emis Composite VOC	Capacity (y Round Trip ixture (%) LDGT 0 Trip Comn ure (%) LDGT 50.00 e Emissio ssion Fact	D Commute HDGV 0 nute (mile): HDGV 0 on Factor(s ors (lb/hou	(mile): LDDV 0 20 (default LDDV 0 s) r) (default CO	20 (defa LDI 0 t) PM 10	3 ult) DT I DT I PM 2.5	00.00	8 N	
Average H Average H Vehicle Exha POVs Worker Trips Average V Worker Trips POVs 10.1.3 Site G Construction	Hauling Truck G Hauling Truck F Auust Vehicle Mi LDGV 0 S Worker Round S Vehicle Mixtu LDGV 50.00 Grading Phase n Exhaust Emis Composite VOC ctors 0.0559	Capacity (y Round Trip ixture (%) LDGT 0 Trip Comn ure (%) LDGT 50.00 e Emissio ssion Fact	D Commute HDGV 0 nute (mile): HDGV 0 on Factor(s ors (lb/hou	(mile): LDDV 0 20 (default LDDV 0 s) r) (default	20 (defa LDI 0 t) LDI 0	3 ult) DT 1 DT 1	00.00	8 N	
Average H Average H - Vehicle Exha POVs - Worker Trips Average V - Worker Trips POVs 10.1.3 Site G - Construction Excavators C	Hauling Truck G Hauling Truck F Auust Vehicle Mi LDGV 0 0 S Worker Round T S Vehicle Mixtu LDGV 50.00 Grading Phase n Exhaust Emis Composite VOC ctors 0.0559 nposite VOC	Capacity (y Round Trip ixture (%) LDGT 0 Trip Comn ure (%) LDGT 50.00 e Emissio ssion Fact SO _x 0.0013	D Commute HDGV 0 nute (mile): HDGV 0 on Factor(s ors (lb/hou	(mile): LDDV 0 20 (default LDDV 0 s) r) (default CO	20 (defa LDI 0 t) PM 10	3 ult) DT I DT I PM 2.5	00.00	8 N 1 (

	VOC	SOx	NOx	CO	PM 10	PM 2.5	CH₄	CO ₂ e		
Emission Factors	0.0442	0.0012	0.2021	0.3473	0.0068	0.0068	0.0039	122.60		
Rubber Tired Dozers Composite										
	VOC	SOx	NOx	СО	PM 10	PM 2.5	CH₄	CO ₂ e		
Emission Factors	0.1671	0.0024	1.0824	0.6620	0.0418	0.0418	0.0150	239.45		
Scrapers Compos	ite									
	VOC	SOx	NOx	CO	PM 10	PM 2.5	CH ₄	CO ₂ e		
Emission Factors	0.1495	0.0026	0.8387	0.7186	0.0334	0.0334	0.0134	262.81		
Tractors/Loaders/	Backhoes	Composit	te	•						
	VOC	SOx	NOx	CO	PM 10	PM 2.5	CH₄	CO ₂ e		
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	SOx	NOx	CO	PM 10	PM 2.5	Pb	NH ₃	CO ₂ e
LDGV	000.309	000.002	000.239	003.421	000.007	000.006		000.023	00318.896
LDGT	000.374	000.003	000.418	004.700	000.009	800.000		000.024	00411.188
HDGV	000.696	000.005	001.076	015.187	000.021	000.019		000.044	00758.535
LDDV	000.115	000.003	000.139	002.492	000.004	000.004		800.000	00309.094
LDDT	000.250	000.004	000.394	004.238	000.007	000.006		800.000	00438.938
HDDV	000.572	000.013	005.669	001.917	000.170	000.156		000.030	01506.304
MC	002.734	000.003	000.845	013.302	000.027	000.023		000.055	00396.858

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)
- 10 20: Conversion Factor Acre Day to pounds (20 lb / 1 Acre Day)
- 11 ACRE: Total acres (acres)
- 12 WD: Number of Total Work Days (days)
- 13 2000: Conversion Factor pounds to tons
- 15 Construction Exhaust Emissions per Phase
- 16 CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000
- 17

24

- CEEPOL: Construction Exhaust Emissions (TONs)
- CEE_{POL}: Construction Exha
 NE: Number of Equipment
- 20 WD: Number of Total Work Days (days)
- 21 H: Hours Worked per Day (hours)
- 22 EF_{POL}: Emission Factor for Pollutant (lb/hour)
- 23 2000: Conversion Factor pounds to tons

25 - Vehicle Exhaust Emissions per Phase

- 26 VMT_{VE} = (HA_{OnSite} + HA_{OffSite}) * (1 / HC) * HT
- 27
 28 VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
- 29 HA_{OnSite}: Amount of Material to be Hauled On-Site (yd³)
- 30 HA_{OffSite}: Amount of Material to be Hauled Off-Site (yd³)
- 31 HC: Average Hauling Truck Capacity (yd³)
- 32 (1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd³)
- 33 HT: Average Hauling Truck Round Trip Commute (mile/trip)
- 34 35 V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000

VPOL: Vehicle Emissions (TONs) 1 VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles) 2 0.002205: Conversion Factor grams to pounds 3 EFPOL: Emission Factor for Pollutant (grams/mile) 4 VM: Vehicle Exhaust On Road Vehicle Mixture (%) 5 2000: Conversion Factor pounds to tons 6 7 8 - Worker Trips Emissions per Phase 9 VMT_{WT} = WD * WT * 1.25 * NE 10 VMTwT: Worker Trips Vehicle Miles Travel (miles) 11 WD: Number of Total Work Days (days) 12 WT: Average Worker Round Trip Commute (mile) 13 1.25: Conversion Factor Number of Construction Equipment to Number of Works 14 NE: Number of Construction Equipment 15 16 17 VPOL = (VMTwt * 0.002205 * EFPOL * VM) / 2000 18 19 VPOL: Vehicle Emissions (TONs) 20 VMTwT: Worker Trips Vehicle Miles Travel (miles) 0.002205: Conversion Factor grams to pounds 21 EF_{POL}: Emission Factor for Pollutant (grams/mile) 22 VM: Worker Trips On Road Vehicle Mixture (%) 23 2000: Conversion Factor pounds to tons 24 25 10.2 Paving Phase 26 27 **10.2.1 Paving Phase Timeline Assumptions** 28 29 - Phase Start Date 30 31 Start Month: 6 32 Start Quarter: 1 Start Year: 2025 33 34 35 - Phase Duration Number of Month: 6 36 Number of Days: 0 37 38 **10.2.2 Paving Phase Assumptions** 39 40 41 - General Paving Information Paving Area (ft²): 1031450 42 43 44 - Paving Default Settings 45 Default Settings Used: Yes 46 Average Day(s) worked per week: 5 (default) 47 48 - Construction Exhaust (default)

Equipment Name	Equipment	Hours Per Day
Pavers Composite	1	8
Paving Equipment Composite	2	8
Rollers Composite	2	6

49

50 - Vehicle Exhaust

	•	-		Commute	. ,	20 (defau			
- Vehicle	Exhaust \								
	LD		.DGT	HDGV	LDDV	LDD	Т	HDDV	M
POVs	C)	0	0	0	0		100.00	0
- Workeı Aver	[.] Trips age Worke	er Round T	rip Comm	ute (mile):	20 (defaul	t)			
- Worker	[.] Trips Veh								
	LD		.DGT	HDGV	LDDV	LDD	T	HDDV	M
POVs	50.	00 5	50.00	0	0	0		0	0
	uction Exh tors Comp		SO _x	NOx	CO	, PM 10	PM 2.5	CH4	C
LACAVA		1	SO	NO	00	PM 10	DM 2 5		<u> </u>
Emissic	n Factors	0.0559	0.0013	0.2269	0.5086	0.0086	0.0086		
	s Composi								
		VOC	SOx	NOx	CO	PM 10	PM 2.5	CH4	C
	on Factors	0.0676	0.0014	0.3314	0.5695	0.0147	0.0147	0.0061	13
Other C	Constructio								
		VOC	SOx	NOx	CO	PM 10	PM 2.5		C
	n Factors	0.0442	0.0012	0.2021	0.3473	0.0068	0.0068	0.0039	12
Rubber	[·] Tired Doz								-
<u> </u>		VOC	SOx	NO _x	<u>CO</u>	PM 10	PM 2.5		C
	n Factors	0.1671	0.0024	1.0824	0.6620	0.0418	0.0418	0.0150	23
Scrape	rs Compos		80	NO	CO	DM 40	DMOF		
		VOC	SOx	NOx	0.7186	PM 10 0.0334	PM 2.5 0.0334		26
Emionia	n Eactors	0 1 4 0 5	0 0006	00007					· 20
	n Factors	0.1495	0.0026	0.8387	0.7100	0.0334	0.0334	0.0104	_
	on Factors s/Loaders/	/Backhoes	Composit	te				-	
Tractor	s/Loaders/	Backhoes VOC	Composit SO _x	te NO _x	CO	PM 10	PM 2.5	CH4	C
Tractor		/Backhoes	Composit	te				CH4	C
Tractor Emissio	s/Loaders/	Backhoes VOC 0.0335	Composit SO _x 0.0007	te NO _x 0.1857	CO 0.3586	PM 10 0.0058	PM 2.5	CH4	C
Tractor Emissio	s/Loaders/	Backhoes VOC 0.0335	Composit SO _x 0.0007	te NO _x 0.1857	CO 0.3586	PM 10 0.0058	PM 2.5	CH4	C
Tractor Emissio	s/Loaders/ on Factors Exhaust &	Backhoes VOC 0.0335 Worker T	Composit SO _x 0.0007 Trips Emis	te NO _x 0.1857 sion Facto	CO 0.3586 ors (grams	PM 10 0.0058 /mile)	PM 2.5 0.0058	6 CH ₄ 0.0030	C (66

	VOC	SOx	NOx	CO	PM 10	PM 2.5	Pb	NH ₃	CO ₂ e
LDGV	000.309	000.002	000.239	003.421	000.007	000.006		000.023	00318.896
LDGT	000.374	000.003	000.418	004.700	000.009	800.000		000.024	00411.188
HDGV	000.696	000.005	001.076	015.187	000.021	000.019		000.044	00758.535
LDDV	000.115	000.003	000.139	002.492	000.004	000.004		800.000	00309.094
LDDT	000.250	000.004	000.394	004.238	000.007	000.006		800.000	00438.938
HDDV	000.572	000.013	005.669	001.917	000.170	000.156		000.030	01506.304
MC	002.734	000.003	000.845	013.302	000.027	000.023		000.055	00396.858

10.2.4 Paving Phase Formula(s) 16 17

- Construction Exhaust Emissions per Phase CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000 19
- 20
- CEEPOL: Construction Exhaust Emissions (TONs) 21
- NE: Number of Equipment 22
- WD: Number of Total Work Days (days) 23
- 24 H: Hours Worked per Day (hours)
- EF_{POL}: Emission Factor for Pollutant (lb/hour) 25

1	2000: Conversion Factor pounds to tons
2	
3	- Vehicle Exhaust Emissions per Phase
4	VMT _{VE} = PA * 0.25 * (1 / 27) * (1 / HC) * HT
5	
6	VMT _{VE} : Vehicle Exhaust Vehicle Miles Travel (miles)
7	PA: Paving Area (ft ²)
8	0.25: Thickness of Paving Area (ft)
9	(1 / 27): Conversion Factor cubic feet to cubic yards (1 yd ³ / 27 ft ³)
10	HC: Average Hauling Truck Capacity (yd ³)
11	(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd ³)
12	HT: Average Hauling Truck Round Trip Commute (mile/trip)
13	
14	V _{POL} = (VMT _{VE} * 0.002205 * EF _{POL} * VM) / 2000
15	
16	VPOL: Vehicle Emissions (TONs)
17	VMT _{VE} : Vehicle Exhaust Vehicle Miles Travel (miles)
18	0.002205: Conversion Factor grams to pounds
19	EFPOL: Emission Factor for Pollutant (grams/mile)
20	VM: Vehicle Exhaust On Road Vehicle Mixture (%)
21	2000: Conversion Factor pounds to tons
22	
23	- Worker Trips Emissions per Phase
24	VMT _{WT} = WD * WT * 1.25 * NE
25	
26	VMTwt: Worker Trips Vehicle Miles Travel (miles)
27	WD: Number of Total Work Days (days)
28	WT: Average Worker Round Trip Commute (mile)
29	1.25: Conversion Factor Number of Construction Equipment to Number of Works
30	NE: Number of Construction Equipment
31	
32	V _{POL} = (VMT _{WT} * 0.002205 * EF _{POL} * VM) / 2000
33	V (List Francisco (TON))
34	VPOL: Vehicle Emissions (TONs)
35	VMTve: Worker Trips Vehicle Miles Travel (miles)
36	0.002205: Conversion Factor grams to pounds
37	EF _{POL} : Emission Factor for Pollutant (grams/mile)
38	VM: Worker Trips On Road Vehicle Mixture (%)
39	2000: Conversion Factor pounds to tons
40	Off Ossaina Emissions non Dhasa
41	- Off-Gassing Emissions per Phase
42	$VOC_P = (2.62 * PA) / 43560$
43	VOC-L Daving VOC Emissions (TONs)
44 45	VOC _P : Paving VOC Emissions (TONs) 2.62: Emission Factor (Ib/acre)
45 46	
46	PA: Paving Area (ft^2) (2560; Conversion Easter equare fact to zero (42560 ft^2 / zero) ² / zero)
47 48	43560: Conversion Factor square feet to acre (43560 ft2 / acre) ² / acre)
48 49	
	11 Construction / Domalition
50	11. Construction / Demolition
51	
52	11.1 General Information & Timeline Assumptions
53	

55

- Activity Location County: Otero

- Activity Title:	Taxiway L Shoulder Pavement	and Demo		
- Activity Descri		- ta Dumunau 04.0		
Taxiway L: E	xtend taxiway from Runway 7-25	o to Runway 04-2	22	
- Activity Start D				
Start Month:				
Start Month:	2025			
- Activity End Da				
Indefinite:	False			
End Month:	12			
End Month:	2025			
- Activity Emissi				
Pollutant VOC	Total Emissions (TONs) 0.319259	Poll PM 2.5		otal Emissions (TO 0.076409
SO _x	0.004805	Pb Pb)	0.000000
NOx	1.700145	NH ₃		0.001239
CO	2.032817	CO ₂ e		480.6
PM 10	17.130902			
- Phase Start Da Start Month: Start Quarte	r: 1	nptions		
- Phase Start Da Start Month: Start Quarte Start Year: - Phase Duratior	ading Phase Timeline Assur te 5 r: 1 2025	nptions		
- Phase Start Da Start Month: Start Quarte Start Year:	ading Phase Timeline Assur te 5 r: 1 2025 n Nonth: 2	nptions		
 Phase Start Da Start Month: Start Quarte Start Year: Phase Duration Number of N Number of D 	ading Phase Timeline Assur te 5 r: 1 2025 n Nonth: 2	nptions		
 Phase Start Da Start Month: Start Quarte Start Year: Phase Duration Number of M Number of D 11.1.2 Site Gra General Site G 	ading Phase Timeline Assur te 5 r: 1 2025 n Month: 2 Days: 0 ading Phase Assumptions rading Information			
 Phase Start Da Start Month: Start Quarte Start Year: Phase Duration Number of M Number of D 11.1.2 Site Gra General Site Gra 	ading Phase Timeline Assur te 5 r: 1 2025 n Month: 2 Days: 0 ading Phase Assumptions rading Information to be Graded (ft ²):	857171		
 Phase Start Da Start Month: Start Quarte Start Year: Phase Duration Number of M Number of D 11.1.2 Site Gra General Site Gra Area of Site Amount of M 	ading Phase Timeline Assur te 5 r: 1 2025 n Month: 2 Days: 0 ading Phase Assumptions rading Information to be Graded (ft ²): Material to be Hauled On-Site (y	857171 yd³): 0		
 Phase Start Da Start Month: Start Quarte Start Year: Phase Duration Number of M Number of D 11.1.2 Site Gra General Site Gra Area of Site Amount of M 	ading Phase Timeline Assur te 5 r: 1 2025 n Month: 2 Days: 0 ading Phase Assumptions rading Information to be Graded (ft ²):	857171 yd³): 0		
 Phase Start Da Start Month: Start Quarte Start Year: Phase Duration Number of N Number of D 11.1.2 Site Gra General Site Gra General Site Gra Area of Site Amount of N Amount of N Site Grading D 	ading Phase Timeline Assur te 5 r: 1 2025 n Month: 2 Days: 0 ading Phase Assumptions rading Information to be Graded (ft ²): Material to be Hauled On-Site (y Material to be Hauled Off-Site (y	857171 yd³): 0		
 Phase Start Da Start Month: Start Quarte Start Year: Phase Duration Number of N Number of D 11.1.2 Site Gra General Site Gra General Site Gra Area of Site Amount of N Amount of N Site Grading D Default Setti 	ading Phase Timeline Assur te 5 r: 1 2025 n Month: 2 Days: 0 ading Phase Assumptions rading Information to be Graded (ft ²): Material to be Hauled On-Site (y Material to be Hauled Off-Site (y	857171 yd³): 0 yd³): 10218		
 Phase Start Da Start Month: Start Quarte Start Year: Phase Duration Number of N Number of D 11.1.2 Site Gra General Site Gra General Site Gra Area of Site Amount of N Amount of N Site Grading D Default Setti 	ading Phase Timeline Assur te 5 r: 1 2025 n Month: 2 Days: 0 ading Phase Assumptions rading Information to be Graded (ft ²): Material to be Hauled On-Site (y Material to be Hauled Off-Site (y	857171 yd³): 0 yd³): 10218		
 Phase Start Da Start Month: Start Quarte Start Year: Phase Duration Number of M Number of D 11.1.2 Site Gra General Site Gra General Site Gra Area of Site Amount of M Amount of M Site Grading D Default Setti Average Day 	ading Phase Timeline Assur te 5 r: 1 2025 n Month: 2 Days: 0 ading Phase Assumptions rading Information to be Graded (ft ²): Material to be Hauled On-Site (y Material to be Hauled Off-Site (y laterial to be Hauled Off-Site (y efault Settings ngs Used: Yes ((s) worked per week: 5 (defaul	857171 yd³): 0 yd³): 10218		
 Phase Start Da Start Month: Start Quarte Start Year: Phase Duration Number of M Number of D 11.1.2 Site Gra General Site Gra General Site Gra Area of Site Amount of M Amount of M Site Grading D Default Setti Average Day 	ading Phase Timeline Assur te 5 r: 1 2025 n Month: 2 Days: 0 ading Phase Assumptions rading Information to be Graded (ft ²): Material to be Hauled On-Site (y Material to be Hauled Off-Site (y	857171 yd³): 0 yd³): 10218	Number	
 Phase Start Da Start Month: Start Quarte Start Year: Phase Duration Number of N Number of D 11.1.2 Site Gra General Site Gra General Site Gi Area of Site Amount of N Amount of N Site Grading D Default Setti Average Day Construction E 	ading Phase Timeline Assur te 5 r: 1 2025 n Month: 2 Days: 0 ading Phase Assumptions rading Information to be Graded (ft ²): Material to be Hauled On-Site (y Material to be Hauled Off-Site (y Material to be Hauled Off-Site (y efault Settings ngs Used: Yes r(s) worked per week: 5 (default Equipment Name	857171 yd³): 0 yd³): 10218	Number (Equipme	nt
 Phase Start Da Start Month: Start Quarte Start Year: Phase Duration Number of N Number of D 11.1.2 Site Gra General Site Ga Area of Site Amount of N Amount of N Site Grading D Default Setti Average Day Construction E 	ading Phase Timeline Assur te 5 r: 1 2025 n Month: 2 Days: 0 ading Phase Assumptions rading Information to be Graded (ft ²): Material to be Hauled On-Site (y Material to be Hauled Off-Site (y Material to be Hauled Off-Site (y efault Settings ngs Used: Yes r(s) worked per week: 5 (default Equipment Name	857171 yd³): 0 yd³): 10218	Equipme 1	nt 8
 Phase Start Da Start Month: Start Quarte Start Year: Phase Duration Number of N Number of D 11.1.2 Site Gra General Site Gra General Site Gra Area of Site Area of Site Amount of N Amount of N Site Grading D Default Setti Average Day Construction E Excavators Com Graders Compo 	ading Phase Timeline Assur te 5 r: 1 2025 n Month: 2 Days: 0 ading Phase Assumptions rading Information to be Graded (ft ²): Material to be Hauled On-Site (y Material to be Hauled Off-Site (y Material to be Hauled Off-Site (y efault Settings ngs Used: Yes r(s) worked per week: 5 (default Equipment Name	857171 yd³): 0 yd³): 10218	Equipme	nt

Scrapers Composite	3	8
Tractors/Loaders/Backhoes Composite	3	8

- Vehicle Exhaust

- Average Hauling Truck Capacity (yd³):
 - 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							

11.1.3 Site Grading Phase Emission Factor(s)

13 14 15

12

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

Execustors Composite

Excavators Comp	osite										
	VOC	SOx	NOx	СО	PM 10	PM 2.5	CH ₄	CO ₂ e			
Emission Factors	0.0559	0.0013	0.2269	0.5086	0.0086	0.0086	0.0050	119.70			
Graders Composi	te										
	VOC	SOx	NOx	CO	PM 10	PM 2.5	CH ₄	CO ₂ e			
Emission Factors	0.0676	0.0014	0.3314	0.5695	0.0147	0.0147	0.0061	132.89			
Other Construction Equipment Composite											
	VOC	SOx	NOx	СО	PM 10	PM 2.5	CH₄	CO ₂ e			
Emission Factors	0.0442	0.0012	0.2021	0.3473	0.0068	0.0068	0.0039	122.60			
Rubber Tired Doz	ers Compo	osite									
	VOC	SOx	NOx	CO	PM 10	PM 2.5	CH ₄	CO ₂ e			
Emission Factors	0.1671	0.0024	1.0824	0.6620	0.0418	0.0418	0.0150	239.45			
Scrapers Compos	ite										
	VOC	SOx	NOx	СО	PM 10	PM 2.5	CH ₄	CO ₂ e			
Emission Factors	0.1495	0.0026	0.8387	0.7186	0.0334	0.0334	0.0134	262.81			
Tractors/Loaders/	Backhoes	Composit	te								
	VOC	SOx	NOx	CO	PM 10	PM 2.5	CH ₄	CO ₂ e			
Emission Factors	0.0335	0.0007	0.1857	0.3586	0.0058	0.0058	0.0030	66.872			

16 17

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

	VOC	SOx	NOx	CO	PM 10	PM 2.5	Pb	NH ₃	CO ₂ e				
LDGV	000.309	000.002	000.239	003.421	000.007	000.006		000.023	00318.896				
LDGT	000.374	000.003	000.418	004.700	000.009	800.000		000.024	00411.188				
HDGV	000.696	000.005	001.076	015.187	000.021	000.019		000.044	00758.535				
LDDV	000.115	000.003	000.139	002.492	000.004	000.004		800.000	00309.094				
LDDT	000.250	000.004	000.394	004.238	000.007	000.006		800.000	00438.938				
HDDV	000.572	000.013	005.669	001.917	000.170	000.156		000.030	01506.304				
MC	002.734	000.003	000.845	013.302	000.027	000.023		000.055	00396.858				

18

19 **11.1.4 Site Grading Phase Formula(s)**

20

- Fugitive Dust Emissions per Phase 21
- PM10_{FD} = (20 * ACRE * WD) / 2000 22

PM10_{FD}: Fugitive Dust PM 10 Emissions (TONs) 1 2 20: Conversion Factor Acre Day to pounds (20 lb / 1 Acre Day) 3 ACRE: Total acres (acres) 4 WD: Number of Total Work Days (days) 2000: Conversion Factor pounds to tons 5 6 7 - Construction Exhaust Emissions per Phase 8 CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000 9 10 CEEPOL: Construction Exhaust Emissions (TONs) NE: Number of Equipment 11 WD: Number of Total Work Days (days) 12 H: Hours Worked per Day (hours) 13 EFPOL: Emission Factor for Pollutant (lb/hour) 14 2000: Conversion Factor pounds to tons 15 16 17 - Vehicle Exhaust Emissions per Phase 18 VMT_{VE} = (HA_{OnSite} + HA_{OffSite}) * (1 / HC) * HT 19 20 VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles) HA_{OnSite}: Amount of Material to be Hauled On-Site (yd³) 21 22 HAoffsite: Amount of Material to be Hauled Off-Site (yd³) HC: Average Hauling Truck Capacity (yd³) 23 (1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd³) 24 HT: Average Hauling Truck Round Trip Commute (mile/trip) 25 26 V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000 27 28 VPOL: Vehicle Emissions (TONs) 29 VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles) 30 0.002205: Conversion Factor grams to pounds 31 EF_{POL}: Emission Factor for Pollutant (grams/mile) 32 VM: Vehicle Exhaust On Road Vehicle Mixture (%) 33 34 2000: Conversion Factor pounds to tons 35 - Worker Trips Emissions per Phase 36 VMT_{WT} = WD * WT * 1.25 * NE 37 38 VMT_{WT}: Worker Trips Vehicle Miles Travel (miles) 39 WD: Number of Total Work Days (days) 40 WT: Average Worker Round Trip Commute (mile) 41 1.25: Conversion Factor Number of Construction Equipment to Number of Works 42 NE: Number of Construction Equipment 43 44 V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000 45 46 47 VPOL: Vehicle Emissions (TONs) 48 VMT_{WT}: Worker Trips Vehicle Miles Travel (miles) 0.002205: Conversion Factor grams to pounds 49 EFPOL: Emission Factor for Pollutant (grams/mile) 50 VM: Worker Trips On Road Vehicle Mixture (%) 51 2000: Conversion Factor pounds to tons 52 53 11.2 Paving Phase 54 55

56 **11.2.1 Paving Phase Timeline Assumptions**

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 9 20	 Phase Start I Start Mont Start Quar Start Quar Start Year: Phase Durati Number of Number of 11.2.2 Pavin General Pavi Paving Are Default Se Average D 	h: 6 ter: 1 2025 on Month: 6 Days: 0 g Phase g Phase ag (ft ²): 6 ult Setting ttings Use ay(s) wor	Assu ation 5025 s ed: ked p	2 per week: 5	Yes 5 (default)					
20	- Construction			ult) nent Name	;		-	nber Of	Hours	Per Day
	D						Equ	ipment		0
	Pavers Comp		ooito					2		8 8
	Paving Equipr Rollers Comp		JUSILE					2		6
23 24 25	Average H - Vehicle Exha POVs	•	le Mix		HDGV	LDDV	20 (defa) DT H	IDDV 00.00	MC
26 27 28 29 30	- Worker Trips Average W - Worker Trips	/orker Ro	lixtu	re (%)	. ,	`	,			
	POVs	LDGV 50.00		DGT 50.00	HDGV 0	LDDV	LDI 0		IDDV 0	MC 0
31 32 33 34	11.2.3 Pavin - Construction Excavators C	g Phase Exhaust composite	Emis Emis	sion Fac	tor(s)			PM 2.5	CH4	CO ₂ e
	Emission Fact		559	0.0013	0.2269	0.5086	0.0086	0.0086	0.0050	119.70
	Graders Com									
			C	SOx	NOx	CO	PM 10	PM 2.5	CH ₄	CO ₂ e
	Emission Fact		676	0.0014	0.3314	0.5695	0.0147	0.0147	0.0061	132.89
	Other Constr			1	1					
	_ · · _			SO _x	NOx	CO	PM 10	PM 2.5	CH ₄	CO ₂ e
	Emission Fac		442	0.0012	0.2021	0.3473	0.0068	0.0068	0.0039	122.60
	Rubber Tired	V	omp DC 671	SO x 0.0024	NO x 1.0824	CO 0.6620	PM 10 0.0418	PM 2.5 0.0418	CH ₄ 0.0150	CO₂e 239.45

Scrapers Compos	Scrapers Composite											
	VOC	SOx	NOx	СО	PM 10	PM 2.5	CH ₄	CO ₂ e				
Emission Factors	0.1495	0.0026	0.8387	0.7186	0.0334	0.0334	0.0134	262.81				
Tractors/Loaders/	Backhoes	Composit	e									
	VOC	SOx	NOx	CO	PM 10	PM 2.5	CH ₄	CO ₂ e				
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	SOx	NOx	CO	PM 10	PM 2.5	Pb	NH ₃	CO ₂ e
LDGV	000.309	000.002	000.239	003.421	000.007	000.006		000.023	00318.896
LDGT	000.374	000.003	000.418	004.700	000.009	800.000		000.024	00411.188
HDGV	000.696	000.005	001.076	015.187	000.021	000.019		000.044	00758.535
LDDV	000.115	000.003	000.139	002.492	000.004	000.004		800.000	00309.094
LDDT	000.250	000.004	000.394	004.238	000.007	000.006		800.000	00438.938
HDDV	000.572	000.013	005.669	001.917	000.170	000.156		000.030	01506.304
MC	002.734	000.003	000.845	013.302	000.027	000.023		000.055	00396.858

11.2.4 Paving Phase Formula(s)

- Construction Exhaust Emissions per Phase

7	CEE _{POL} = (NE * WD * H * EF _{POL}) / 2000
8 9	CEE _{POL} : Construction Exhaust Emissions (TONs)
10	NE: Number of Equipment
11	WD: Number of Total Work Days (days)
12	H: Hours Worked per Day (hours)
13	EF_{POL} : Emission Factor for Pollutant (lb/hour)
14	2000: Conversion Factor pounds to tons
15	
16	- Vehicle Exhaust Emissions per Phase
17	VMT _{VE} = PA * 0.25 * (1 / 27) * (1 / HC) * HT
18	
19	VMT _{VE} : Vehicle Exhaust Vehicle Miles Travel (miles)
20	PA: Paving Area (ft ²)
21	0.25: Thickness of Paving Area (ft)
22	(1 / 27): Conversion Factor cubic feet to cubic yards (1 yd ³ / 27 ft ³)
23	HC: Average Hauling Truck Capacity (yd ³)
24	(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd ³)
25	HT: Average Hauling Truck Round Trip Commute (mile/trip)
26	
27	V _{POL} = (VMT _{VE} * 0.002205 * EF _{POL} * VM) / 2000
28	
29	VPOL: Vehicle Emissions (TONs)
30	VMT _{VE} : Vehicle Exhaust Vehicle Miles Travel (miles)
31	0.002205: Conversion Factor grams to pounds
32	EFPOL: Emission Factor for Pollutant (grams/mile)
33	VM: Vehicle Exhaust On Road Vehicle Mixture (%)
34	2000: Conversion Factor pounds to tons
35	
36	- Worker Trips Emissions per Phase
37 38	VMT _{WT} = WD * WT * 1.25 * NE
39	VMT _{wt} : Worker Trips Vehicle Miles Travel (miles)
40	WD: Number of Total Work Days (days)
41	WT: Average Worker Round Trip Commute (mile)
••	

1 2		sion Factor Number of Constr of Construction Equipment	uction Equ	uipment to Numbe	r of Works
3 4 5	V _{POL} = (VMT _{WT} * (0.002205 * EF _{POL} * VM) / 2000			
6 7 8 9 10 11	VMT _{VE} : Work 0.002205: Co EF _{POL} : Emiss VM: Worker	e Emissions (TONs) ker Trips Vehicle Miles Travel (onversion Factor grams to pou sion Factor for Pollutant (grams Trips On Road Vehicle Mixture rsion Factor pounds to tons	nds s/mile)		
12 13 14	- Off-Gassing Er VOC _P = (2.62 * P	nissions per Phase A) / 43560			
15 16 17 18 19 20	2.62: Emissi PA: Paving A	g VOC Emissions (TONs) on Factor (Ib/acre) Area (ft²) rersion Factor square feet to ad	cre (43560) ft2 / acre) ² / acre)
21 22	12. Constru	ction / Demolition			
23 24	12.1 General l	nformation & Timeline As	sumptio	າຣ	
25 26 27 28 29	- Activity Locatio County: Of Regulatory A		ORY ARE	A	
30 31	- Activity Title:	Extended Taxiway J Parking	Pavemen	t and Demo	
32 33 34	- Activity Descri Extend taxiwa	ption: ay from Taxiway A to Taxiway	R		
35 36 37	- Activity Start D Start Month: Start Month:	1			
38 39	- Activity End Da				
40	Indefinite:	False			
41	End Month:	12			
42 43	End Month:	2025			
44	- Activity Emissi		1		
	Pollutant	Total Emissions (TONs)	-	Pollutant	Total Emissions (TONs)
	VOC	0.346833	-	PM 2.5	0.077397
	SOx	0.004888	-	Pb	0.000000
	NOx	1.736063	-	NH₃	0.001429
	CO	2.044962		CO ₂ e	490.2
	PM 10	32.320910	J		
45 46	12.1 Site Grad	ing Phase			

- 46
- 46 47

12.1 Site Grading Phase

48 **12.1.1 Site Grading Phase Timeline Assumptions**

Start Year: 2025 - Phase Duration Number of Month: 2 Number of Days: 0 12.1.2 Site Grading Phase Assumptions - General Site Grading Information Area of Site to be Graded (ft ²): 1620590 Amount of Material to be Hauled On-Site (yd ³): 0 Amount of Material to be Hauled Off-Site (yd ³): 8591 - Site Grading Default Settings Default Settings Used: Yes Average Day(s) worked per week: 5 (default) - Construction Exhaust (default) Equipment Name	Number C		
Number of Month: 2 Number of Days: 0 12.1.2 Site Grading Phase Assumptions - General Site Grading Information Area of Site to be Graded (ft ²): 1620590 Amount of Material to be Hauled On-Site (yd ³): 0 Amount of Material to be Hauled Off-Site (yd ³): 8591 - Site Grading Default Settings Default Settings Used: Yes Average Day(s) worked per week: 5 (default) - Construction Exhaust (default)	Number C		
Number of Month: 2 Number of Days: 0 12.1.2 Site Grading Phase Assumptions - General Site Grading Information Area of Site to be Graded (ft ²): 1620590 Amount of Material to be Hauled On-Site (yd ³): 0 Amount of Material to be Hauled Off-Site (yd ³): 8591 - Site Grading Default Settings Default Settings Used: Yes Average Day(s) worked per week: 5 (default) - Construction Exhaust (default)	Number C		
Number of Days: 0 12.1.2 Site Grading Phase Assumptions - General Site Grading Information Area of Site to be Graded (ft ²): 1620590 Amount of Material to be Hauled On-Site (yd ³): 0 Amount of Material to be Hauled Off-Site (yd ³): 8591 - Site Grading Default Settings Pes Default Settings Used: Yes Average Day(s) worked per week: 5 (default) - Construction Exhaust (default) 1000000000000000000000000000000000000	Number C		
 General Site Grading Information Area of Site to be Graded (ft²): 1620590 Amount of Material to be Hauled On-Site (yd³): 0 Amount of Material to be Hauled Off-Site (yd³): 8591 Site Grading Default Settings Default Settings Used: Yes Average Day(s) worked per week: 5 (default) Construction Exhaust (default) 	Number C		
Amount of Material to be Hauled On-Site (yd ³): 0 Amount of Material to be Hauled Off-Site (yd ³): 8591 - Site Grading Default Settings Default Settings Used: Yes Average Day(s) worked per week: 5 (default) - Construction Exhaust (default)	Number C		
Amount of Material to be Hauled Off-Site (yd ³): 8591 - Site Grading Default Settings Default Settings Used: Yes Average Day(s) worked per week: 5 (default) - Construction Exhaust (default)	Number C		
- Site Grading Default Settings Default Settings Used: Yes Average Day(s) worked per week: 5 (default) - Construction Exhaust (default)	Number C		
Default Settings Used: Yes Average Day(s) worked per week: 5 (default) - Construction Exhaust (default)	Number C		
Average Day(s) worked per week: 5 (default) - Construction Exhaust (default)	Number C		
	Number C		
	Number C		
)f Hour	rs Per D
	Equipmer		
Excavators Composite	1		8
Graders Composite Other Construction Equipment Composite	<u> </u>		<u>8</u> 8
Rubber Tired Dozers Composite	1		8
Scrapers Composite	3		8
Tractors/Loaders/Backhoes Composite	3		8
- Vehicle Exhaust Vehicle Mixture (%) LDGV LDGT HDGV LDDV	0 (default)	HDDV	MC
POVs 0 0 0 0	0	100.00	0
- Worker Trips Average Worker Round Trip Commute (mile): 20 (default)			
Average worker Round Trip Commute (mile): 20 (default)- Worker Trips Vehicle Mixture (%)LDGVLDGTHDGVLDDVPOVs50.0050.00	LDDT 0	HDDV 0	MC 0

	VOC	SOx	NOx	CO	PM 10	PM 2.5	CH ₄	CO ₂ e
Emission Factors	0.0442	0.0012	0.2021	0.3473	0.0068	0.0068	0.0039	122.60
Rubber Tired Doz	ers Compo	osite	•	•		•	•	
	VOC	SOx	NOx	CO	PM 10	PM 2.5	CH ₄	CO ₂ e
Emission Factors	0.1671	0.0024	1.0824	0.6620	0.0418	0.0418	0.0150	239.45
Scrapers Compos	ite							
	VOC	SOx	NOx	CO	PM 10	PM 2.5	CH ₄	CO ₂ e
Emission Factors	0.1495	0.0026	0.8387	0.7186	0.0334	0.0334	0.0134	262.81
Tractors/Loaders/	Backhoes	Composit	te	•		•	•	
	VOC	SÖx	NOx	CO	PM 10	PM 2.5	CH ₄	CO ₂ e
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)

1011010					le (graine				
	VOC	SOx	NOx	CO	PM 10	PM 2.5	Pb	NH ₃	CO ₂ e
LDGV	000.309	000.002	000.239	003.421	000.007	000.006		000.023	00318.896
LDGT	000.374	000.003	000.418	004.700	000.009	800.000		000.024	00411.188
HDGV	000.696	000.005	001.076	015.187	000.021	000.019		000.044	00758.535
LDDV	000.115	000.003	000.139	002.492	000.004	000.004		800.000	00309.094
LDDT	000.250	000.004	000.394	004.238	000.007	000.006		800.000	00438.938
HDDV	000.572	000.013	005.669	001.917	000.170	000.156		000.030	01506.304
MC	002.734	000.003	000.845	013.302	000.027	000.023		000.055	00396.858

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)
- 11 ACRE: Total acres (acres)
- 12 WD: Number of Total Work Days (days)
- 13 2000: Conversion Factor pounds to tons

15 - Construction Exhaust Emissions per Phase

- 16 CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000
- 17

14

- CEEPOL: Construction Exhaust Emissions (TONs)
- CEE_{POL}: Construction Exha
 NE: Number of Equipment
- 20 WD: Number of Total Work Days (days)
- 21 H: Hours Worked per Day (hours)
- 22 EF_{POL}: Emission Factor for Pollutant (lb/hour)
- 23 2000: Conversion Factor pounds to tons

2425 - Vehicle Exhaust Emissions per Phase

- 26 VMT_{VE} = (HA_{OnSite} + HA_{OffSite}) * (1 / HC) * HT
- 27
 28 VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
- 29 HA_{OnSite}: Amount of Material to be Hauled On-Site (yd³)
- 30 HA_{offSite}: Amount of Material to be Hauled Off-Site (yd³)
- 31 HC: Average Hauling Truck Capacity (yd³)
- 32 (1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd³)
- 33 HT: Average Hauling Truck Round Trip Commute (mile/trip)
- 34 35 V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000

VPOL: Vehicle Emissions (TONs) 1 VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles) 2 0.002205: Conversion Factor grams to pounds 3 EFPOL: Emission Factor for Pollutant (grams/mile) 4 VM: Vehicle Exhaust On Road Vehicle Mixture (%) 5 2000: Conversion Factor pounds to tons 6 7 8 - Worker Trips Emissions per Phase 9 VMT_{WT} = WD * WT * 1.25 * NE 10 VMTwT: Worker Trips Vehicle Miles Travel (miles) 11 WD: Number of Total Work Days (days) 12 WT: Average Worker Round Trip Commute (mile) 13 1.25: Conversion Factor Number of Construction Equipment to Number of Works 14 NE: Number of Construction Equipment 15 16 17 VPOL = (VMTwt * 0.002205 * EFPOL * VM) / 2000 18 19 VPOL: Vehicle Emissions (TONs) 20 VMTwT: Worker Trips Vehicle Miles Travel (miles) 0.002205: Conversion Factor grams to pounds 21 EF_{POL}: Emission Factor for Pollutant (grams/mile) 22 VM: Worker Trips On Road Vehicle Mixture (%) 23 2000: Conversion Factor pounds to tons 24 25 12.2 Paving Phase 26 27 12.2.1 Paving Phase Timeline Assumptions 28 29 - Phase Start Date 30 31 Start Month: 7 32 Start Quarter: 1 Start Year: 2025 33 34 35 - Phase Duration Number of Month: 6 36 Number of Days: 0 37 38 12.2.2 Paving Phase Assumptions 39 40 41 - General Paving Information Paving Area (ft²): 1446619 42 43 - Paving Default Settings 44 45 **Default Settings Used:** Yes 46 Average Day(s) worked per week: 5 (default) 47 48 - Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Pavers Composite	1	8
Paving Equipment Composite	2	8
Rollers Composite	2	6

49

50 - Vehicle Exhaust

- Vehicle		ehicle Mix					_		
	LDO		.DGT	HDGV	LDDV	LDD	T	HDDV	М
POVs	0		0	0	0	0		100.00	(
- Worker	Trins								
		r Round T	rip Comm	ute (mile):	20 (defaul	t)			
	•		•	· · ·	,	,			
- Worker		icle Mixtur							
	LDO		.DGT	HDGV	LDDV	LDD	T	HDDV	Μ
POVs	50.	00 5	50.00	0	0	0		0	C
	~	ase Emis							
	•								
	ors Comp		SION Facto	ors (lb/hou	i) (default)			
	oro oomp	VOC	SOx	NOx	CO	PM 10	PM 2.5	5 CH4	С
Emission	Factors	0.0559	0.0013	0.2269	0.5086	0.0086	0.0086		
	Composi								
		VOC	SOx	NOx	CO	PM 10	PM 2.5	5 CH4	С
Emission		0.0676	0.0014	0.3314	0.5695	0.0147	0.0147	0.0061	l 13
Other Co	onstructio	on Equipmo							
		VOC	SOx	NOx	CO	PM 10	PM 2.5		С
Emission		0.0442	0.0012	0.2021	0.3473	0.0068	0.0068	0.0039) 12
Rubber	Tired Doz	ers Compo							
<u> </u>	<u> </u>	VOC	SO _x	NO _x	CO	PM 10	PM 2.5		<u>C</u>
Emission		0.1671	0.0024	1.0824	0.6620	0.0418	0.0418	0.0150) 23
Scrapers	s Compos	VOC	SOx	NOx	CO	PM 10	PM 2.5	6 CH4	С
Emission	Factors	0.1495	0.0026	0.8387	0.7186	0.0334	0.0334		
		Backhoes			0.7100	0.0004	0.0004	0.0134	r 20
11401013		VOC	SOx	NOx	CO	PM 10	PM 2.5	5 CH4	С
Emission	Factors	0.0335	0.0007	0.1857	0.3586	0.0058	0.0058		
			5.0001	5	2.0000	2.0000	2.000	0.0000	
- Vehicle		Worker T	rips Emis	sion Facto	ors (grams	/mile)			
	VOC	SOx	NOx	CO	PM 10	PM 2.5	Pb	NH ₃	CC
LDGV	000.309	000.002	000.239	003.421	000.007	000.006		000.023	00318
LDGT	000 374	000 003	000 418	004 700	000 009	000 008		000 024	0041

	VOC	SOx	NOx	CO	PM 10	PM 2.5	Pb	NH ₃	CO ₂ e
LDGV	000.309	000.002	000.239	003.421	000.007	000.006		000.023	00318.896
LDGT	000.374	000.003	000.418	004.700	000.009	000.008		000.024	00411.188
HDGV	000.696	000.005	001.076	015.187	000.021	000.019		000.044	00758.535
LDDV	000.115	000.003	000.139	002.492	000.004	000.004		800.000	00309.094
LDDT	000.250	000.004	000.394	004.238	000.007	000.006		800.000	00438.938
HDDV	000.572	000.013	005.669	001.917	000.170	000.156		000.030	01506.304
MC	002.734	000.003	000.845	013.302	000.027	000.023		000.055	00396.858
									1

16 **12.2.4 Paving Phase Formula(s)**

17 18

8 - Construction Exhaust Emissions per Phase

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

- 20
- 21 CEE_{POL}: Construction Exhaust Emissions (TONs)
- 22 NE: Number of Equipment
- 23 WD: Number of Total Work Days (days)
- 24 H: Hours Worked per Day (hours)
- 25 EF_{POL}: Emission Factor for Pollutant (lb/hour)

1	2000: Conversion Factor pounds to tons
2	
3	- Vehicle Exhaust Emissions per Phase
4	VMT _{VE} = PA * 0.25 * (1 / 27) * (1 / HC) * HT
5	
6	VMT _{VE} : Vehicle Exhaust Vehicle Miles Travel (miles)
7	PA: Paving Area (ft²)
8	0.25: Thickness of Paving Area (ft)
9	(1 / 27): Conversion Factor cubic feet to cubic yards (1 yd ³ / 27 ft ³)
10	HC: Average Hauling Truck Capacity (yd ³)
11	(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd ³)
12	HT: Average Hauling Truck Round Trip Commute (mile/trip)
13	
14	V _{POL} = (VMT _{VE} * 0.002205 * EF _{POL} * VM) / 2000
15	
16	V _{POL} : Vehicle Emissions (TONs)
17	VMTve: Vehicle Exhaust Vehicle Miles Travel (miles)
18	0.002205: Conversion Factor grams to pounds
19	EF _{POL} : Emission Factor for Pollutant (grams/mile)
20	VM: Vehicle Exhaust On Road Vehicle Mixture (%)
21	2000: Conversion Factor pounds to tons
22	
23	- Worker Trips Emissions per Phase
24	VMT _{WT} = WD * WT * 1.25 * NE
25	
26	VMTwT: Worker Trips Vehicle Miles Travel (miles)
27	WD: Number of Total Work Days (days)
28	WT: Average Worker Round Trip Commute (mile)
29	1.25: Conversion Factor Number of Construction Equipment to Number of Works
30	NE: Number of Construction Equipment
31	
32	V _{POL} = (VMT _{WT} * 0.002205 * EF _{POL} * VM) / 2000
33	
34	VPOL: Vehicle Emissions (TONs)
35	VMTve: Worker Trips Vehicle Miles Travel (miles)
36	0.002205: Conversion Factor grams to pounds
37	EF _{POL} : Emission Factor for Pollutant (grams/mile)
38	VM: Worker Trips On Road Vehicle Mixture (%)
39	2000: Conversion Factor pounds to tons
40	Off Cassing Emissions not Phase
41	- Off-Gassing Emissions per Phase
42	$VOC_P = (2.62 * PA) / 43560$
43 44	VOC-L Deving VOC Emissions (TONs)
44 45	VOC _P : Paving VOC Emissions (TONs) 2.62: Emission Factor (Ib/acre)
45 46	PA: Paving Area (ft^2)
40 47	43560: Conversion Factor square feet to acre (43560 ft2 / acre) ² / acre)
47	45500. Conversion Faciol square leet to acre (45500 fiz / acre) / acre)
40 49	
	13 Construction / Domolition
50	13. Construction / Demolition
51	
52	13.1 General Information & Timeline Assumptions
53	

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- Activity Location County: Otero

Regulatory A				
	Extend Taxiway J Parking Should	der and Demo		
-				
 Activity Descrip Extend taxiwa 	o tion: ly from Taxiway A to Taxiway R			
- Activity Start Da	ate			
Start Month:	1			
Start Month:	2025			
- Activity End Da	te			
Indefinite:	False			
End Month:	12			
End Month:	2025			
A ativity Emissi				
- Activity Emission Pollutant	Total Emissions (TONs)	Pollutan	t Total E	missions (TONs
VOC	0.321800	PM 2.5		0.076229
SOx	0.004790	Pb		0.000000
NOx	1.693621	NH ₃		0.001204
CO	2.030610	CO ₂ e		478.9
PM 10	18.429811			
13.1 Site Gradi 13.1.1 Site Gra - Phase Start Dat Start Month: Start Quarter	ng Phase ding Phase Timeline Assum e 7	ptions		
 13.1.1 Site Gra Phase Start Dat Start Month: Start Quarter Start Year: Phase Duration Number of M 	ng Phase ding Phase Timeline Assum re 7 : 1 2025 onth: 2	ptions		
 13.1.1 Site Gra Phase Start Dat Start Month: Start Quarter Start Year: Phase Duration 	ng Phase ding Phase Timeline Assum re 7 : 1 2025 onth: 2	ptions		
 13.1.1 Site Gra Phase Start Dat Start Month: Start Quarter Start Year: Phase Duration Number of M Number of Data 	ng Phase ding Phase Timeline Assum re 7 : 1 2025 onth: 2	ptions		
 13.1.1 Site Gra Phase Start Dat Start Month: Start Quarter Start Year: Phase Duration Number of M Number of Data 13.1.2 Site Gra General Site Gr Area of Site t Amount of M 	ng Phase ding Phase Timeline Assum re 7 : 1 2025 onth: 2 ays: 0	922466 3): 0		
 13.1.1 Site Gra Phase Start Dat Start Month: Start Quarter Start Year: Phase Duration Number of M Number of Da 13.1.2 Site Gra General Site Gra General Site Gra Area of Site t Amount of M Amount of M Site Grading De Default Settir 	ng Phase ding Phase Timeline Assum re 7 : 1 2025 onth: 2 ays: 0 ding Phase Assumptions ading Information o be Graded (ft ²): aterial to be Hauled On-Site (yd aterial to be Hauled Off-Site (yd	922466 3): 0		
 13.1.1 Site Gra Phase Start Dat Start Month: Start Quarter Start Year: Phase Duration Number of M Number of Da 13.1.2 Site Gra General Site Gra General Site Gra Area of Site t Amount of M Amount of M Site Grading De Default Settir 	ng Phase ding Phase Timeline Assum re 7 : 1 2025 onth: 2 ays: 0 ding Phase Assumptions ading Information o be Graded (ft ²): aterial to be Hauled On-Site (yd aterial to be Hauled Off-Site (yd	922466 3): 0		
 13.1.1 Site Gra Phase Start Dat Start Month: Start Quarter Start Year: Phase Duration Number of M Number of Da 13.1.2 Site Gra General Site Gra General Site Gra Area of Site t Amount of M Amount of M Site Grading Default Settin Average Day 	ng Phase ding Phase Timeline Assum re 7 : 1 2025 onth: 2 ays: 0 ding Phase Assumptions ading Information o be Graded (ft ²): aterial to be Hauled On-Site (yd aterial to be Hauled Off-Site (yd	922466 ³): 0 ³): 8189	Number Of	Hours Per Da
 13.1.1 Site Gra Phase Start Dat Start Month: Start Quarter Start Year: Phase Duration Number of M Number of Da 13.1.2 Site Gra General Site Gra General Site Gra Area of Site t Amount of M Amount of M Site Grading Default Settin Average Day 	ng Phase ding Phase Timeline Assum re 7 : 1 2025 onth: 2 ays: 0 ding Phase Assumptions ading Information o be Graded (ft ²): aterial to be Hauled On-Site (yd aterial to be Hauled Off-Site (yd aterial to be Hau	922466 ³): 0 ³): 8189	Number Of Equipment	Hours Per Da
 13.1.1 Site Gra Phase Start Dat Start Month: Start Quarter Start Year: Phase Duration Number of M Number of Data 13.1.2 Site Gra General Site Gra General Site Gra Area of Site t Amount of M Amount of M Site Grading De Default Settin Average Day Construction Estimation 	ng Phase ding Phase Timeline Assum a 7 1 1 2025 onth: 2 ays: 0 ding Phase Assumptions ading Information o be Graded (ft ²): aterial to be Hauled On-Site (yd aterial to be Hauled Off-Site (yd aterial to be Haul	922466 ³): 0 ³): 8189	Equipment	Hours Per Da
 13.1.1 Site Gra Phase Start Dat Start Month: Start Quarter Start Year: Phase Duration Number of M Number of Da 13.1.2 Site Gra General Site Gra General Site Gra Area of Site t Amount of M Amount of M Site Grading De Default Settin Average Day Construction Exerct Com Graders Composite 	ng Phase ding Phase Timeline Assum a 7 1 1 2025 onth: 2 ays: 0 ding Phase Assumptions ading Information o be Graded (ft ²): aterial to be Hauled On-Site (yd aterial to be Hauled Off-Site (yd aterial to be Haul	922466 ³): 0 ³): 8189	Equipment 1	8

Scrapers Composite	3	8
Tractors/Loaders/Backhoes Composite	3	8

- Vehicle Exhaust

- Average Hauling Truck Capacity (yd³):
 - 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

13.1.3 Site Grading Phase Emission Factor(s)

13 14 15

12

1 2

3

4

5 6

7 8

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

Excavators Composite

Excavators Comp	USILE							
	VOC	SOx	NOx	CO	PM 10	PM 2.5	CH₄	CO ₂ e
Emission Factors	0.0559	0.0013	0.2269	0.5086	0.0086	0.0086	0.0050	119.70
Graders Composi	te							
	VOC	SOx	NOx	СО	PM 10	PM 2.5	CH ₄	CO ₂ e
Emission Factors	0.0676	0.0014	0.3314	0.5695	0.0147	0.0147	0.0061	132.89
Other Constructio	n Equipm	ent Comp	osite					
	VOC	SOx	NOx	CO	PM 10	PM 2.5	CH ₄	CO ₂ e
Emission Factors	0.0442	0.0012	0.2021	0.3473	0.0068	0.0068	0.0039	122.60
Rubber Tired Doz	ers Compo	osite			-			
	VOC	SOx	NOx	СО	PM 10	PM 2.5	CH ₄	CO ₂ e
Emission Factors	0.1671	0.0024	1.0824	0.6620	0.0418	0.0418	0.0150	239.45
Scrapers Compos	ite							
	VOC	SOx	NOx	СО	PM 10	PM 2.5	CH ₄	CO ₂ e
Emission Factors	0.1495	0.0026	0.8387	0.7186	0.0334	0.0334	0.0134	262.81
Tractors/Loaders/	Backhoes	Composit	te					
	VOC	SOx	NOx	СО	PM 10	PM 2.5	CH ₄	CO ₂ e
Emission Factors	0.0335	0.0007	0.1857	0.3586	0.0058	0.0058	0.0030	66.872

16 17

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

	VOC	SOx	NOx	CO	PM 10	PM 2.5	Pb	NH ₃	CO ₂ e
LDGV	000.309	000.002	000.239	003.421	000.007	000.006		000.023	00318.896
LDGT	000.374	000.003	000.418	004.700	000.009	800.000		000.024	00411.188
HDGV	000.696	000.005	001.076	015.187	000.021	000.019		000.044	00758.535
LDDV	000.115	000.003	000.139	002.492	000.004	000.004		000.008	00309.094
LDDT	000.250	000.004	000.394	004.238	000.007	000.006		800.000	00438.938
HDDV	000.572	000.013	005.669	001.917	000.170	000.156		000.030	01506.304
MC	002.734	000.003	000.845	013.302	000.027	000.023		000.055	00396.858

18 19

13.1.4 Site Grading Phase Formula(s)

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- Fugitive Dust Emissions per Phase 21

PM10_{FD} = (20 * ACRE * WD) / 2000 22

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OCTOBER 2022

PM10_{FD}: Fugitive Dust PM 10 Emissions (TONs) 1 2 20: Conversion Factor Acre Day to pounds (20 lb / 1 Acre Day) 3 ACRE: Total acres (acres) 4 WD: Number of Total Work Days (days) 2000: Conversion Factor pounds to tons 5 6 7 - Construction Exhaust Emissions per Phase 8 CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000 9 10 CEEPOL: Construction Exhaust Emissions (TONs) **NE: Number of Equipment** 11 WD: Number of Total Work Days (days) 12 H: Hours Worked per Day (hours) 13 EFPOL: Emission Factor for Pollutant (lb/hour) 14 2000: Conversion Factor pounds to tons 15 16 17 - Vehicle Exhaust Emissions per Phase 18 VMT_{VE} = (HA_{OnSite} + HA_{OffSite}) * (1 / HC) * HT 19 20 VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles) HA_{OnSite}: Amount of Material to be Hauled On-Site (yd³) 21 22 HA_{OffSite}: Amount of Material to be Hauled Off-Site (yd³) HC: Average Hauling Truck Capacity (yd³) 23 (1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd³) 24 HT: Average Hauling Truck Round Trip Commute (mile/trip) 25 26 V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000 27 28 VPOL: Vehicle Emissions (TONs) 29 VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles) 30 0.002205: Conversion Factor grams to pounds 31 EFPOL: Emission Factor for Pollutant (grams/mile) 32 VM: Vehicle Exhaust On Road Vehicle Mixture (%) 33 34 2000: Conversion Factor pounds to tons 35 - Worker Trips Emissions per Phase 36 VMT_{WT} = WD * WT * 1.25 * NE 37 38 VMT_{WT}: Worker Trips Vehicle Miles Travel (miles) 39 WD: Number of Total Work Days (days) 40 WT: Average Worker Round Trip Commute (mile) 41 1.25: Conversion Factor Number of Construction Equipment to Number of Works 42 NE: Number of Construction Equipment 43 44 V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000 45 46 47 VPOL: Vehicle Emissions (TONs) 48 VMT_{WT}: Worker Trips Vehicle Miles Travel (miles) 0.002205: Conversion Factor grams to pounds 49 EFPOL: Emission Factor for Pollutant (grams/mile) 50 VM: Worker Trips On Road Vehicle Mixture (%) 51 2000: Conversion Factor pounds to tons 52 53 54 13.2 Paving Phase

55

56 13.2.1 Paving Phase Timeline Assumptions

1 2 3 4 5 6 7 8 9	 Phase Start Dat Start Month: Start Quarter Start Year: Phase Duration Number of Monumber of Data 	7 : 1 2025 onth: 6							
10 11 12	13.2.2 Paving F	Phase Assi	umptions						
13 14 15	- General Paving Paving Area								
16 17 18 19	- Paving Default Settin Default Settin Average Day	ngs Used: (s) worked	per week:	Yes 5 (default)					
20	- Construction Ex		ault) ment Name	e		Nun	nber Of	Hours	Per Day
						Equ	ipment		
	Pavers Composit			1		8			
	Paving Equipmer Rollers Composit		9				2		8 6
21	Rollers Composi	le					Z		0
22 23 24	- Vehicle Exhaus Average Hau		Round Trip	o Commute	(mile):	20 (defa	ult)		
25	- Vehicle Exhaus			HDCV			רד ∟	עסט	MC
			ixture (%) LDGT 0	HDGV 0	LDDV	LDI		IDDV 00.00	MC 0
	- Worker Trips Average Wor	DGV 0 ker Round	LDGT 0 Trip Comn	0 nute (mile):	0 20 (defaul	t)	1	00.00	0
25 26 27 28 29	- Worker Trips Average Wor - Worker Trips Ve	DGV 0 ker Round ⁻ chicle Mixtu DGV	LDGT	0 nute (mile): HDGV	0 20 (defaul	0 t)	1 DT	00.00	0 MC
25 26 27 28 29 30	- Worker Trips Average Wor - Worker Trips Ve	DGV 0 ker Round ⁻ chicle Mixtu DGV	LDGT 0 Trip Comn	0 nute (mile):	0 20 (defaul	t)	1 DT	00.00	0
25 26 27 28 29	- Worker Trips Average Wor - Worker Trips Ve	DGV 0 ker Round chicle Mixtu DGV 50.00 Phase Emis xhaust Emis nposite	LDGT 0 Trip Comn re (%) LDGT 50.00 ssion Fact	0 nute (mile): HDGV 0 ctor(s) cors (Ib/hou	0 20 (defaul LDDV 0 r) (default	t) LDI 0	DT F	00.00	0 MC 0
25 26 27 28 29 30 31 32 33	POVs POVs - Worker Trips Average Wor - Worker Trips Value - Worker Trips Value 1000 - 100	DGV 0 ker Round bicle Mixtu DGV 50.00 Phase Emis xhaust Emis nposite VOC	LDGT 0 Trip Comn re (%) LDGT 50.00 ssion Fact ssion Fact	0 nute (mile): HDGV 0 ctor(s) cors (Ib/hou	0 20 (defaul LDDV 0 r) (default	t) LDI 0) PM 10	DT F PM 2.5	00.00	0 MC 0
25 26 27 28 29 30 31 32 33	L POVs - Worker Trips Average Wor - Worker Trips Ver POVs 5 13.2.3 Paving F - Construction Excavators Con Emission Factors	DGV 0 ker Round ehicle Mixtu DGV io.00 Phase Emis xhaust Emis nposite VOC io.0559	LDGT 0 Trip Comn re (%) LDGT 50.00 ssion Fact	0 nute (mile): HDGV 0 ctor(s) cors (Ib/hou	0 20 (defaul LDDV 0 r) (default	t) LDI 0	DT F	00.00	0 MC 0
25 26 27 28 29 30 31 32 33	POVs POVs - Worker Trips Average Wor - Worker Trips Value - Worker Trips Value 1000 - 100	DGV 0 ker Round ehicle Mixtu DGV iol.00 Phase Emis nposite VOC iol.0559 osite	LDGT 0 Trip Comn Ire (%) LDGT 50.00 ssion Fact ssion Fact SO _x 0.0013	0 nute (mile): HDGV 0 ctor(s) cors (lb/hou NO _x 0.2269	0 20 (defaul LDDV 0 r) (default CO 0.5086) PM 10 0.0086	DT H PM 2.5 0.0086	00.00 IDDV 0 CH4 0.0050	0 MC 0 CO2e 119.70
25 26 27 28 29 30 31 32 33	L POVs - Worker Trips Average Wor - Worker Trips Value POVs 5 13.2.3 Paving F - Construction Excavators Con Emission Factors Graders Component	DGV 0 ker Round ehicle Mixtu DGV iology Phase Emis xhaust Emis nposite VOC iology iology iology	LDGT 0 Trip Comn Ire (%) LDGT 50.00 ssion Fact ssion Fact SO _x 0.0013 SO _x	0 nute (mile): HDGV 0 :tor(s) cors (lb/hou 0.2269	0 20 (defaul 0 LDDV 0 r) (default CO 0.5086	 0 t) LDI 0 PM 10 0.0086 PM 10	DT H PM 2.5 0.0086 PM 2.5	00.00 IDDV 0 CH4 0.0050 CH4	0 MC 0 0 5 0 2 0 119.70 5 0 2 6 0 2 6
25 26 27 28 29 30 31 32 33	L POVs - Worker Trips Average Wor - Worker Trips Value POVs 5 13.2.3 Paving F - Construction Excavators Compo Emission Factors Graders Compo Emission Factors	DGV 0 ker Round ehicle Mixtu DGV 50.00 Phase Emis xhaust Emis nposite VOC s 0.0559 osite VOC s 0.0676	LDGT 0 Trip Comn re (%) LDGT 50.00 ssion Fact ssion Fact SO _x 0.0013 SO _x 0.0014	0 nute (mile): HDGV 0 :tor(s) :tor(s) ors (lb/hou 0.2269 NO _x 0.3314	0 20 (defaul LDDV 0 r) (default CO 0.5086) PM 10 0.0086	DT H PM 2.5 0.0086	00.00 IDDV 0 CH4 0.0050	0 MC 0 CO2e 119.70
25 26 27 28 29 30 31 32 33	L POVs - Worker Trips Average Wor - Worker Trips Value POVs 5 13.2.3 Paving F - Construction Excavators Con Emission Factors Graders Component	DGV 0 ker Round chicle Mixtu DGV chicle Mixtu chicle Mixtu DGV chicle Mixtu DGV chicle Mixtu DGV chicle Mixtu DGV chicle Mixtu chicle Mixtu DGV chicle Mixtu	LDGT 0 Trip Comn re (%) LDGT 50.00 ssion Fact ssion Fact SO _x 0.0013 SO _x 0.0014 nent Comp	0 nute (mile): HDGV 0 ctor(s) cors (lb/hou NO _x 0.2269 NO _x 0.3314 posite	0 20 (defaul 0 LDDV 0 r) (default CO 0.5086 CO 0.5695	 0 t) LDI 0 PM 10 0.0086 PM 10 0.0147 	PM 2.5 0.0086 PM 2.5 0.0147	00.00 IDDV 0 CH4 0.0050 CH4 0.0061	0 MC 0 0 119.70 CO₂e 132.89
25 26 27 28 29 30 31 32 33	L POVs - Worker Trips Average Wor - Worker Trips Value POVs 5 13.2.3 Paving F - Construction Excavators Compo Emission Factors Graders Compo Emission Factors Other Construction	DGV 0 ker Round chicle Mixtu DGV io.00 Phase Emis xhaust Emis nposite VOC is 0.0559 posite VOC io.0676 tion Equipn VOC	LDGT 0 Trip Comn re (%) LDGT 50.00 ssion Fact ssion Fact SO _x 0.0013 SO _x 0.0014 nent Comp SO _x	0 nute (mile): HDGV 0 ctor(s) ctor(s) 0.2269 NOx 0.2269 NOx 0.3314 posite NOx	0 20 (defaul 0 7) (default CO 0.5086 CO 0.5695	 0 t) LDI 0 PM 10 0.0147 PM 10 0.0147 	PM 2.5 0.0086 PM 2.5 0.0147 PM 2.5	00.00 IDDV 0 CH4 0.0050 CH4 0.0061 CH4	0 MC 0 0 119.70 CO2e 132.89 CO2e
25 26 27 28 29 30 31 32 33	POVs POVs - Worker Trips Average Wor - Worker Trips Value POVs 5 13.2.3 Paving F - Construction Excavators Com Emission Factors Graders Compo Emission Factors Other Construct Emission Factors	DGV 0 ker Round chicle Mixtu DGV chicle Mixtu chicle Mixtu DGV chicle Mixtu	LDGT 0 Trip Comn re (%) LDGT 50.00 ssion Fact ssion Fact SO _x 0.0013 SO _x 0.0014 nent Comp SO _x 0.0012	0 nute (mile): HDGV 0 ctor(s) cors (lb/hou NO _x 0.2269 NO _x 0.3314 posite	0 20 (defaul 0 LDDV 0 r) (default CO 0.5086 CO 0.5695	 0 t) LDI 0 PM 10 0.0086 PM 10 0.0147 	PM 2.5 0.0086 PM 2.5 0.0147	00.00 IDDV 0 CH4 0.0050 CH4 0.0061	0 MC 0 0 119.70 CO₂e 132.89
25 26 27 28 29 30 31 32 33	L POVs - Worker Trips Average Wor - Worker Trips Value POVs 5 13.2.3 Paving F - Construction Excavators Compo Emission Factors Graders Compo Emission Factors Other Construction	DGV 0 ker Round chicle Mixtu DGV chicle Mixtu chicle Mixtu <td>LDGT 0 0 0 Trip Comm 0 Ire (%) 1 LDGT 50.00 ssion Fact 50.00 ssion Fact SOx 0.0013 0.0014 nent Comp SOx 0.0012 0.0012</td> <td>0 nute (mile): HDGV 0 ctor(s) cors (lb/hou NO_x 0.2269 NO_x 0.3314 posite NO_x 0.2021</td> <td>0 20 (defaul 0 0 r) (default CO 0.5086 CO 0.5695 CO 0.3473</td> <td> 0 LDI 0 0<td>PM 2.5 0.0086 PM 2.5 0.0147 PM 2.5 0.0068</td><td>00.00 IDDV 0 CH4 0.0050 CH4 0.0061 CH4 0.0039</td><td>0 MC 0 0 119.70 CO2e 132.89 CO2e 122.60</td></td>	LDGT 0 0 0 Trip Comm 0 Ire (%) 1 LDGT 50.00 ssion Fact 50.00 ssion Fact SOx 0.0013 0.0014 nent Comp SOx 0.0012 0.0012	0 nute (mile): HDGV 0 ctor(s) cors (lb/hou NO _x 0.2269 NO _x 0.3314 posite NO _x 0.2021	0 20 (defaul 0 0 r) (default CO 0.5086 CO 0.5695 CO 0.3473	 0 LDI 0 0<td>PM 2.5 0.0086 PM 2.5 0.0147 PM 2.5 0.0068</td><td>00.00 IDDV 0 CH4 0.0050 CH4 0.0061 CH4 0.0039</td><td>0 MC 0 0 119.70 CO2e 132.89 CO2e 122.60</td>	PM 2.5 0.0086 PM 2.5 0.0147 PM 2.5 0.0068	00.00 IDDV 0 CH4 0.0050 CH4 0.0061 CH4 0.0039	0 MC 0 0 119.70 CO2e 132.89 CO2e 122.60
25 26 27 28 29 30 31 32 33	POVs POVs - Worker Trips Average Wor - Worker Trips Value POVs 5 13.2.3 Paving F - Construction Excavators Com Emission Factors Graders Compo Emission Factors Other Construct Emission Factors	DGV 0 ker Round chicle Mixtu DGV chicle Mixtu chicle Mixtu DGV chicle Mixtu	LDGT 0 Trip Comn re (%) LDGT 50.00 ssion Fact ssion Fact SO _x 0.0013 SO _x 0.0014 nent Comp SO _x 0.0012	0 nute (mile): HDGV 0 ctor(s) ctor(s) 0.2269 NOx 0.2269 NOx 0.3314 posite NOx	0 20 (defaul 0 7) (default CO 0.5086 CO 0.5695	 0 t) LDI 0 PM 10 0.0147 PM 10	PM 2.5 0.0086 PM 2.5 0.0147 PM 2.5	00.00 IDDV 0 CH4 0.0050 CH4 0.0061 CH4	0 MC 0 0 119.70 CO2e 132.89 CO2e

Scrapers Compos	ite							
	VOC	SOx	NOx	СО	PM 10	PM 2.5	CH₄	CO ₂ e
Emission Factors	0.1495	0.0026	0.8387	0.7186	0.0334	0.0334	0.0134	262.81
Tractors/Loaders/	Backhoes	Composit	e			•	•	
	VOC	SOx	NOx	СО	PM 10	PM 2.5	CH₄	CO ₂ e
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	SOx	NOx	CO	PM 10	PM 2.5	Pb	NH ₃	CO ₂ e
LDGV	000.309	000.002	000.239	003.421	000.007	000.006		000.023	00318.896
LDGT	000.374	000.003	000.418	004.700	000.009	800.000		000.024	00411.188
HDGV	000.696	000.005	001.076	015.187	000.021	000.019		000.044	00758.535
LDDV	000.115	000.003	000.139	002.492	000.004	000.004		800.000	00309.094
LDDT	000.250	000.004	000.394	004.238	000.007	000.006		800.000	00438.938
HDDV	000.572	000.013	005.669	001.917	000.170	000.156		000.030	01506.304
MC	002.734	000.003	000.845	013.302	000.027	000.023		000.055	00396.858

13.2.4 Paving Phase Formula(s)

- Construction Exhaust Emissions per Phase

5 1 1 1 1 1
- 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
VPOL: 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)
č
OCTOBER 2022

	sion Factor Number of Constru of Construction Equipment	uction Equipment to Numb	per of Works
	of Construction Equipment		
VPOI = (VMTwr * (0.002205 * EF _{POL} * VM) / 2000		
V _{POL} : Vehicle	e Emissions (TONs)		
	ker Trips Vehicle Miles Travel (
	onversion Factor grams to pou		
	sion Factor for Pollutant (grams		
	Trips On Road Vehicle Mixture	(%)	
2000: Conve	rsion Factor pounds to tons		
- Off-Gassing Er	nissions per Phase		
VOCP = (2.62 * P			
·			
	g VOC Emissions (TONs)		
	on Factor (lb/acre)		
PA: Paving A		vra (12560 #2 / a)2 /	-o)
4350U: CONV	ersion Factor square feet to ac	acre)- / acre)- / acre	e)
14 Constru	ction / Demolition		
		sumptions	
14.1 General li	nformation & Timeline Ass	sumptions	
14.1 General In - Activity Location	nformation & Timeline Ass	sumptions	
14.1 General In - Activity Location County: Of	nformation & Timeline Ass on tero		
14.1 General In - Activity Location County: Other	nformation & Timeline Ass		
14.1 General In - Activity Location County: Of Regulatory A	nformation & Timeline Ass on tero Area(s): NOT IN A REGULAT		
14.1 General In - Activity Location County: Of	nformation & Timeline Ass on tero Area(s): NOT IN A REGULAT		
14.1 General II - Activity Locatio County: Of Regulatory A - Activity Title:	nformation & Timeline Ass on iero Area(s): NOT IN A REGULAT Building Demo		
14.1 General II - Activity Location County: Of Regulatory A - Activity Title: - Activity Descri	nformation & Timeline Ass on iero Area(s): NOT IN A REGULAT Building Demo	ORY AREA	
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 14.1 General In Activity Location County: Or Regulatory A Activity Title: Activity Description Demo of build Activity Start D Start Month: Start Month: 	nformation & Timeline Ass on lero Area(s): NOT IN A REGULAT Building Demo ption: dings B809, B904, B909, and E ate 1 2025	ORY AREA	
 14.1 General In Activity Location County: Or Regulatory A Activity Title: Activity Descrip Demo of build Activity Start D Start Month: 	nformation & Timeline Ass on lero Area(s): NOT IN A REGULAT Building Demo ption: dings B809, B904, B909, and E ate 1 2025	ORY AREA	
 14.1 General In Activity Location County: Or Regulatory A Activity Title: Activity Description Activity Start Demo of build Activity Start Description Activity Start Month: Activity End Data Indefinite: End Month: 	nformation & Timeline Ass on tero Area(s): NOT IN A REGULAT Building Demo ption: dings B809, B904, B909, and E ate 1 2025	ORY AREA	
 14.1 General In Activity Location County: Or Regulatory A Activity Title: Activity Description Demo of build Activity Start Destart Month: Start Month: Activity End Data Indefinite: 	nformation & Timeline Ass on tero Area(s): NOT IN A REGULAT Building Demo ption: dings B809, B904, B909, and E ate 1 2025	ORY AREA	
 14.1 General In Activity Location County: Order Regulatory A Activity Title: Activity Description Activity Start Demo of build Activity Start Demo of build Activity Start Month: Start Month: Start Month: End Month: End Month: 	nformation & Timeline Ass on tero Area(s): NOT IN A REGULAT Building Demo ption: dings B809, B904, B909, and E ate 1 2025 ate False 12 2025	ORY AREA	
 14.1 General In Activity Location County: Order Regulatory A Activity Title: Activity Descrite Activity Descrite Activity Start Demo of build Activity Start Descrite Activity Start Month: Start Month: Activity End Date Indefinite: End Month: End Month: Activity Emission 	nformation & Timeline Ass on tero Area(s): NOT IN A REGULAT Building Demo ption: dings B809, B904, B909, and E ate 1 2025 ate False 12 2025 ons:	- ORY AREA 9918.	Total Emissions (TO
 14.1 General In Activity Location County: Order Regulatory A Activity Title: Activity Description Activity Start Description Activity End Dastription Activity End Description Activity End Month: End Month: Activity Emissiption Pollutant 	nformation & Timeline Ass on tero Area(s): NOT IN A REGULAT Building Demo ption: dings B809, B904, B909, and B ate 1 2025 ate False 12 2025 ons: Total Emissions (TONs)	ORY AREA 9918. Pollutant	
 14.1 General In Activity Location County: Order Regulatory A Activity Title: Activity Descrite Activity Start Demo of build Activity Start Demo of build Activity Start Month: Start Month: Start Month: Activity End Date Indefinite: End Month: End Month: Activity Emission 	nformation & Timeline Ass on tero Area(s): NOT IN A REGULAT Building Demo ption: dings B809, B904, B909, and E ate 1 2025 ate False 12 2025 ons:	- ORY AREA 9918.	Total Emissions (TO 0.008896 0.000000
 14.1 General In Activity Location County: Or Regulatory A Activity Title: Activity Descrip Demo of build Activity Start D Start Month: Start Month: Start Month: Start Month: End Month: End Month: End Month: Activity Emissi Pollutant VOC 	nformation & Timeline Ass on tero Area(s): NOT IN A REGULAT Building Demo ption: dings B809, B904, B909, and E ate 1 2025 ate False 12 2025 ons: Total Emissions (TONs) 0.042423	ORY AREA 9918. Pollutant PM 2.5	0.008896
 14.1 General In Activity Location County: Or Regulatory A Activity Title: Activity Descrip Demo of build Activity Start Descrip Start Month: Start Month: Start Month: Activity End Da Indefinite: End Month: End Month: Activity Emissi Pollutant VOC SO_x 	nformation & Timeline Ass on tero Area(s): NOT IN A REGULAT Building Demo ption: dings B809, B904, B909, and E ate 1 2025 ate False 12 2025 ons: Total Emissions (TONs) 0.042423 0.000765	ORY AREA 9918. Pollutant PM 2.5 Pb	0.000000

14.1.1 Demolition Phase Timeline Assumptions

Number of Month: 4 Number of Days: 0 14.1.2 Demolition Phase Assumptions General Demolition Information Area of Building to be demolished (ft²): 27125 Height of Building to be demolished (ft): 18 • Default Settings Used: Yes • Average Day(s) worked per week: 5 (default) • Construction Exhaust (default) • Concrete/Industrial Saws Composite 1 Rubber Tired Dozers Composite 1 Tractors/Loaders/Backhoes Composite 2 • Vehicle Exhaust Average Hauling Truck Capacity (yd³): 20 (default) • Vehicle Exhaust Vehicle Mixture (%) Vehicle Exhaust Vehicle Mixture (%) • Vorker Trips Average Worker Round Trip Commute (mile): 20 (default) • Worker Trips Average Worker Round Trip Commute (mile): 20 (default)	Start Month: 1 Start Quarter: 1 Start Year: 2025 Phase Duration Number of Month: 4 Number of Days: 0 14.1.2 Demolition Phase Assumptions General Demolition Information Area of Building to be demolished (ft?): 27125 Height of Building to be demolished (ft?): 18 Default Settings Used: Yes Average Day(s) worked per week: 5 (default) Construction Exhaust (default) Equipment Name Concrete/Industrial Saws Composite 1 Rubber Tired Dozers Composite 1 Tractors/Loaders/Backhoes Composite 2 Vehicle Exhaust Average Hauling Truck Capacity (yd³): 20 (default) Average Hauling Truck Round Trip Commute (mile): 20 (default) Average Hauling Truck Round Trip Commute (mile): 20 (default) Vehicle Exhaust Vehicle Mixture (%) Vehicle Exhaust Vehicle Mixture (%) Worker Trips Average Worker Round Trip Commute (mile): 20 (default) Worker Trips Vehicle Mixture (%) Vehicle Exhaust	Dhaco Stor									
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Construction Exhaust Emission Factors (lb/hour) (default) Concrete/Industrial Saws Composite VOC SOx NOx CO PM 10 PM 2.5 CH4 CO Emission Factors 0.0336 0.0006 0.2470 0.3705 0.0093 0.0030 58. Rubber Tired Dozers Composite VOC SOx NOx CO PM 10 PM 2.5 CH4 CO Emission Factors 0.1671 0.0024 1.0824 0.6620 0.0418 0.0418 0.0150 238 Tractors/Loaders/Backhoes Composite U	VOC SOx NOx CO PM 10 PM 2.5 CH4 CO Emission Factors 0.0336 0.0006 0.2470 0.3705 0.0093 0.0093 0.0030 58. Rubber Tired Dozers Composite VOC SOx NOx CO PM 10 PM 2.5 CH4 CO Emission Factors 0.0336 0.0006 0.2470 0.3705 0.0093 0.0093 0.0030 58. Rubber Tired Dozers Composite VOC SOx NOx CO PM 10 PM 2.5 CH4 CO Emission Factors 0.1671 0.0024 1.0824 0.6620 0.0418 0.0150 239 Tractors/Loaders/Backhoes Composite VOC	Average Average Vehicle Ex POVs Worker Tri Average Worker Tri POVs 4.1.3 Den Constructi Concrete/In Emission Fa Rubber Tir	Haulin haust V LDC 0 ps Worke ps Vehi LDC 50.0 nolition on Exha ndustria actors ed Doze	g Truck R (ehicle Mix 3V L 3V L r Round T cle Mixtur 3V L 00 4 n Phase E aust Emis al Saws C VOC 0.0336 ers Comp VOC 0.1671 Backhoes	rip Comm rip Comm re (%) DGT 0 rip Comm re (%) DGT 50.00 Emission Sion Facto omposite SO _x 0.0006 osite SO _x 0.0024 Composi	Commute HDGV 0 hute (mile): HDGV 0 Factor(s) ors (lb/hou NO _x 0.2470 NO _x 1.0824 te	(mile): LDDV 0 20 (defaul LDDV 0 (default 0 0 0 0 0 0 0 0 0 0 0 0 0	20 (defat LDE 0 t) PM 10 0.0093 PM 10 0.0418	PT H 0T 1 0T H 0.0093 PM 2.5 0.0418	00.00 iDDV 0 CH4 0.0030 CH4 0.0150	0 MC 0

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

0.0007

0.1857

0.3586

0.0058

0.0058

0.0030

0.0335

Emission Factors

66.872

Draft EA for Airfield and Access Control Points Improvements Holloman Air Force Base, New Mexico

		VOC	60	NO	<u> </u>	DM 40	DMOE	Dh	NILI	<u> </u>
		VOC	SO _x	NO _x	CO	PM 10	PM 2.5	Pb	NH ₃	CO 2 e
	LDGV	000.309	000.002	000.239	003.421	000.007	000.006		000.023	00318.896
	LDGT	000.374	000.003	000.418	004.700	000.009	000.008		000.024	00411.188
	HDGV	000.696	000.005	001.076	015.187	000.021	000.019		000.044	00758.535
	LDDV	000.115	000.003	000.139	002.492	000.004	000.004		000.008	00309.094
	MC	002.734	000.003	000.845	013.302	000.027	000.023		000.055	00396.858
1 2 3 4 5 6 7 8 9 10 1 12 13 14 15 16 7 8 9 10 1 12 13 14 15 16 7 8 9 30 1 12 23 24 25 26 27 28 9 30 1 32 33 34 35	- Fugitive PM10 _{FD} = PM10 0.000 BA: <i>A</i> BH: <i>H</i> 2000: - Constru CEE _{POL} = CEE _P NE: <i>M</i> WD: H: H0 EF _{POL} 2000: - Vehicle VMTvE = 1 VMTv BA: <i>A</i> BH: <i>H</i> (1/2) 0.25: HC: <i>A</i> (1/H HT: <i>A</i>	PFD: Fugitiv 42: Emiss Area of Bui Height of B Conversion Internation Exh (NE * WD oL: Constr Number of Number of Number of Durs Worke : Emission Conversion Exhaust E BA * BH * (FE: Vehicle Area of Bui Height of B 7): Conver Volume reage Ha C): Conver	000.004 000.013 000.003 Phase F ssions per * BA * BH) re Dust PM ion Factor P aust Emise * H * EFPOI uction Exha Equipment Total Work ad per Day n Factor for on Factor p Emissions 1 / 27) * 0.1 Exhaust V Iding being uilding being uilding being uilding being aust Comp Exhaust V Iding being uilding being	r Phase / 2000 10 Emissio (lb/ft ³) demolishe e demolish bounds to to sions per L) / 2000 aust Emiss & Days (dar (hours) Pollutant (bounds to to per Phase 25 * (1 / HC ehicle Mile demolish ng demolish r cubic feet ctor (materia k Capacity pr cubic yar k Round Tr	ons (TONs d (ft ²) hed (ft) ons Phase ions (TONs ys) (lb/hour) ons c) * HT s Travel (m (ft ²) n (ft) to cubic ya al reduced (yd ³) rds to trips ip Commu	s) hiles) ards (1 yd ³ by 75% to (1 trip / HC	account fo yd ³)	r air spa	000.008 000.030 000.055	00438.938 01506.304 00396.858
36										
37			missions (T		_					
38			Exhaust V			niles)				
39			version Fac	•		-)				
40			n Factor for							
41 42			haust On R			, /o j				
42 43	2000:	Conversio	on Factor p		2112					
43 44	- Worker	Trine Emi	ssions per	Phaeo						
44 45			1.25 * NE							
45 46			1.20 NE							
40 47		T. Worker	Trips Vehi	cle Miles T	ravel (mile	s)				
48			Total Worl			-,				
-0	vvD.			Curra (ua	, , ,					

- WT: Average Worker Round Trip Commute (mile) 1
- 1.25: Conversion Factor Number of Construction Equipment to Number of Works 2
- NE: Number of Construction Equipment 3
- 4 5 VPOL = (VMTwt * 0.002205 * EFPOL * VM) / 2000
- 6

- 7 VPOL: Vehicle Emissions (TONs)
- VMTwT: Worker Trips Vehicle Miles Travel (miles) 8
- 0.002205: Conversion Factor grams to pounds 9
- EFPOL: Emission Factor for Pollutant (grams/mile) 10
- VM: Worker Trips On Road Vehicle Mixture (%) 11
- 2000: Conversion Factor pounds to tons 12

La Luz 1 13

1 General Information 11

- Action Location
Base: HOLLOMAN AFB
State: New Mexico
County(s): Otero
Regulatory Area(s): NOT IN A REGULATORY AREA
- Action Title: La Luz Gate Alternative 1: Reposition La Luz Gate
- Project Number/s (if applicable):
- Projected Action Start Date: 1 / 2027
- Action Purpose and Need:
The current location and alignment of La Luz Gate does not meet modern anti-terrorism and force
protection standards. Additionally, the remote location of La Luz Gate necessitates pre-positioning of
security forces and other emergency response personnel as response time to the gate is not adequate
under normal conditions.
- Action Description:
Relocate gate entrance approximately 2.5 to 3 miles south, to include a guardhouse, three identification
check lanes with booths, a 2-lane inspection building, and an overwatch tower or pad. Extend security

th, to include a guardhouse, three identification nd an overwatch tower or pad. Extend security fence and cable barriers to meet the relocated entrance. Demolish current facilities and excess pavement.

39 - Point of Contact 40

41	Name:	Jessie Moore
42	Title:	Env. Scientist
43	Organization:	HazAir
44	Email:	jessie.moore@hazair.com
45	Phone Number:	5057025632
46		

47 - Activity List:

	Activity Type	Activity Title
2.	Construction / Demolition	Reposition La Luz Gate

48

37 38

49 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 50 Air Emissions Guide for Air Force Transitory Sources. 51

2.1 General Inf	ormation & Timeline Ass	umption	6	
- Activity Location County: Ot				
Regulatory A	rea(s): NOT IN A REGULAT	ORY ARE	A	
- Activity Title:	Reposition La Luz Gate			
- Activity Descrip		o ''		
				guardhouse, three identification h tower or pad. Extend security
				current facilities and excess
pavement.				
- Activity Start D				
Start Month: Start Month:	1 2027			
- Activity End Da Indefinite:	te False			
End Month:	11			
End Month:	2027			
- Activity Emissi				
Pollutant VOC	Total Emissions (TONs) 0.228106		Pollutant PM 2.5	Total Emissions (TONs) 0.028055
SOx	0.002319	_	Pb	0.000000
			NH ₃	0.000767
NOx	0.702635	-		
	0.702635 1.028136 1.907771	-	CO ₂ e	226.3
NO _x CO PM 10	1.028136 1.907771	-		
NOx CO PM 10	1.028136 1.907771			
NO _x CO PM 10 2.1 Demolition	1.028136 1.907771	ptions		
NOx CO PM 10 2.1 Demolition 2.1.1 Demolitic	1.028136 1.907771 Phase on Phase Timeline Assum	ptions		
NOx CO PM 10 2.1 Demolition 2.1.1 Demolitic - Phase Start Dat Start Month:	1.028136 1.907771 Phase on Phase Timeline Assum	ptions		
NOx CO PM 10 2.1 Demolition 2.1.1 Demolition - Phase Start Dat Start Month: Start Quarter	1.028136 1.907771 Phase on Phase Timeline Assum te 11 :: 1	ptions		
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NO _x CO PM 10 2.1 Demolition 2.1.1 Demolition - Phase Start Dat Start Month: Start Quarter Start Year: - Phase Duration	1.028136 1.907771 Phase on Phase Timeline Assum te 11 :: 1 2027	ptions		
NO _x CO PM 10 2.1 Demolition 2.1.1 Demolition - Phase Start Dat Start Month: Start Quarter Start Year:	1.028136 1.907771 Phase on Phase Timeline Assum te 11 : 1 2027 onth: 1	ptions		
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NOx CO PM 10 2.1 Demolition 2.1.1 Demolition 2.1.1 Demolition 2.1.1 Demolition 2.1.1 Demolition Start Month: Start Quarter Start Year: - Phase Duration Number of D Number of D 2.1.2 Demolition - General Demoli Area of Build	1.028136 1.907771 Phase on Phase Timeline Assum te 11 2027 onth: 1 ays: 0 on Phase Assumptions	8176		

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	e/Industrial						1			8
	Tired Doze						1			1
I ractors/	/Loaders/B	acknoes C	omposite				2			6
	age Haulin		apacity (y cound Trip			default) 20 (defau	ult)			
Vehicle	Exhaust V						.			_
POVs			_DGT	HDGV 0	LDDV	0			IDDV 00.00	I
		1	-	-						
Worker	Trips Veh	icle Mixtu	re (%)							
POVs 2.1.3 De Constru	molition	GV I 00 Phase Er aust Emis al Saws C	DGT 50.00 mission F sion Facto omposite	ors (lb/hou)			IDDV 0	
POVs 2.1.3 De Constru Concret	Emolition ction Exh e/Industria	GV I 00 4 Phase En 4 aust Emis 5 al Saws C VOC 0.0336 0.0336	DGT 50.00 mission F sion Facto omposite SO _x 0.0006	0 actor(s)	0	0	PM 2 0.00	2.5		
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POVs 2.1.3 De Constru Concret Emissior Rubber Emissior Tractors	LDO 50. molition action Exh e/Industria a Factors Tired Doz	GV I 00 I aust Emis I aust Emis I al Saws C VOC 0.0336 I ers Comp VOC 0.1671 I Backhoes	DGT 50.00 mission Factor ssion Factor omposite SOx 0.0006 osite SOx 0.0024	0 actor(s) ors (lb/hou NO _x 0.2470 NO _x 1.0824	0 r) (default CO 0.3705 CO 0.6620	● 0 ● 0.0093 ● 0.0093 ● 0.0418	PM : 0.00 PM : 0.04	2.5 93 2.5 18 2.5	0 CH₄ 0.0030 CH₄ 0.0150	
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POVs 2.1.3 De Constru Concret Emissior Rubber Emissior Tractors Emissior Vehicle LDGV LDGV LDGV LDDV	LD0 50. molition ction Exh e/Industria a Factors Tired Doz a Factors s/Loaders/ a Factors Exhaust & VOC 000.309 000.374 000.696 000.115	GV I 00 Image: Complexity aust Emis Image: Complexity aust Emis Image: Complexity 0.0336 Image: Complexity 0.0336 Image: Complexity VOC 0.0336 Image: Complexity VOC 0.1671 Image: Complexity Backhoes VOC 0.0335 VOC Worker SOx 000.002 000.003 000.003 000.005 000.003 000.003	DGT 50.00 mission Factor sion Factor omposite SOx 0.0006 osite SOx 0.0024 Composite SOx 0.0024 Composite SOx 0.0007 Trips Emis NOx 000.239 000.418 001.076 000.139	0 actor(s) prs (lb/hou NOx 0.2470 NOx 1.0824 te NOx 0.1857 sion Facto 003.421 004.700 015.187 002.492	0 r) (default CO 0.3705 CO 0.6620 CO 0.3586 rs (grams PM 10 000.007 000.009 000.021 000.004	0 PM 10 0.0093 PM 10 0.0418 PM 10 0.0418 /mile) PM 2.5 000.006 000.008 000.019 000.004	PM 2 0.00 PM 2 0.04 PM 2 0.00	2.5 93 2.5 18 2.5 58 0 0 0 0 0 0 0	0 CH4 0.0030 CH4 0.0150 CH4 0.0030 NH3 000.023 000.024 000.024 000.044 000.008) { }
POVs 2.1.3 De Constru Concret Emissior Rubber Emissior Tractors Emissior Vehicle LDGV LDGT HDGV	LDO 50. Find String Factors	GV I 00 Image: Complement of the sector of the se	DGT 50.00 mission Factor sion Factor omposite SOx 0.0006 osite SOx 0.0024 Composite SOx 0.0024 Composite SOx 0.0007 Trips Emis NOx 000.239 000.418 001.076	0 actor(s) prs (lb/hou NOx 0.2470 NOx 1.0824 te NOx 0.1857 sion Facto CO 003.421 004.700 015.187	0 r) (default CO 0.3705 CO 0.6620 CO 0.3586 ors (grams PM 10 000.007 000.009 000.021	0 PM 10 0.0093 PM 10 0.0418 PM 10 0.0458 /mile) PM 2.5 000.006 000.008 000.019	PM 2 0.00 PM 2 0.04 PM 2 0.00	2.5 93 2.5 18 2.5 58 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 CH4 0.0030 CH4 0.0150 CH4 0.0030 NH3 000.023 000.024 000.044) { }) { 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
POVs 2.1.3 De Constru Concret Emissior Rubber Emissior Tractors Emissior Vehicle LDGV LDGV LDGV LDDV LDDV	LDO 50. smolition ction Exh e/Industria n Factors Tired Doz n Factors s/Loaders/ n Factors Exhaust & VOC 000.309 000.374 000.696 000.115 000.250	GV I 00 I 00 I 00 I 00 I 00 I aust Emis aust Emis al Saws C VOC 0.0336 ers Comp VOC 0.1671 Backhoes VOC 0.0335 Worker SOx 000.002 000.003 000.003 000.003 000.003 000.004 I	DGT 50.00 mission Factor sion Factor omposite SOx 0.0006 osite SOx 0.0024 Composite SOx 0.0024 Composite SOx 0.0024 Composite SOx 0.0007 Trips Emis NOx 000.239 000.418 001.076 000.394	0 actor(s) prs (lb/hou NOx 0.2470 NOx 1.0824 te NOx 0.1857 sion Facto 003.421 004.700 015.187 002.492 004.238	0 r) (default CO 0.3705 CO 0.6620 CO 0.3586 rs (grams PM 10 000.007 000.021 000.004 000.007	PM 10 0.0093 PM 10 0.0418 PM 10 0.0418 PM 10 0.0058 /mile) PM 2.5 000.006 000.008 000.004 000.004 000.006	PM 2 0.00 PM 2 0.04 PM 2 0.00	2.5 93 2.5 18 2.5 58 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 CH₄ 0.0030 CH₄ 0.0150 CH₄ 0.0030 NH₃ 000.023 000.024 000.024 000.044 000.008	0 2 0 2 0 2 0 2 0 2 0 2 0 2 0 2 0 2 0 2
POVs 2.1.3 De Constru Concret Emissior Rubber Emissior Tractors Emissior Vehicle LDGV LDGV LDGT HDGV LDDT HDDV MC	LDO 50. Findustria Factors Tired Doz Factors Factors Factors Factors Factors Exhaust 8 VOC 000.309 000.374 000.696 000.115 000.250 000.572 002.734	GV I 00 I 00 I aust Emis aust Emis aust Emis I olo 0.0336 ers Comp VOC 0.1671 I Backhoes VOC 0.0335 I & Worker I SOx 000.002 000.003 000.003 000.003 000.003 000.003 000.003	DGT 50.00 mission Factor sion Factor omposite SOx 0.0006 osite SOx 0.0006 osite SOx 0.0024 Composite SOx 0.0024 Composite SOx 0.0007 Trips Emis NOx 000.239 000.418 001.076 000.394 005.669	0 actor(s) prs (lb/hou NOx 0.2470 NOx 1.0824 te NOx 0.1857 sion Facto 003.421 004.700 015.187 002.492 004.238 001.917	0 r) (default CO 0.3705 CO 0.6620 CO 0.3586 rs (grams PM 10 000.007 000.007 000.021 000.007 000.007 000.007	0 PM 10 0.0093 PM 10 0.0418 PM 10 0.0058 /mile) PM 2.5 000.006 000.008 000.019 000.004 000.006 000.156	PM 2 0.00 PM 2 0.04 PM 2 0.00	2.5 93 2.5 18 2.5 58 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 CH4 0.0030 CH4 0.0150 CH4 0.0030 NH ₃ 000.023 000.024 000.044 000.008 000.008 000.030	0 2 0 2 0 2 0 2 0 2 0 2 0 2 0 2 0 2 0 2

1	BA: Area of Building to be demolished (ft ²)
2	BA: Alea of Building to be demoisted (if) BH: Height of Building to be demolished (ft)
3	2000: Conversion Factor pounds to tons
4	
5	- Construction Exhaust Emissions per Phase
6	$CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$
7	
8	CEEPOL: Construction Exhaust Emissions (TONs)
9	NE: Number of Equipment
10	WD: Number of Total Work Days (days)
11	H: Hours Worked per Day (hours)
12	EF _{POL} : Emission Factor for Pollutant (lb/hour)
13	2000: Conversion Factor pounds to tons
14	
15	- Vehicle Exhaust Emissions per Phase
16	VMT _{VE} = BA * BH * (1 / 27) * 0.25 * (1 / HC) * HT
17	
18	VMT _{VE} : Vehicle Exhaust Vehicle Miles Travel (miles)
19	BA: Area of Building being demolish (ft ²)
20	BH: Height of Building being demolish (ft)
21	(1 / 27): Conversion Factor cubic feet to cubic yards (1 yd ³ / 27 ft ³)
22	0.25: Volume reduction factor (material reduced by 75% to account for air space)
23	HC: Average Hauling Truck Capacity (yd ³)
24	$(1 / HC)$: Conversion Factor cubic yards to trips $(1 \text{ trip} / HC \text{ yd}^3)$
25	HT: Average Hauling Truck Round Trip Commute (mile/trip)
26	
27	V _{POL} = (VMT _{VE} * 0.002205 * EF _{POL} * VM) / 2000
28	Verse Vehicle Emissions (TONs)
29 30	V _{POL} : Vehicle Emissions (TONs) VMT _{VE} : Vehicle Exhaust Vehicle Miles Travel (miles)
31	0.002205: Conversion Factor grams to pounds
32	EFPOL: Emission Factor for Pollutant (grams/mile)
33	VM: Vehicle Exhaust On Road Vehicle Mixture (%)
34	2000: Conversion Factor pounds to tons
35	
36	- Worker Trips Emissions per Phase
37	VMT _{WT} = WD * WT * 1.25 * NE
38	
39	VMT _{WT} : Worker Trips Vehicle Miles Travel (miles)
40	WD: Number of Total Work Days (days)
41	WT: Average Worker Round Trip Commute (mile)
42	1.25: Conversion Factor Number of Construction Equipment to Number of Works
43	NE: Number of Construction Equipment
44	
45	V _{POL} = (VMT _{WT} * 0.002205 * EF _{POL} * VM) / 2000
46	V Vahiele Freieriere (TONe)
47	V _{POL} : Vehicle Emissions (TONs)
48 40	VMT _{WT} : Worker Trips Vehicle Miles Travel (miles)
49 50	0.002205: Conversion Factor grams to pounds EF _{POL} : Emission Factor for Pollutant (grams/mile)
50 51	VM: Worker Trips On Road Vehicle Mixture (%)
51 52	2000: Conversion Factor pounds to tons
52 53	
53 54	2.2 Site Grading Phase
55	

5556 2.2.1 Site Grading Phase Timeline Assumptions

Phase Start	t Dato												
Start Mor													
Start Qua													
Start Yea	ar: 20	027											
Phase Dura													
Number													
Number	of Days:	. 0											
2.2.2 Site Grading Phase Assumptions													
	Juaniy	i nuse	Assumpt	10113									
General Site	e Gradir	ng Inforn	nation										
Area of S	Site to be	e Gradeo	d (ft²):		184697								
				n-Site (yd ³									
Amount	of Mater	rial to be	Hauled O	ff-Site (yd ³	°): 0								
	n Deferi	14 0 - 44											
Site Gradin Default S			-	Yes									
			ber week:										
Average	Duy(0)												
Constructio	on Exha	ust (defa	ult)										
			nent Name	e		Nur	nber C)f	Hours	Per Day			
						Equ	lipmer	nt					
Graders Cor							1			8			
		-quipmer	nt Composi	Other Construction Equipment Composite 1 8									
Tractors/Loa	aders/Ba	ckhoes C	Composite		20 (/	dofault)	1 2			8 7			
Tractors/Loa Vehicle Exh Average Average	aders/Ba naust Hauling Hauling	Ckhoes (Truck C Truck R	Composite Capacity (y Cound Trip			default) 20 (defa	2						
Tractors/Loa Vehicle Exh Average	aders/Ba naust Hauling Hauling naust Ve	Ckhoes () Truck () Truck R chicle Mi	Composite Capacity (y Round Trip xture (%)	rd³): o Commute	(mile):	20 (defa	2 ult)	нг		7			
Tractors/Loa Vehicle Exh Average Average	aders/Ba naust Hauling Hauling	Ckhoes () Truck () Truck R chicle Mi	Composite Capacity (y Cound Trip	/d³):			2 ult) DT		DDV 0.00				
Tractors/Loa Vehicle Exh Average Average Vehicle Exh POVs Worker Trip	aders/Ba naust Hauling Hauling naust Ve LDG ¹ 0 S Worker os Vehic	Ckhoes C Truck C Truck R Chicle Mi V I Round 1	Composite Capacity (y Round Trip xture (%) LDGT 0 Frip Comm re (%)	rd³): o Commute <u>HDGV</u> 0 nute (mile):	e (mile):	20 (defat	2 ult) DT	100	0.00	7 MC 0			
Tractors/Loa Vehicle Exh Average Average Vehicle Exh POVs Worker Trip Average	aders/Ba naust Hauling Hauling naust Ve LDG ¹ 0 S Worker DS Vehic LDG ¹	Ckhoes C Truck C Truck R Chicle Mi V I Round 1 Cle Mixtu	Composite Capacity (y Round Trip xture (%) LDGT 0 Frip Comm re (%) LDGT	rd ³): 9 Commute HDGV 0	• (mile):	20 (defat LDC 0	2 ult) DT	100		7 MC			
Tractors/Loa Vehicle Exh Average Vehicle Exh POVs Worker Trip Average	aders/Ba naust Hauling Hauling naust Ve LDG ¹ 0 S Worker os Vehic	Ckhoes C Truck C Truck R Chicle Mi V I Round 1 Cle Mixtu	Composite Capacity (y Round Trip xture (%) LDGT 0 Frip Comm re (%)	rd³): o Commute <u>HDGV</u> 0 nute (mile):	e (mile):	20 (defat	2 ult) DT	100 HC	0.00	7 MC 0			
Tractors/Loa Vehicle Exh Average Average Vehicle Exh POVs Worker Trip Average	aders/Ba naust Hauling Hauling naust Ve LDG' 0 Sos Worker 0 Sos Vehic 50.00 Grading	ckhoes (Truck C Truck R chicle Mi ehicle Mi V I Round 1 cle Mixtu V I Phase ust Emise	Composite Capacity (y Round Trip xture (%) LDGT 0 Frip Comm re (%) LDGT 50.00 Emission Ssion Facto	rd ³): o Commute HDGV 0 nute (mile): HDGV 0 n Factor(s ors (lb/hou	(mile): LDDV 0 20 (default LDDV 0) (default	20 (defai LDC 0 t) LDC 0	2 ult) DT	100 HC	0.00	7 MC 0			
Tractors/Loa Vehicle Exh Average Average Vehicle Exh POVs Worker Trip Average Worker Trip POVs 2.2.3 Site G Constructio Graders Co	aders/Ba naust Hauling Hauling naust Ve LDG' 0 S Worker 0 S Vehic LDG' 50.00 Grading	ckhoes (Truck C Truck R chicle Mi V I Round 1 cle Mixtu V I Phase ust Emis VOC	Composite Capacity (y Round Trip xture (%) LDGT 0 Frip Comm re (%) LDGT 50.00 Emission Emission So, SO,	rd ³): o Commute HDGV 0 nute (mile): HDGV 0 n Factor(s) ors (lb/hou NO _x	(mile): LDDV 0 20 (default LDDV 0 (default CO	20 (defat LDE 0 t) PM 10	2 ult) DT	100 HE 2.5	0.00	7 MC 0 0			
Tractors/Loa Vehicle Exh Average Average Vehicle Exh POVs Worker Trip Average Worker Trip POVs 2.2.3 Site G Constructio Graders Co	aders/Ba naust Hauling Hauling naust Ve LDG' 0 S Worker 0 S Vehic LDG' 50.00 Grading on Exhau mposite	ckhoes C Truck C Truck R chicle Mi V I Round 1 cle Mixtu V I Phase ust Emis VOC 0.0676	Composite Capacity (y Round Trip xture (%) LDGT 0 Frip Comm re (%) LDGT 50.00 Emission Emission Ssion Facto SO _x 0.0014	rd ³): o Commute HDGV 0 nute (mile): HDGV 0 n Factor(s) ors (lb/hou NO _x 0.3314	(mile): LDDV 0 20 (default LDDV 0) (default	20 (defai LDC 0 t) LDC 0	2 ult) DT	100 HE 2.5	0.00	7 MC 0 0			
Tractors/Loa Vehicle Exh Average Average Vehicle Exh POVs Worker Trip Average Worker Trip POVs 2.2.3 Site G Constructio Graders Co	aders/Ba naust Hauling Hauling naust Ve LDG' 0 S Worker 0 S Vehic LDG' 50.00 Grading on Exhau mposite	ckhoes C Truck C Truck R chicle Mi V I Round T cle Mixtu V I O I Phase ust Emis VOC 0.0676 Equipm	Composite Capacity (y Round Trip xture (%) DGT 0 Frip Comm re (%) DGT 50.00 Emission Sion Facto SO _x 0.0014 ent Comp	HDGV 0 hute (mile): HDGV 0 hute (mile): HDGV 0 Factor(s) ors (lb/hou 0.3314 posite	(mile): LDDV 0 20 (default LDDV 0 (default 0 0 0 0 0 0 0 0 0 0 0 0 0	20 (defat LDE 0 1) PM 10 0.0147	2 ult) DT	100 HE 2.5	0.00 DV 0 CH₄ 0.0061	7 MC 0 MC 0 0 132.89			
Tractors/Loa Vehicle Exh Average Average Vehicle Exh POVs Worker Trip Average Worker Trip POVs 2.2.3 Site G Constructio Graders Co Emission Fa Other Cons	aders/Ba naust Hauling Hauling naust Ve LDG 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	ckhoes C Truck C Truck R hicle Mi V I Round T cle Mixtu V I C Phase Ust Emis VOC 0.0676 Equipm VOC	Composite Capacity (y Cound Trip Xture (%) LDGT 0 Frip Comm re (%) LDGT 50.00 Emission Emission Son Facto SO _x 0.0014 ent Comp SO _x	rd ³): Commute HDGV 0 nute (mile): HDGV 0 A Factor(s) ors (lb/hou NO _x 0.3314 oosite NO _x	(mile): LDDV 0 20 (default LDDV 0 (default CO 0.5695 CO	20 (defat LDE 0 1) PM 10 0.0147 PM 10	2 ult) DT DT DT PM 2 0.01	100 HE 2.5 47 2.5	0.00 DV 0 CH4 0.0061 CH4	7 MC 0 0 MC 0 0 132.89 CO ₂ e			
Tractors/Loa Vehicle Exh Average Average Vehicle Exh POVs Worker Trip Average Worker Trip POVs 2.2.3 Site G Constructio Graders Co	aders/Ba naust Hauling Hauling haust Ve LDG' 0 Sos Worker 50.00 Grading on Exhau on Exhau on Exhau on Exhau on Exhau	ckhoes C Truck C Truck R chicle Mi V I Round I cle Mixtu V I Phase ust Emise VOC 0.0676 Equipm VOC 0.0442	Composite Capacity (y Round Trip xture (%) DGT 0 Frip Comm re (%) DGT 50.00 Emission Emission Emission SO _x 0.0014 ent Comp SO _x 0.0012	HDGV 0 hute (mile): HDGV 0 hute (mile): HDGV 0 Factor(s) ors (lb/hou 0.3314 posite	(mile): LDDV 0 20 (default LDDV 0 (default 0 0 0 0 0 0 0 0 0 0 0 0 0	20 (defat LDE 0 1) PM 10 0.0147	2 ult) DT	100 HE 2.5 47 2.5	0.00 DV 0 CH₄ 0.0061	7 MC 0 MC 0 0 132.89			

Emission Factors	0.1671	0.0024	1.0824	0.6620	0.0418	0.0418	0.0150	239.45	
Tractors/Loaders/	Backhoes	Composit	te						
	VOC SOx NOx CO PM 10 PM 2.5 CH4 CO2e								
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	SOx	NOx	CO	PM 10	PM 2.5	Pb	NH ₃	CO ₂ e
LDGV	000.309	000.002	000.239	003.421	000.007	000.006		000.023	00318.896
LDGT	000.374	000.003	000.418	004.700	000.009	800.000		000.024	00411.188
HDGV	000.696	000.005	001.076	015.187	000.021	000.019		000.044	00758.535
LDDV	000.115	000.003	000.139	002.492	000.004	000.004		000.008	00309.094
LDDT	000.250	000.004	000.394	004.238	000.007	000.006		800.000	00438.938
HDDV	000.572	000.013	005.669	001.917	000.170	000.156		000.030	01506.304
MC	002.734	000.003	000.845	013.302	000.027	000.023		000.055	00396.858

3 4

5

2.2.4 Site Grading Phase Formula(s)

6 - Fugitive Dust Emissions per Phase

7 8

9

12

13 14

24

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

15	- Construction Exhaust Emissions per Phase
16	CEE _{POL} = (NE * WD * H * EF _{POL}) / 2000

- 1718 CEE_{POL}: Construction Exhaust Emissions (TONs)
- 19 NE: Number of Equipment
- 20 WD: Number of Total Work Days (days)
- 21 H: Hours Worked per Day (hours)
- 22 EF_{POL}: Emission Factor for Pollutant (lb/hour)
- 23 2000: Conversion Factor pounds to tons

25 - Vehicle Exhaust Emissions per Phase

- 26 VMT_{VE} = (HA_{OnSite} + HA_{OffSite}) * (1 / HC) * HT
- 27
 28 VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
- 29 HA_{OnSite} : Amount of Material to be Hauled On-Site (yd³)
- $HA_{OffSite}$: Amount of Material to be Hauled Off-Site (yd³)
- 31 HC: Average Hauling Truck Capacity (yd³)
- 32 (1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd³)
- 33 HT: Average Hauling Truck Round Trip Commute (mile/trip)
- 34 35 VPOL = (VMTVE * 0.002205 * EFPOL * VM) / 2000
- 36
 37 V_{POL}: Vehicle Emissions (TONs)
- 38 VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
- 39 0.002205: Conversion Factor grams to pounds
- 40 EF_{POL}: Emission Factor for Pollutant (grams/mile)
- 41 VM: Vehicle Exhaust On Road Vehicle Mixture (%)
- 42 2000: Conversion Factor pounds to tons
- 43

1 2	- Worker Trips Emissions per Phase VMTwT = WD * WT * 1.25 * NE		
3 4	VMTwt: Worker Trips Vehicle Miles Travel (miles)		
5	WD: Number of Total Work Days (days)		
6	WT: Average Worker Round Trip Commute (mile)		
7	1.25: Conversion Factor Number of Construction Equipment 1	o Number of Works	
8 9	NE: Number of Construction Equipment		
10 11	V _{POL} = (VMT _{WT} * 0.002205 * EF _{POL} * VM) / 2000		
12	V _{POL} : Vehicle Emissions (TONs)		
13	VMT _{wT} : Worker Trips Vehicle Miles Travel (miles)		
14	0.002205: Conversion Factor grams to pounds		
15	EFPOL: Emission Factor for Pollutant (grams/mile)		
16	VM: Worker Trips On Road Vehicle Mixture (%)		
17	2000: Conversion Factor pounds to tons		
18 19	2.3 Trenching/Excavating Phase		
20			
21	2.3.1 Trenching / Excavating Phase Timeline Assumption	ons	
22	Dhana Qiant Data		
23 24	- Phase Start Date Start Month: 2		
24 25	Start Quarter: 1		
26	Start Year: 2027		
27			
28	- Phase Duration		
29	Number of Month: 1		
30	Number of Days: 0		
31			
32	2.3.2 Trenching / Excavating Phase Assumptions		
33 34	- General Trenching/Excavating Information		
34 35	Area of Site to be Trenched/Excavated (ft ²): 795.2		
36	Amount of Material to be Hauled On-Site (yd^3): 0		
37	Amount of Material to be Hauled Off-Site (yd): 0		
38	Q ,		
39	- Trenching Default Settings		
40	Default Settings Used: Yes		
41	Average Day(s) worked per week: 5 (default)		
42 43	Construction Exhaust (default)		
43	- Construction Exhaust (default) Equipment Name	Number Of	Hours Per Day
	Equipment Name	Equipment	nouisier Day
	Excavators Composite	2	8
	Other General Industrial Equipment Composite	1	8
	Tractors/Loaders/Backhoes Composite	1	8
44	····· - · · ·		
45	- Vehicle Exhaust		
46 47	Average Hauling Truck Capacity (yd ³): 20 (det Average Hauling Truck Round Trip Commute (mile): 2	ault) 20 (default)	
47 48	Average nating truck round trip commute (inne): 2		
49	- Vehicle Exhaust Vehicle Mixture (%)		
	LDGV LDGT HDGV LDDV	LDDT HD	DDV MC

POVs	0	0	0	0	0	100.00	0

- Worker Trips

- Average Worker Round Trip Commute (mile): 20 (default)
- 2 3 4 5

1

- Worker Trips Vehicle Mixture (%)

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

2.3.3 Trenching / Excavating Phase Emission Factor(s)

7 8 9

6

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

Graders Composite												
	VOC	SOx	NOx	CO	PM 10	PM 2.5	CH₄	CO ₂ e				
Emission Factors	0.0676	0.0014	0.3314	0.5695	0.0147	0.0147	0.0061	132.89				
Other Construction Equipment Composite												
	VOC	SOx	NOx	CO	PM 10	PM 2.5	CH₄	CO ₂ e				
Emission Factors	0.0442	0.0012	0.2021	0.3473	0.0068	0.0068	0.0039	122.60				
Rubber Tired Doze	Rubber Tired Dozers Composite											
	VOC	SOx	NOx	CO	PM 10	PM 2.5	CH₄	CO ₂ e				
Emission Factors	0.1671	0.0024	1.0824	0.6620	0.0418	0.0418	0.0150	239.45				
Tractors/Loaders/Backhoes Composite												
	VOC	SOx	NOx	СО	PM 10	PM 2.5	CH₄	CO ₂ e				
Emission Factors	0.0335	0.0007	0.1857	0.3586	0.0058	0.0058	0.0030	66.872				

10 11

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

	VOC	SOx	NOx	CO	PM 10	PM 2.5	Pb	NH ₃	CO ₂ e		
LDGV	000.309	000.002	000.239	003.421	000.007	000.006		000.023	00318.896		
LDGT	000.374	000.003	000.418	004.700	000.009	800.000		000.024	00411.188		
HDGV	000.696	000.005	001.076	015.187	000.021	000.019		000.044	00758.535		
LDDV	000.115	000.003	000.139	002.492	000.004	000.004		800.000	00309.094		
LDDT	000.250	000.004	000.394	004.238	000.007	000.006		800.000	00438.938		
HDDV	000.572	000.013	005.669	001.917	000.170	000.156		000.030	01506.304		
MC	002.734	000.003	000.845	013.302	000.027	000.023		000.055	00396.858		

12

21 22

23

13 2.3.4 Trenching / Excavating Phase Formula(s)

14 15 - Fugitive Dust Emissions per Phase

- PM10_{FD} = (20 * ACRE * WD) / 2000 16
- 17 18 PM10_{FD}: Fugitive Dust PM 10 Emissions (TONs)
- 20: Conversion Factor Acre Day to pounds (20 lb / 1 Acre Day) 19
- ACRE: Total acres (acres) 20
 - WD: Number of Total Work Days (days)
 - 2000: Conversion Factor pounds to tons
- 24 - Construction Exhaust Emissions per Phase
- CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000 25
- 26 CEEPOL: Construction Exhaust Emissions (TONs) 27
- NE: Number of Equipment 28
- WD: Number of Total Work Days (days) 29
- H: Hours Worked per Day (hours) 30
- EF_{POL}: Emission Factor for Pollutant (lb/hour) 31
- 2000: Conversion Factor pounds to tons 32

1	
1 2	- Vehicle Exhaust Emissions per Phase
3	$VMT_{VE} = (HA_{OnSite} + HA_{OffSite}) * (1 / HC) * HT$
4	
	VMT _{VE} : Vehicle Exhaust Vehicle Miles Travel (miles)
5	HA_{OnSite} : Amount of Material to be Hauled On-Site (yd ³)
6	
7	HA _{OffSite} : Amount of Material to be Hauled Off-Site (yd ³)
8	HC: Average Hauling Truck Capacity (yd ³)
9	(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd ³) HT: Average Hauling Truck Round Trip Commute (mile/trip)
10	HT. Average Hauling Truck Round The Commute (mile/inp)
11	V _{POL} = (VMT _{VE} * 0.002205 * EF _{POL} * VM) / 2000
12	$v_{POL} = (v_{W11VE} 0.002203 EFPOL v_{W1})/2000$
13	V
14 15	V _{POL} : Vehicle Emissions (TONs)
15	VMT _{VE} : Vehicle Exhaust Vehicle Miles Travel (miles)
16	0.002205: Conversion Factor grams to pounds
17 18	EF _{POL} : Emission Factor for Pollutant (grams/mile) VM: Vehicle Exhaust On Road Vehicle Mixture (%)
10 19	2000: Conversion Factor pounds to tons
20	
20 21	- Worker Trips Emissions per Phase
21	$VMT_{WT} = WD * WT * 1.25 * NE$
22	
23 24	VMT _{WT} : Worker Trips Vehicle Miles Travel (miles)
24	WD: Number of Total Work Days (days)
26	WT: Average Worker Round Trip Commute (mile)
27	1.25: Conversion Factor Number of Construction Equipment to Number of Works
28	NE: Number of Construction Equipment
29	
30	V _{POL} = (VMT _{WT} * 0.002205 * EF _{POL} * VM) / 2000
31	
32	VPOL: Vehicle Emissions (TONs)
33	VMT _{VE} : Worker Trips Vehicle Miles Travel (miles)
34	0.002205: Conversion Factor grams to pounds
35	EF _{POL} : Emission Factor for Pollutant (grams/mile)
36	VM: Worker Trips On Road Vehicle Mixture (%)
37	2000: Conversion Factor pounds to tons
38	·
39	2.4 Building Construction Phase
40	-
41	2.4.1 Building Construction Phase Timeline Assumptions
42	
43	- Phase Start Date
44	Start Month: 3
45	Start Quarter: 1
46	Start Year: 2027
47	
48	- Phase Duration
49	Number of Month: 3
50	Number of Days: 0
51	
52	2.4.2 Building Construction Phase Assumptions
53	
54	- General Building Construction Information
55	Building Category: Office or Industrial
56	Area of Building (ft ²): 7952

	ght of B nber of I		ng (ft): 20	0 /A						
-										
	ng Cons ault Sett			ult Setting	l s /es					
				er week: 5						
- Const	ruction	Exha	ust (defa	ult)						
			Equipm	nent Name	;			ber Of		rs Per Day
Cranes	s Compo	site					Equ	ipment 1		4
	s Compo							2		6
Tracto	rs/Loade	ers/Ba	ckhoes C	omposite				1		8
Ave	-	uling) Truck R	-	Commute	(mile):	20 (defau	ılt)		
		LDG		.DGT	HDGV	LDDV	LDD	T	HDDV	MC
POVs		0		0	0	0	0		100.00	0
- WOIKE	a mps		le Mixtur	C (/0)						
POVs		LDG 50.00		.DGT 50.00	HDGV 0	LDDV 0	LDD 0	T	HDDV 0	MC 0
- Vendo Ave	or Trips erage Ve	50.00	0 5 Round T	DGT 50.00		0	0	DT		
- Vendo Ave	or Trips erage Ve	50.00 endor Vehic	0 5 Round T :le Mixtur	.DGT 50.00 Trip Comm re (%)	0 iute (mile):	0 40 (defaul	t)		0	0
- Vendo Ave	or Trips erage Ve	50.00	0 5 Round T :le Mixtur	DGT 50.00	0	0	0			
- Vendo Ave - Vendo POVs 2.4.3 E - Const Crane	or Trips Prage Ve or Trips V Building Ruction S Compo	50.00 endor Vehic LDG 0 g Cor Exhau osite	0 5 Round T Cle Mixtur V L nstructio	DGT 50.00 Frip Comm re (%) .DGT 0 on Phase sion Facto SO _x	0 hute (mile): HDGV 0 Emission Drs (lb/hou	0 40 (defaul 0 Factor(s r) (default) PM 10	PM 2.	0 HDDV 100.00 5 CH4	0 MC 0
- Vendo Ave - Vendo POVs 2.4.3 E - Const Crane Emissi	or Trips or Trips Ve or Trips V Building ruction I s Compo on Facto	50.00 endor Vehic LDG 0 g Cor Exhat osite	0 5 Round T Cle Mixtur V L nstructio ust Emis 0.0680	DGT 50.00 Trip Comm re (%) .DGT 0 DGT 0 DGT 0 DGT 0 Sion Facto	0 hute (mile): HDGV 0 Emission prs (lb/hou	0 40 (defaul 0 Factor(s r) (default	t) LDD 0)T	0 HDDV 100.00 5 CH4	0 MC 0
- Vendo Ave - Vendo POVs 2.4.3 E - Const Crane Emissi	or Trips Prage Ve or Trips V Building Ruction S Compo	50.00 endor Vehic LDG 0 g Cor Exhat osite	0 5 Round T cle Mixtur V L nstructio ust Emiss VOC 0.0680 e	DGT 50.00 rip Comm re (%) .DGT 0 .DGT 0 on Phase sion Factor SOx 0.0013	0 HDGV 0 Emission Drs (Ib/hou NO _x 0.4222	0 40 (defaul 0 Factor(s r) (default <u>CO</u> 0.3737	<pre> 0 10 0</pre>	PM 2 . 0.014	0 HDDV 100.00 5 CH4 3 0.006	0 MC 0 0 1 128.77
- Vendo Ave - Vendo POVs 2.4.3 E - Const Crane Emissi Forklif	or Trips or Trips Ve or Trips V Building ruction I s Compo on Facto	50.00 endor Vehic LDG 0 g Cor Exhau osite posite	0 5 Round T Cle Mixtur V L nstructio ust Emis 0.0680	DGT 50.00 Frip Comm re (%) .DGT 0 on Phase sion Facto SO _x	0 hute (mile): HDGV 0 Emission Drs (lb/hou	0 40 (defaul 0 Factor(s r) (default) PM 10	PM 2.	0 HDDV 100.00 5 CH4 3 0.006 5 CH4	0 MC 0 1 128.77 CO2e
- Vendo Ave - Vendo POVs 2.4.3 E - Const Crane Emissi Forklif	or Trips or Trips or Trips Building ruction s Compo on Factor on Factor	50.00 endor Vehic LDG' 0 g Cor Exhau ors posite posite	0 5 Round T Sle Mixtur V L nstructio ust Emiss VOC 0.0680 e VOC 0.0236 sackhoes	DGT 50.00 rip Comm re (%) .DGT 0 .DGT on Phase sion Factor SOx 0.0013 SOx 0.0006 Composi	0 hute (mile): HDGV 0 Emission ors (lb/hou NO _x 0.4222 NO _x 0.0859 te	0 40 (defaul 0 Factor(s r) (default 0.3737 CO 0.2147	 0 LDD 0 0	PM 2.3 0.0143 PM 2.3 0.0023	0 HDDV 100.00 5 CH4 3 0.006 5 CH4 5 0.002	0 MC 0 1 128.77 CO ₂ e 1 54.449
- Vendo Ave - Vendo POVs 2.4.3 E - Const Crane Emissi Forklif Emissi	or Trips or Trips V or Trips V Building ruction I s Compo on Factor its Compo on Factor on Factor	50.00 mdor Vehic LDG' 0 g Cor Exhat ors posite ors ers/B	0 5 Round T See Mixtur V L nstruction ust Emiss VOC 0.0680 e VOC 0.0236 Sackhoes VOC	DGT 50.00 50.00 rip Comm re (%) .DGT .DGT 0 .DGT	0 hute (mile): HDGV 0 Emission ors (lb/hou NO _x 0.4222 NO _x 0.0859 te NO _x	0 40 (defaul 0 Factor(s r) (default <u>CO</u> 0.3737 <u>CO</u> 0.2147 <u>CO</u>	 0 LDD 0 0	PM 2. 0.014 PM 2. 0.002 PM 2.	0 HDDV 100.00 5 CH4 3 0.006 5 CH4 5 0.002 5 CH4	0 MC 0 1 128.77 CO2e 1 54.449 CO2e
- Vendo Ave - Vendo POVs 2.4.3 E - Const Crane Emissi Forklif Emissi	or Trips or Trips or Trips Building ruction s Compo on Factor on Factor	50.00 mdor Vehic LDG' 0 g Cor Exhat ors posite ors ers/B	0 5 Round T Sle Mixtur V L nstructio ust Emiss VOC 0.0680 e VOC 0.0236 sackhoes	DGT 50.00 rip Comm re (%) .DGT 0 .DGT on Phase sion Factor SOx 0.0013 SOx 0.0006 Composi	0 hute (mile): HDGV 0 Emission ors (lb/hou NO _x 0.4222 NO _x 0.0859 te	0 40 (defaul 0 Factor(s r) (default 0.3737 CO 0.2147	 0 LDD 0 0	PM 2.3 0.0143 PM 2.3 0.0023	0 HDDV 100.00 5 CH4 3 0.006 5 CH4 5 0.002 5 CH4	0 MC 0 1 128.77 CO2e 1 54.449 CO2e
- Vendo Ave - Vendo POVs 2.4.3 E - Const Crane Emissi Forklif Emissi Tracto Emissi	or Trips Prage Ve or Trips V Building ruction I s Compo on Factor on Factor on Factor on Factor on Factor on Factor	50.00 mdor Vehic LDG 0 g Cor Exhat ors posite ors ers/B ors	0 5 Round T cle Mixtur V L nstruction ust Emiss VOC 0.0680 e VOC 0.0236 Backhoes VOC 0.0335	DGT DGT 50.00	0 HDGV 0 Emission ors (lb/hou NO _x 0.4222 NO _x 0.0859 te NO _x 0.1857	0 40 (default 0 Factor(s r) (default CO 0.3737 CO 0.2147 CO 0.3586	 0 LDD 0 0	PM 2. 0.014 PM 2. 0.002 PM 2.	0 HDDV 100.00 5 CH4 3 0.006 5 CH4 5 0.002 5 CH4	0 MC 0 1 128.77 CO2e 1 54.449 CO2e
- Vendo Ave - Vendo POVs 2.4.3 E - Const Crane Emissi Forklif Emissi Tracto Emissi	or Trips Prage Ve or Trips V Building Building ruction I s Compo on Factor on Factor	50.00 mdor Vehic LDG 0 g Cor Exhau ors pors ers/B ors ust & C	0 5 Round T cle Mixtur V L nstruction ust Emiss VOC 0.0680 e VOC 0.0236 Backhoes VOC 0.0335	DGT DGT 50.00	0 hute (mile): HDGV 0 Emission ors (lb/hou NO _x 0.4222 NO _x 0.0859 te NO _x	0 40 (default 0 Factor(s r) (default CO 0.3737 CO 0.2147 CO 0.3586	 0 LDD 0 0	PM 2. 0.014 PM 2. 0.002 PM 2.	0 HDDV 100.00 5 CH4 3 0.006 5 CH4 5 0.002 5 CH4	0 MC 0 1 128.77 CO2e 1 54.449 CO2e
- Vendo Ave - Vendo POVs 2.4.3 E - Const Crane Emissi Forklif Emissi Tracto Emissi	or Trips or Trips Ve or Trips V Building ruction I s Compo on Factor on Factor	50.00 endor Vehic LDG' 0 g Cor Exhau ors posite posite posite posite posite ors ers/B ors ust & C 309	0 5 Round T cle Mixtur V L nstructio ust Emiss VOC 0.0680 e VOC 0.0236 backhoes VOC 0.0335 Worker T	DGT 50.00 frip Comm re (%) .DGT .SOx 0.0007 rrips Emis	0 HDGV 0 Emission ors (lb/hou NO _x 0.4222 NO _x 0.0859 te NO _x 0.1857 sion Factor	0 40 (default 0 Factor(s r) (default CO 0.3737 CO 0.2147 CO 0.3586 ors (grams	<pre> 0 0 10 0</pre>	PM 2. 0.0143 PM 2. 0.0029 PM 2. 0.0059	0 HDDV 100.00 5 CH4 3 0.006 5 CH4 5 0.002 5 CH4 3 0.003	0 MC 0 1 28.77 CO2e 1 54.449 CO2e 0 66.872

000.696

000.115

000.005

000.003

000.250 000.004

001.076

000.139

000.394

015.187

002.492

004.238

000.021

000.004

000.007

000.019

000.004

000.006

HDGV

LDDV

LDDT

00758.535

00309.094

00438.938

000.044

800.000

800.000

	HDDV MC	000.572 002.734	000.013 000.003	005.669 000.845	001.917 013.302	000.170 000.027	000.156 000.023)00.030)00.055	01506.304 00396.858
1 2 3	2.4.4 Bi	uilding Co	onstructio	n Phase	Formula(s)				
4 5	- Constru CEE _{POL} =	uction Exh (NE * WD	aust Emis: * H * EF _{POI}	sions per _) / 2000	Phase					
6 7 9 10 11 12 13	NE: WD: H: H EF _{PO}	POL: Constr Number of Number of ours Worke L: Emissior Conversio	Equipment Total Work d per Day Factor for	c Days (da (hours) Pollutant (ys) (lb/hour)	5)				
14 15		Exhaust E BA * BH * ()					
16 17 18 19 20 21	BA: // BH: (0.42	/E: Vehicle Area of Bui Height of B / 1000): C Average Ha	lding (ft²) uilding (ft) onversion l	=actor ft ³ to	o trips (0.42	2 trip / 1000	,			
22 23 24	V _{POL} = (V	MT _{VE} * 0.00)2205 * EF	pol * VM) /	2000					
24 25 26 27 28 29 30 31	VMT 0.002 EF _{PO} VM:	Vehicle En Ve: Vehicle 2205: Conv L: Emissior Worker Trij : Conversion	Exhaust V rersion Fac n Factor for os On Road	ehicle Mile tor grams Pollutant (Vehicle N	to pounds (grams/mile /lixture (%)	,				
32 33 34		Trips Emi WD * WT *		Phase						
34 35 36 37 38 39 40	WD: WT: 1.25:	wt: Worker Number of Average W Conversio Number of	Total Worl orker Rour n Factor N	c Days (da nd Trip Cor umber of C	ys) mmute (mile Constructior	e)	nt to Numbe	er of Work	s	
40 41 42	V _{POL} = (V	MTwt * 0.0	02205 * EF	POL * VM) /	2000					
43 44 45 46 47 48 49	VMTv 0.002 EF _{PO} VM:	Vehicle En wr: Worker 2205: Conv L: Emissior Worker Trij : Conversio	Trips Vehi rersion Fac rector for os On Road	cle Miles T tor grams t Pollutant (Vehicle N	to pounds (grams/mile /lixture (%)	,				
50 51		Trips Emi s BA * BH * (
52 53 54		/⊤: Vender Area of Bui		cle Miles T	ravel (miles	3)				

1	BH: Height of Building (ft) (0.38 / 1000): Conversion Factor ft ³ to trips (0.38 trip / 1000 ft ³)											
2						·)						
3	HT: Ave	rage Hauling	Truck Round	Trip Commut	e (mile/trip)							
4	., <u>, , .</u>	* • • • • • • •										
	VPOL = (VMT)	/т * 0.002205	* EFPOL * VM) / 2000								
6		hiala Englacia										
7		.: Vehicle Emissions (TONs) ſ∨⊤: Vender Trips Vehicle Miles Travel (miles)										
8 9		5: Conversion)							
9 10		mission Facto)							
10)							
12												
12	2000. 00											
	2.5 Archite	ctural Coat	ings Phase									
15												
16	2.5.1 Archi	tectural Co	atings Phas	e Timeline	Assumptio	ns						
17												
18	- Phase Star	t Date										
19	Start Mo	nth: 5										
20	Start Qu	arter: 1										
21	Start Yea	ar: 2027										
22												
23	- Phase Dura											
24		of Month: 1										
25	Number	of Days: 0										
26					-							
	2.5.2 Archi	tectural Co	atings Phas	se Assumpt	ions							
28	0											
29		chitectural C	•									
30 31		Category: uare Footage	Non-Resid	ientiai								
32		of Units:	N/A									
33	Number	or onits.										
33 34	- Architectur	ral Coatings	Default Setti	nas								
35		Settings Use		Yes								
36		Day(s) work										
37				· ·····/								
38	- Worker Trij	ps										
39		Worker Rou	nd Trip Com	mute (mile):	20 (default)							
40	-				-							
41	- Worker Tri	ps Vehicle M										
		LDGV	LDGT	HDGV	LDDV	LDDT	HDDV					
	POVs	50.00	50.00	0	0	0	0					

45

2.5.3 Architectural Coatings Phase Emission Factor(s)

- Worker Trips Emission Factors (grams/mile)

	VOC	SOx	NOx	CO	PM 10	PM 2.5	Pb	NH ₃	CO ₂ e		
LDGV	000.309	000.002	000.239	003.421	000.007	000.006		000.023	00318.896		
LDGT	000.374	000.003	000.418	004.700	000.009	800.000		000.024	00411.188		
HDGV	000.696	000.005	001.076	015.187	000.021	000.019		000.044	00758.535		
LDDV	000.115	000.003	000.139	002.492	000.004	000.004		800.000	00309.094		
LDDT	000.250	000.004	000.394	004.238	000.007	000.006		800.000	00438.938		
HDDV	000.572	000.013	005.669	001.917	000.170	000.156		000.030	01506.304		
MC	002.734	000.003	000.845	013.302	000.027	000.023		000.055	00396.858		

MC

0

	4 Architectural Coatings Phase Formula(s)	
- W	orker Trips Emissions per Phase	
VM	T _{WT} = (1 * WT * PA) / 800	
	VMTwT: Worker Trips Vehicle Miles Travel (miles)	
	1: Conversion Factor man days to trips (1 trip / 1 man * day)	
	WT: Average Worker Round Trip Commute (mile)	
	PA: Paint Area (ft ²) 200: Conversion Factor equare fact to man down (1 ft ² / 1 man * dow)	
	800: Conversion Factor square feet to man days (1 ft ² / 1 man * day)	
Vpo	= (VMTwt * 0.002205 * EF _{POL} * VM) / 2000	
	V _{POL} : Vehicle Emissions (TONs)	
	VMTwr: 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	
~	Cooping Emissions per Phase	
	F-Gassing Emissions per Phase C _{AC} = (AB * 2.0 * 0.0116) / 2000.0	
vU		
	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 (Ib/ft ²)	
	2000: Conversion Factor pounds to tons	
2.6	Paving Phase	
2.6	1 Paving Phase Timeline Assumptions	
٦Ļ	and Start Data	
	ase Start Date Start Month: 3	
	Start Quarter: 1	
	Start Year: 2027	
- Pł	ase Duration	
	Number of Month: 2	
	Number of Days: 0	
	· · · · · · · · · · · · ·	
2.6	2 Paving Phase Assumptions	
_		
- Ge	neral Paving Information	
	Paving Area (ft ²): 134509	
	<u> </u>	
- Pa	ving Default Settings	
	Default Settings Used: Yes	
	Average Day(s) worked per week: 5 (default)	
_		
- Co	nstruction Exhaust (default) Equipment Name Number Of	Hours Pe

Draft EA for Airfield and Access Control Points Improvements Holloman Air Force Base, New Mexico

			•							
	and Morta	r Mixers Co		4	6					
	Composite			1	7					
	Equipment	Composite					2		6	
Rollers	Composite					1			7	
Aver	Exhaust age Haulin	•	•	Commute	(mile):	20 (defai	ult)			
Venicle	Exhaust V						.		MO	
	LDO		.DGT	HDGV	LDDV			HDDV	MC	
POVs	0		0	0	0	0		100.00	0	
	Trips Veh	GV L	re (%) .DGT	HDGV	LDDV	LDD)T	HDDV	MC	
POVs	50.	00 5	50.00	0	0	0		0	0	
	s Composi	VOC	SOx	NOx	СО	PM 10	PM 2.5		CO ₂ e	
Emissio	n Factors	0.0676	0.0014	0.3314	0.5695	0.0147	0.0147	0.006	1 132.8	
Other C	onstructio		ent Comp	osite						
		VOC	SOx	NOx	CO	PM 10	PM 2.5		CO ₂	
	n Factors	0.0442	0.0012	0.2021	0.3473	0.0068	0.0068	0.0039	9 122.6	
Rubber	Tired Doz									
		VOC	SOx	NOx	CO	PM 10	PM 2.5		CO ₂	
	n Factors	0.1671	0.0024	1.0824	0.6620	0.0418	0.0418	0.0150	239.4	
Tractor	s/Loaders/									
		VOC	SOx	NOx	CO	PM 10	PM 2.5		CO ₂ e	
Emissio	n Factors	0.0335	0.0007	0.1857	0.3586	0.0058	0.0058	0.0030	66.87	
Vehicle	Exhaust 8	Worker T	rips Emis	sion Facto	ors (grams	/mile)				
	VOC	SOx	NOx	CO	PM 10	PM 2.5	Pb	NH ₃	CO ₂ e	
LDGV	000.309	000.002	000.239	003.421	000.007	000.006		000.023	00318.89	
LDGT	000.374	000.003	000.418	004.700	000.009	000.008		000.024	00411.18	
HDGV	000.696	000.005	001.076	015.187	000.021	000.019		000.044	00758.53	
LDDV	000.115	000.003	000.139	002.492	000.004	000.004		800.000	00309.09	
LDDT	000.250	000.004	000.394	004.238	000.007	000.006		800.000	00438.93	
	000 572	000 013	005 669	001 917	000 170	000 156		000 030	01506.30	

Volnolo Exhauot a Monker Impo Emiodien i actore (gramornino)											
	VOC	SOx	NOx	CO	PM 10	PM 2.5	Pb	NH ₃	CO ₂ e		
LDGV	000.309	000.002	000.239	003.421	000.007	000.006		000.023	00318.896		
LDGT	000.374	000.003	000.418	004.700	000.009	800.000		000.024	00411.188		
HDGV	000.696	000.005	001.076	015.187	000.021	000.019		000.044	00758.535		
LDDV	000.115	000.003	000.139	002.492	000.004	000.004		800.000	00309.094		
LDDT	000.250	000.004	000.394	004.238	000.007	000.006		800.000	00438.938		
HDDV	000.572	000.013	005.669	001.917	000.170	000.156		000.030	01506.304		
MC	002.734	000.003	000.845	013.302	000.027	000.023		000.055	00396.858		

2.6.4 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)

1	2000: Conversion Factor pounds to tons
2	
3	- Vehicle Exhaust Emissions per Phase
4	VMT _{VE} = PA * 0.25 * (1 / 27) * (1 / HC) * HT
5	
6	VMT _{VE} : Vehicle Exhaust Vehicle Miles Travel (miles)
7	PA: Paving Area (ft²)
8	0.25: Thickness of Paving Area (ft)
9	(1 / 27): Conversion Factor cubic feet to cubic yards (1 yd ³ / 27 ft ³)
10	HC: Average Hauling Truck Capacity (yd ³)
	(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd ³)
11	
12	HT: Average Hauling Truck Round Trip Commute (mile/trip)
13	
14	V _{POL} = (VMT _{VE} * 0.002205 * EF _{POL} * VM) / 2000
15	
16	VPOL: Vehicle Emissions (TONs)
17	VMT _{VE} : Vehicle Exhaust Vehicle Miles Travel (miles)
18	0.002205: Conversion Factor grams to pounds
19	EF _{POL} : Emission Factor for Pollutant (grams/mile)
20	VM: Vehicle Exhaust On Road Vehicle Mixture (%)
21	2000: Conversion Factor pounds to tons
22	
23	- Worker Trips Emissions per Phase
24	VMT _{WT} = WD * WT * 1.25 * NE
25	
	VMT
26	VMTwt: Worker Trips Vehicle Miles Travel (miles)
27	WD: Number of Total Work Days (days)
28	WT: Average Worker Round Trip Commute (mile)
29	1.25: Conversion Factor Number of Construction Equipment to Number of Works
30	NE: Number of Construction Equipment
31	
32	V _{POL} = (VMT _{WT} * 0.002205 * EF _{POL} * VM) / 2000
33	
	Verse Vehicle Emissions (TONs)
34	VPOL: Vehicle Emissions (TONs)
35	VMT _{VE} : Worker Trips Vehicle Miles Travel (miles)
36	0.002205: Conversion Factor grams to pounds
37	EF _{POL} : Emission Factor for Pollutant (grams/mile)
38	VM: Worker Trips On Road Vehicle Mixture (%)
39	2000: Conversion Factor pounds to tons
40	
41	- Off-Gassing Emissions per Phase
42	VOC _P = (2.62 * PA) / 43560
43	
44	VOC _P : Paving VOC Emissions (TONs)
45	2.62: Emission Factor (lb/acre)
46	PA: Paving Area (ft ²)
47	43560: Conversion Factor square feet to acre (43560 ft2 / acre) ² / acre)
40	La Luz 2
48	La Luz z
40	1 Concret Information

49 **1. General Information**

- 51 Action Location
- 52 Base: HOLLOMAN AFB
- 53 State: New Mexico

County(s): Ote	
Regulatory Area	(s): NOT IN A REGULATORY AREA
- Action Title: La Lu	z Gate Alternative 2: Renovate Existing Facilities at La Luz Gate
- Project Number/s (if applicable):
Projected Action S	
- Projected Action S	
- Action Purpose an	d Need:
	ion and alignment of La Luz Gate does not meet modern anti-terrorism and force
	rds. Additionally, the remote location of La Luz Gate necessitates pre-positioning of
under normal con	d other emergency response personnel as response time to the gate is not adequate
- Action Description	
	facilities, expand to three identification check stations with booths, add a 2-lane
inspection buildin	g and an overwatch tower or pad.
- Point of Contact	
Name:	Jessie Moore
Title:	Env. Scientist
Organization:	HazAir
Email:	jessie.moore@hazair.com
Phone Number:	5057025632
- Activity List:	
· · · · · · · · · · · · · · · · · · ·	
Activity Ty	
2. Construction / Emission factors and	Demolition Vehicle Inspection air emission estimating methods come from the United States Air Force's Air
2. Construction / Emission factors and Emissions Guide for / Air Emissions Guide f	Demolition Vehicle Inspection d air emission estimating methods come from the United States Air Force's Air Air Force Stationary Sources, Air Emissions Guide for Air Force Mobile Sources, and for Air Force Transitory Sources.
2. Construction / Emission factors and Emissions Guide for A	Demolition Vehicle Inspection d air emission estimating methods come from the United States Air Force's Air Air Force Stationary Sources, Air Emissions Guide for Air Force Mobile Sources, and for Air Force Transitory Sources.
2. Construction / Emission factors and Emissions Guide for / Air Emissions Guide f 2. Construction	Demolition Vehicle Inspection d air emission estimating methods come from the United States Air Force's Air Air Force Stationary Sources, Air Emissions Guide for Air Force Mobile Sources, and for Air Force Transitory Sources. n / Demolition
2. Construction / Emission factors and Emissions Guide for / Air Emissions Guide f 2. Construction	Demolition Vehicle Inspection d air emission estimating methods come from the United States Air Force's Air Air Force Stationary Sources, Air Emissions Guide for Air Force Mobile Sources, and for Air Force Transitory Sources.
2. Construction / Emission factors and Emissions Guide for / Air Emissions Guide f 2. Construction	Demolition Vehicle Inspection d air emission estimating methods come from the United States Air Force's Air Air Force Stationary Sources, Air Emissions Guide for Air Force Mobile Sources, and for Air Force Transitory Sources. n / Demolition
2. Construction / Emission factors and Emissions Guide for / Air Emissions Guide for / Air Emissions Guide for / 2. Construction 2.1 General Inform - Activity Location County: Otero	Demolition Vehicle Inspection d air emission estimating methods come from the United States Air Force's Air Air Force Stationary Sources, Air Emissions Guide for Air Force Mobile Sources, and for Air Force Transitory Sources. n / Demolition mation & Timeline Assumptions
2. Construction / Emission factors and Emissions Guide for / Air Emissions Guide for / Air Emissions Guide for / 2. Construction 2.1 General Inform - Activity Location County: Otero	Demolition Vehicle Inspection d air emission estimating methods come from the United States Air Force's Air Air Force Stationary Sources, Air Emissions Guide for Air Force Mobile Sources, and for Air Force Transitory Sources. n / Demolition
 2. Construction / Emission factors and Emissions Guide for / Air Emissions Guide f 2. Construction 2.1 General Inform - Activity Location County: Otero Regulatory Area 	Demolition Vehicle Inspection d air emission estimating methods come from the United States Air Force's Air Air Force Stationary Sources, Air Emissions Guide for Air Force Mobile Sources, and for Air Force Transitory Sources. n / Demolition mation & Timeline Assumptions (s): NOT IN A REGULATORY AREA
2. Construction / Emission factors and Emissions Guide for / Air Emissions Guide f 2. Construction 2.1 General Inform - Activity Location County: Otero	Demolition Vehicle Inspection d air emission estimating methods come from the United States Air Force's Air Air Force Stationary Sources, Air Emissions Guide for Air Force Mobile Sources, and for Air Force Transitory Sources. n / Demolition mation & Timeline Assumptions (s): NOT IN A REGULATORY AREA
 2. Construction / Emission factors and Emissions Guide for / Air Emissions Guide f 2. Construction 2.1 General Inform - Activity Location County: Otero Regulatory Area 	Demolition Vehicle Inspection d air emission estimating methods come from the United States Air Force's Air Air Force Stationary Sources, Air Emissions Guide for Air Force Mobile Sources, and for Air Force Transitory Sources. h / Demolition mation & Timeline Assumptions (s): NOT IN A REGULATORY AREA hicle Inspection
2. Construction / Emission factors and Emissions Guide for / Air Emissions Guide for / Air Emissions Guide for 2. Construction Construction - Activity Location County: Otero Regulatory Area - Activity Title: Vel - Activity Description Renovation of vec	Demolition Vehicle Inspection d air emission estimating methods come from the United States Air Force's Air Air Force Stationary Sources, Air Emissions Guide for Air Force Mobile Sources, and for Air Force Transitory Sources. n / Demolition mation & Timeline Assumptions (s): NOT IN A REGULATORY AREA nicle Inspection n: ehicle inspection, gatehouse, guard structures, and canopy. New construction of
2. Construction / Emission factors and Emissions Guide for / Air Emissions Guide for / Air Emissions Guide for / 2. Construction 2. Construction 2.1 General Inform - Activity Location County: Otero Regulatory Area - - Activity Title: Vel - Activity Description -	Demolition Vehicle Inspection d air emission estimating methods come from the United States Air Force's Air Air Force Stationary Sources, Air Emissions Guide for Air Force Mobile Sources, and for Air Force Transitory Sources. n / Demolition mation & Timeline Assumptions (s): NOT IN A REGULATORY AREA nicle Inspection n: ehicle inspection, gatehouse, guard structures, and canopy. New construction of
 2. Construction / Emission factors and Emissions Guide for / Air Emissions Guide for / Air Emissions Guide for 2. Construction 2.1 General Inform Activity Location County: Otero Regulatory Area Activity Title: Vel Activity Description Renovation of ve 100,000 square fet 	Demolition Vehicle Inspection d air emission estimating methods come from the United States Air Force's Air Air Force Stationary Sources, Air Emissions Guide for Air Force Mobile Sources, and for Air Force Transitory Sources. n / Demolition mation & Timeline Assumptions (s): NOT IN A REGULATORY AREA nicle Inspection n: ehicle inspection, gatehouse, guard structures, and canopy. New construction of
2. Construction / Emission factors and Emissions Guide for / Air Emissions Guide for / Air Emissions Guide for / Air Emissions Guide for / 2. Construction 2. Construction 2.1 General Inform - Activity Location County: Otero Regulatory Area - Activity Title: Vel - Activity Description Renovation of vel 100,000 square fel - Activity Start Date	Demolition Vehicle Inspection d air emission estimating methods come from the United States Air Force's Air Air Force Stationary Sources, Air Emissions Guide for Air Force Mobile Sources, and for Air Force Transitory Sources. n / Demolition mation & Timeline Assumptions (s): NOT IN A REGULATORY AREA nicle Inspection n: whicle inspection, gatehouse, guard structures, and canopy. New construction of pavement.
2. Construction / Emission factors and Emissions Guide for / Air Emissions Guide for / Air Emissions Guide for / Air Emissions Guide for / 2. Construction 2. Construction 2.1 General Inform - Activity Location County: Otero Regulatory Area - Activity Title: Vel - Activity Description Renovation of vel 100,000 square fel - Activity Start Date Start Month: 1	Demolition Vehicle Inspection d air emission estimating methods come from the United States Air Force's Air Air Force Stationary Sources, Air Emissions Guide for Air Force Mobile Sources, and for Air Force Transitory Sources. n / Demolition mation & Timeline Assumptions (s): NOT IN A REGULATORY AREA nicle Inspection n: whicle inspection, gatehouse, guard structures, and canopy. New construction of pavement.
 2. Construction / Emission factors and Emissions Guide for / Air Emissions Guide for / Air Emissions Guide for / 2. Construction 2.1 General Inform Activity Location County: Otero Regulatory Area Activity Title: Vel Activity Description Renovation of ve 100,000 square fe Activity Start Date Start Month: 1 Start Month: 2 	Demolition Vehicle Inspection d air emission estimating methods come from the United States Air Force's Air Air Force Stationary Sources, Air Emissions Guide for Air Force Mobile Sources, and or Air Force Transitory Sources. n / Demolition mation & Timeline Assumptions (s): NOT IN A REGULATORY AREA nicle Inspection n: ehicle inspection, gatehouse, guard structures, and canopy. New construction of pavement.
 2. Construction / Emission factors and Emissions Guide for / Air Emissions Guide for / Air Emissions Guide for / 2. Construction 2.1 General Inform Activity Location County: Otero Regulatory Area Activity Title: Vel Activity Description Renovation of vel 100,000 square fel Activity Start Date Start Month: 1 Start Month: 2 Activity End Date 	Demolition Vehicle Inspection d air emission estimating methods come from the United States Air Force's Air Air Force Stationary Sources, Air Emissions Guide for Air Force Mobile Sources, and or Air Force Transitory Sources. n / Demolition mation & Timeline Assumptions (s): NOT IN A REGULATORY AREA nicle Inspection n: phicle inspection, gatehouse, guard structures, and canopy. New construction of pavement. 027
 2. Construction / Emission factors and Emissions Guide for / Air Emissions Guide for / Air Emissions Guide for / 2. Construction 2.1 General Inform Activity Location County: Otero Regulatory Area Activity Title: Vel Activity Description Renovation of vel 100,000 square fel Activity Start Date Start Month: 1 Start Month: 2 Activity End Date 	Demolition Vehicle Inspection d air emission estimating methods come from the United States Air Force's Air Air Force Stationary Sources, Air Emissions Guide for Air Force Mobile Sources, and or Air Force Transitory Sources. h / Demolition mation & Timeline Assumptions (s): NOT IN A REGULATORY AREA nicle Inspection n: shicle inspection, gatehouse, guard structures, and canopy. New construction of set of pavement.
 2. Construction / Emission factors and Emissions Guide for / Air Emissions Guide for / Air Emissions Guide for / 2. Construction 2.1 General Inform Activity Location County: Otero Regulatory Area Activity Title: Vel Activity Description Renovation of vel 100,000 square fel Activity Start Date Start Month: 1 Start Month: 2 Activity End Date 	Demolition Vehicle Inspection d air emission estimating methods come from the United States Air Force's Air Air Force Stationary Sources, Air Emissions Guide for Air Force Mobile Sources, and or Air Force Transitory Sources. n / Demolition mation & Timeline Assumptions (s): NOT IN A REGULATORY AREA nicle Inspection n: phicle inspection, gatehouse, guard structures, and canopy. New construction of pavement. 027

- End Month: 12
- End Month: 2027
- 2 3 4

7 8

1

- Activity Emissions:

Pollutant	Total Emissions (TONs)
VOC	0.167323
SOx	0.001019
NOx	0.371304
CO	0.502741
PM 10	1.011785

Pollutant	Total Emissions (TONs)
PM 2.5	0.016961
Pb	0.000000
NH₃	0.000348
CO ₂ e	100.3

- 2.1 Site Grading Phase
- 2.1.1 Site Grading Phase Timeline Assumptions

- Phase Start Date		
Start Month: 1		
Start Quarter: 1		
Start Year: 2027		
- Phase Duration		
Number of Month: 1		
Number of Days: 0		
-		
2.1.2 Site Grading Phase Assumptions		
5		
- General Site Grading Information		
- Site Grading Default Settings		
Default Settings Used: Yes		
Average Day(s) worked per week: 5 (default)		
 Construction Exhaust (default) 		
Equipment Name	Number O	f
	Equipmen	t
Graders Composite	1	
Other Construction Equipment Composite	1	
Rubber Tired Dozers Composite	1	
Tractors/Loaders/Backhoes Composite	1	
- Vehicle Exhaust		
Average Hauling Truck Capacity (yd ³): 20 (de	fault)	
Average Hauling Truck Round Trip Commute (mile):	20 (default)	
- Vehicle Exhaust Vehicle Mixture (%)		
LDGV LDGT HDGV LDDV	LDDT	
LDGV LDGT HDGV LDDV	LDDT	
POVs 0 0 0 0	0	
	 Phase Start Date Start Month: 1 Start Quarter: 1 Start Year: 2027 Phase Duration Number of Month: 1 Number of Days: 0 2.1.2 Site Grading Phase Assumptions General Site Grading Information Area of Site to be Graded (ft²): 100000 Amount of Material to be Hauled On-Site (yd³): 0 Amount of Material to be Hauled Off-Site (yd³): 0 Site Grading Default Settings Default Settings Used: Yes Average Day(s) worked per week: 5 (default) Construction Exhaust (default) Graders Composite Other Construction Equipment Composite Rubber Tired Dozers Composite Tractors/Loaders/Backhoes Composite Vehicle Exhaust Average Hauling Truck Capacity (yd³): 20 (def Average Hauling Truck Round Trip Commute (mile): 2 Vehicle Exhaust Vehicle Mixture (%) 	Phase Start Date Start Month: 1 Start Quarter: 1 Start Year: 2027 Phase Duration Number of Month: 1 Number of Days: 0 2.1.2 Site Grading Phase Assumptions General Site Grading Information Area of Site to be Graded (ft ²): 100000 Amount of Material to be Hauled On-Site (yd ³): 0 Amount of Material to be Hauled Off-Site (yd ³): 0 Site Grading Default Settings Default Settings Default Settings Used: Yes Average Day(s) worked per week: 5 (default) Construction Exhaust (default) Construction Exhaust (default) Construction Equipment Composite 1 Other Construction Equipment Composite 1 Tractors/Loaders/Backhoes Composite 1 Vehicle Exhaust Average Hauling Truck Capacity (yd ³): 20 (default) Average Hauling Truck Round Trip Commute (mile): 20 (default)

- 38
 - Worker Trips
 - Average Worker Round Trip Commute (mile): 20 (default)
- 39 40
- Worker Trips Vehicle Mixture (%) 41

C-90

Hours Per Day

6

8

6

7

MC

0

HDDV

100.00

	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

Cladele Competer								
	VOC	SOx	NOx	СО	PM 10	PM 2.5	CH₄	CO ₂ e
Emission Factors	0.0676	0.0014	0.3314	0.5695	0.0147	0.0147	0.0061	132.89
Other Constructio	n Equipm	ent Comp	osite					
	VOC	SOx	NOx	со	PM 10	PM 2.5	CH₄	CO ₂ e
Emission Factors	0.0442	0.0012	0.2021	0.3473	0.0068	0.0068	0.0039	122.60
Rubber Tired Doz	ers Compo	osite						
	VOC	SOx	NOx	CO	PM 10	PM 2.5	CH₄	CO ₂ e
Emission Factors	0.1671	0.0024	1.0824	0.6620	0.0418	0.0418	0.0150	239.45
Tractors/Loaders/	Backhoes	Composit	te					
	VOC	SOx	NOx	CO	PM 10	PM 2.5	CH₄	CO ₂ e
Emission Factors	0.0335	0.0007	0.1857	0.3586	0.0058	0.0058	0.0030	66.872

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

1011010	Exhauot 0					,			
	VOC	SOx	NOx	CO	PM 10	PM 2.5	Pb	NH ₃	CO ₂ e
LDGV	000.309	000.002	000.239	003.421	000.007	000.006		000.023	00318.896
LDGT	000.374	000.003	000.418	004.700	000.009	800.000		000.024	00411.188
HDGV	000.696	000.005	001.076	015.187	000.021	000.019		000.044	00758.535
LDDV	000.115	000.003	000.139	002.492	000.004	000.004		800.000	00309.094
LDDT	000.250	000.004	000.394	004.238	000.007	000.006		800.000	00438.938
HDDV	000.572	000.013	005.669	001.917	000.170	000.156		000.030	01506.304
MC	002.734	000.003	000.845	013.302	000.027	000.023		000.055	00396.858

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9

12

13

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15

17

2.1.4 Site Grading Phase Formula(s)

- Fugitive Dust Emissions per Phase 10

- PM10_{FD} = (20 * ACRE * WD) / 2000 11
 - 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) 16
 - 2000: Conversion Factor pounds to tons
- 18 - Construction Exhaust Emissions per Phase 19
- CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000 20
- 21
- 22 CEE_{POL}: Construction Exhaust Emissions (TONs)
- 23 NE: Number of Equipment
- WD: Number of Total Work Days (days) 24
- 25 H: Hours Worked per Day (hours)
- EF_{POL}: Emission Factor for Pollutant (lb/hour) 26
- 2000: Conversion Factor pounds to tons 27 28

- Vehicle Exhaust Emissions per Phase 29

- VMT_{VE} = (HA_{OnSite} + HA_{OffSite}) * (1 / HC) * HT 30
- 31
- VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
- 32 HA_{OnSite}: Amount of Material to be Hauled On-Site (yd³) 33

1	HA _{OffSite} : Amount of Material to be Hauled Off-Site (yd ³)
2	HC: Average Hauling Truck Capacity (yd^3)
	(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd ³)
3	
4	HT: Average Hauling Truck Round Trip Commute (mile/trip)
5	
6	V _{POL} = (VMT _{VE} * 0.002205 * EF _{POL} * VM) / 2000
7	
8	VPOL: Vehicle Emissions (TONs)
9	VMT _{VE} : Vehicle Exhaust Vehicle Miles Travel (miles)
10	0.002205: Conversion Factor grams to pounds
11	EF _{POL} : Emission Factor for Pollutant (grams/mile)
12	VM: Vehicle Exhaust On Road Vehicle Mixture (%)
13	2000: Conversion Factor pounds to tons
14	
	Worker Tring Emissions nor Phase
15	- Worker Trips Emissions per Phase
16	VMT _{WT} = WD * WT * 1.25 * NE
17	
18	VMT _{WT} : Worker Trips Vehicle Miles Travel (miles)
19	WD: Number of Total Work Days (days)
20	WT: Average Worker Round Trip Commute (mile)
21	1.25: Conversion Factor Number of Construction Equipment to Number of Works
22	NE: Number of Construction Equipment
23	
24	V _{POL} = (VMT _{WT} * 0.002205 * EF _{POL} * VM) / 2000
25	
26	VPOL: Vehicle Emissions (TONs)
27	VMT _{wT} : Worker Trips Vehicle Miles Travel (miles)
28	0.002205: Conversion Factor grams to pounds
29	EFPOL: Emission Factor for Pollutant (grams/mile)
30	VM: Worker Trips On Road Vehicle Mixture (%)
31	2000: Conversion Factor pounds to tons
32	
33	2.2 Architectural Coatings Phase
	2.2 Architectural Coatings I hase
34	
35	2.2.1 Architectural Coatings Phase Timeline Assumptions
36	
37	- Phase Start Date
38	Start Month: 1
39	Start Quarter: 1
40	Start Year: 2027
41	
42	- Phase Duration
43	Number of Month: 3
44	Number of Days: 0
45	
-	2.2.2 Architectural Coatings Phase Assumptions
46	2.2.2 Architectural Coalings Phase Assumptions
47	
48	- General Architectural Coatings Information
49	Building Category: Non-Residential
50	Total Square Footage (ft ²):8336
51	Number of Units: N/A
52	
	Architectural Continue Default Sattinge
53	- Architectural Coatings Default Settings
54	Default Settings Used: Yes
55	Average Day(s) worked per week: 5 (default)
56	

- 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 Architectural Coatings Phase Emission Factor(s)

- Worker Trips Emission Factors (grams/mile)

	VOC	SOx	NOx	CÓ	PM 10	PM 2.5	Pb	NH ₃	CO ₂ e
LDGV	000.604	000.007	000.679	005.119	000.013	000.012		000.033	00365.157
LDGT	000.784	000.010	001.171	008.128	000.015	000.013		000.034	00488.008
HDGV	001.315	000.015	003.118	025.189	000.035	000.031		000.045	00760.452
LDDV	000.249	000.003	000.329	003.517	000.007	000.006		800.000	00371.991
LDDT	000.550	000.005	000.880	007.137	800.000	800.000		800.000	00579.910
HDDV	000.934	000.014	009.704	002.987	000.373	000.344		000.031	01586.560
MC	002.847	800.000	000.870	014.993	000.028	000.025		000.051	00396.071

9 10 11

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17

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22

27

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1

2

3 4

5

6 7 8

2.2.4 Architectural Coatings Phase Formula(s)

12 - Worker Trips Emissions per Phase

- 13 VMT_{WT} = (1 * WT * PA) / 800
 - VMTwT: Worker Trips Vehicle Miles Travel (miles)
 - 1: Conversion Factor man days to trips (1 trip / 1 man * day)
 - WT: Average Worker Round Trip Commute (mile)
- 18 PA: Paint Area (ft²)
 - 800: Conversion Factor square feet to man days (1 ft² / 1 man * day)
- 20 21 V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000
- 23 V_{POL}: Vehicle Emissions (TONs)
- 24 VMTwT: Worker Trips Vehicle Miles Travel (miles)
- 25 0.002205: Conversion Factor grams to pounds
- 26 EF_{POL}: Emission Factor for Pollutant (grams/mile)
 - VM: Worker Trips On Road Vehicle Mixture (%)
- 28 2000: Conversion Factor pounds to tons 29

30 - Off-Gassing Emissions per Phase

- 31 VOC_{AC} = (AB * 2.0 * 0.0116) / 2000.0 32
 - VOC_{AC}: Architectural Coating VOC Emissions (TONs)
- 34 BA: Area of Building (ft²)
- 35 2.0: Conversion Factor total area to coated area (2.0 ft² coated area / total area)
- 36 0.0116: Emission Factor (lb/ft²)
- 2000: Conversion Factor pounds to tons
- 39 **2.3 Paving Phase**
- 40
- ~

41 2.3.1 Paving Phase Timeline Assumptions
 42

43 - Phase Start Date

- 44 Start Month: 2
- 45 Start Quarter: 1

						Holloma				
Start Ye	ar: 20	027								
- Phase Dura	ation									
	of Month	h• 2								
	of Days:									
	•••••									
2.3.2 Pavir	ng Phase	e Assur	nptions							
- General Pa										
Paving A	Area (ft ²):	: 10000	0							
- Paving Def	iault Sott	inge								
	Settings		``	Yes						
			er week: {							
Average	Day(3) V	Norkeu p								
- Constructi	on Exhai								1	
		Equipr	nent Name	e			nber O		Hours	Per Da
0						Equ	lipmen	nt		0
Cement and		vilxers Co	omposite				4			6
Pavers Con		omnooita					1 2			7
Paving Equ Rollers Con		omposite	•				<u> </u>			6 7
Tractors/Lo		ckhoos (omnosito				1			7
Average	Hauling		•	Commute	(mile):	20 (defa	ult)			
- Vehicle Ex	Hauling	hicle Mi	•	Commute	(mile):	20 (defa	,		DDV	MC
Average - Vehicle Ex POVs	Hauling haust Ve LDG 0	hicle Mi	xture (%)				DT		DDV 0.00	MC 0
Average - Vehicle Ex POVs - Worker Tri Average	Hauling haust Ve LDG 0 ps Worker ps Vehic	Nicle Mix V L Round 1	xture (%) _DGT 0 Trip Comm	HDGV 0 nute (mile):	LDDV 0 20 (defaul	t)	DT	10	0.00	0
Average - Vehicle Ex POVs - Worker Tri Average - Worker Tri	Hauling haust Ve LDG 0 ps Worker ps Vehic	Round 1	xture (%) _DGT 0 	HDGV 0 nute (mile): HDGV	LDDV 0 20 (defaul	t)		10 HE	0.00	0 MC
Average - Vehicle Ex POVs - Worker Tri Average	Hauling haust Ve LDG 0 ps Worker ps Vehic	Round 1	xture (%) _DGT 0 Trip Comm	HDGV 0 nute (mile):	LDDV 0 20 (defaul	t)		10 HE	0.00	0
Average - Vehicle Ex POVs - Worker Tri Average - Worker Tri POVs	Hauling haust Ve LDGV 0 ps Worker ps Vehic LDGV 50.00	Round T Round T le Mixtur	xture (%) _DGT 0 	HDGV 0 nute (mile): HDGV 0	LDDV 0 20 (defaul	t)		10 HE	0.00	0 MC
Average - Vehicle Ex POVs - Worker Tri Average - Worker Tri	Hauling haust Ve LDGV 0 ps Worker ps Vehic LDGV 50.00	Round T Round T le Mixtur	xture (%) _DGT 0 	HDGV 0 nute (mile): HDGV 0	LDDV 0 20 (defaul	t)		10 HE	0.00	0 MC
Average - Vehicle Ex POVs - Worker Tri Average - Worker Tri POVs	Hauling haust Ve LDG 0 ps Worker ps Vehic LDG 50.00	Round 1 Round 1 le Mixtur V L C S E Emiss	xture (%) _DGT 0 -rip Comm re (%) _DGT 50.00 -sion Facto	HDGV 0 nute (mile): HDGV 0 Dr(s)	LDDV 0 20 (defaul LDDV 0	t)		10 HE	0.00	0 MC
Average - Vehicle Ex POVs - Worker Tri Average - Worker Tri POVs 2.3.3 Pavir	Hauling haust Ve LDGV 0 ps Worker ps Vehic LDGV 50.00 ng Phase on Exhau	Round T Round T le Mixtur V L C ! e Emiss	xture (%) _DGT 0 -rip Comm re (%) _DGT 50.00 -sion Facto	HDGV 0 nute (mile): HDGV 0 Dr(s)	LDDV 0 20 (defaul LDDV 0	t)		10 HE	0.00	0 MC 0
Average - Vehicle Ex POVs - Worker Tri Average - Worker Tri POVs 2.3.3 Pavir - Constructi Graders Co	Hauling haust Ve LDG 0 ps Worker ps Vehic LDG 50.00 ng Phase on Exhau	Round 1 Round 1 le Mixtur V L D L e Emiss	xture (%) DGT 0 Trip Comm re (%) DGT 50.00 Sion Factor sion Factor SO _x	HDGV 0 nute (mile): HDGV 0 Dr(s) Dr(s) NOx	LDDV 0 20 (defaul LDDV 0 r) (default	t) PM 10	DT	10 HE 2.5	0.00 DDV 0 CH4	0 MC 0
Average - Vehicle Ex POVs - Worker Tri Average - Worker Tri POVs 2.3.3 Pavir - Constructi Graders Co Emission Fa	Hauling haust Ve LDG 0 ps Worker ps Vehic LDG 50.00 ng Phase omposite actors	Round 1 Round 1 le Mixtur V L D S e Emiss ust Emiss VOC 0.0676	xture (%) DGT 0 Trip Comm re (%) DGT 50.00 Sion Factor sion Factor SO _x 0.0014	HDGV 0 nute (mile): HDGV 0 or(s) ors (lb/hou NO _x 0.3314	LDDV 0 20 (defaul LDDV 0	t)	DT DT	10 HE 2.5	0.00	0 MC 0
Average - Vehicle Ex POVs - Worker Tri Average - Worker Tri POVs 2.3.3 Pavir - Constructi Graders Co	Hauling haust Ve LDG 0 ps Worker ps Vehic LDG 50.00 ng Phase omposite actors	Round 1 Round 1 le Mixtur V L C L C C E Emiss ust Emiss VOC 0.0676 Equipm	xture (%) DGT 0 Trip Comm re (%) DGT 50.00 Sion Factor Sion Factor SO _x 0.0014 ent Comp	HDGV 0 hute (mile): HDGV 0 or(s) ors (lb/hou 0.3314 osite	LDDV 0 20 (defaul LDDV 0 r) (default 0.5695	LDE 0 t) LDE 0 PM 10 0.0147	DT	10 HC 2.5	0.00 DDV 0 CH4 0.0061	0 MC 0 132.4
Average - Vehicle Ex POVs - Worker Tri Average - Worker Tri POVs 2.3.3 Pavir - Constructi Graders Co Emission Fa Other Cons	Hauling haust Ve LDGV 0 ps Worker ps Vehic LDGV 50.00 ng Phase on Exhau pmposite actors	Round 1 Round 1 le Mixtur V L C	xture (%) DGT 0 Trip Comm re (%) DGT 50.00 Sion Factor SOx 0.0014 ent Comp SOx	HDGV 0 hute (mile): HDGV 0 or(s) ors (lb/hou 0.3314 osite NO _x	LDDV 0 20 (defaul LDDV 0 r) (default CO 0.5695	LDE 0 t) PM 10 0.0147 PM 10	DT D	10 HE 2.5 47	0.00 DDV 0 CH₄ 0.0061 CH₄	0 MC 0 132.4
Average - Vehicle Ex POVs - Worker Tri Average - Worker Tri POVs 2.3.3 Pavir - Constructi Graders Co Emission Fa Other Cons Emission Fa	Hauling haust Ve haust Ve LDGV 0 ps Worker ps Vehic LDGV 50.00 ng Phase actors struction actors	Round 1 Round 1 le Mixtur V L b le Emiss ust Emiss VOC 0.0676 Equipm VOC 0.0442	xture (%) _DGT 0 Trip Comm re (%) _DGT 50.00 50	HDGV 0 hute (mile): HDGV 0 or(s) ors (lb/hou 0.3314 osite	LDDV 0 20 (defaul LDDV 0 r) (default 0.5695	LDE 0 t) LDE 0 PM 10 0.0147	DT	10 HE 2.5 47	0.00 DDV 0 CH4 0.0061	0 MC 0 132.4
Average - Vehicle Ex POVs - Worker Tri Average - Worker Tri POVs 2.3.3 Pavir - Constructi Graders Co Emission Fa Other Cons	Hauling haust Ve haust Ve LDGV 0 ps Worker ps Vehic LDGV 50.00 ng Phase actors struction actors	chicle Mix V I Round 1 cle Mixtur V I O I cle Mixtur V I O I e Emiss voc 0.0676 Equipm VOC 0.0442 rs Comp	xture (%) DGT 0 rip Comm re (%) DGT 50.00 sion Factor sion Factor sion Factor sion Factor sox 0.0014 ent Comp SOx 0.0012 osite	HDGV 0 hute (mile): HDGV 0 Dr(s) Dr(s) Dr(s) 0 Dr(s) 0.3314 0.3314 0.3314	LDDV 0 20 (defaul LDDV 0 r) (default 0 r) (default 0 0.5695 CO 0.3473	LDE 0 0 t) PM 10 0.0147 PM 10 0.0068	DT D	10 HE 2.5 47 88	0.00 DDV 0 CH₄ 0.0061 CH₄ 0.0039	0 MC 0 132.0 CO ₂ 122.0
Average - Vehicle Ex POVs - Worker Tri Average - Worker Tri POVs 2.3.3 Pavir - Constructi Graders Co Emission Fa Other Cons Emission Fa	Hauling haust Ve LDG 0 ps Worker ps Vehic LDG 0 tog Phase on Exhau omposite actors struction actors ed Dozer	Round 1 Round 1 le Mixtur V L e Emiss ust Emiss VOC 0.0676 Equipm VOC 0.0442 rs Comp VOC	xture (%) _DGT 0 Trip Comm re (%) _DGT 50.00 Sion Factor sion Factor sion Factor sion Factor SOx 0.0014 ent Comp SOx 0.0012 osite SOx	HDGV 0 nute (mile): HDGV 0 or(s) ors (lb/hou 0.3314 osite NO _x 0.2021	LDDV 0 20 (defaul LDDV 0 r) (default CO 0.5695 CO 0.3473 CO	LDE 0 t) PM 10 0.0147 PM 10 0.0068 PM 10	DT D	10 HE 2.5 47 2.5 68 2.5	0.00 DDV 0 CH₄ 0.0061 CH₄ 0.0039 CH₄	0 MC 0 132.4 CO ₂ 122.4 CO ₂
Average - Vehicle Ex POVs - Worker Tri Average - Worker Tri POVs 2.3.3 Pavir - Constructi Graders Co Emission Fa Other Cons Emission Fa Emission Fa	Hauling haust Ve haust Ve LDG 0 ps Worker ps Vehic LDG 50.00 ng Phase actors struction actors ed Dozer actors	thicle Mix V I Round T Ie Mixture V I V I 0 I e Emiss ust Emiss VOC 0.0676 Equipm VOC 0.0442 rs Comp VOC 0.1671	xture (%) _DGT 0 Trip Comm re (%) _DGT 50.00 sion Facto sion Facto sion Facto sion Facto sion Facto sox 0.0014 ent Comp SOx 0.0012 osite SOx 0.0024	HDGV 0 hute (mile): HDGV 0 or(s) ors (lb/hou or(s) NOx 0.3314 osite NOx 0.2021 NOx 1.0824	LDDV 0 20 (defaul LDDV 0 r) (default 0 r) (default 0 0.5695 CO 0.3473	LDE 0 0 t) PM 10 0.0147 PM 10 0.0068	DT D	10 HE 2.5 47 2.5 68 2.5	0.00 DDV 0 CH₄ 0.0061 CH₄ 0.0039	0 MC 0 132.0 CO ₂ 122.0 CO ₂
Average - Vehicle Ex POVs - Worker Tri Average - Worker Tri POVs 2.3.3 Pavir - Constructi Graders Co Emission Fa Other Cons Emission Fa	Hauling haust Ve haust Ve LDG 0 ps Worker ps Vehic LDG 50.00 ng Phase actors struction actors ed Dozer actors	thicle Mix V I Round T Ie Mixture V I V I 0 I e Emiss ust Emiss VOC 0.0676 Equipm VOC 0.0442 rs Comp VOC 0.1671	xture (%) _DGT 0 Trip Comm re (%) _DGT 50.00 sion Facto sion Facto sion Facto sion Facto sion Facto sox 0.0014 ent Comp SOx 0.0012 osite SOx 0.0024	HDGV 0 hute (mile): HDGV 0 or(s) ors (lb/hou or(s) NOx 0.3314 osite NOx 0.2021 NOx 1.0824	LDDV 0 20 (defaul LDDV 0 r) (default CO 0.5695 CO 0.3473 CO	LDE 0 t) PM 10 0.0147 PM 10 0.0068 PM 10	DT D	10 HE 2.5 47 2.5 68 2.5 18	0.00 DDV 0 CH₄ 0.0061 CH₄ 0.0039 CH₄	0 MC

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

Draft EA for Airfield and Access Control Points Improvements Holloman Air Force Base, New Mexico

		VOC	80	NO	00	DM 40	DM2E	Dh	NH.	CO-
	LDGV	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	Pb	NH ₃	CO2e
	LDGV	000.309	000.002	000.239 000.418	003.421 004.700	000.007	000.006		000.023	00318.896 00411.188
	HDGV LDDV	000.696	000.005	001.076	015.187	000.021	000.019		000.044	00758.535
			000.003		002.492	000.004	000.004		000.008	00309.094
	LDDT	000.250	000.004	000.394	004.238	000.007	000.006		000.008	00438.938
	HDDV	000.572	000.013	005.669	001.917	000.170	000.156		000.030	01506.304
	MC	002.734	000.003	000.845	013.302	000.027	000.023		000.055	00396.858
1	224 Da	wing Pha	se Formu							
2 3	2.3.4 Fd	iving Fila	se ronnu	lia(5)						
4	- Constru	uction Exh	aust Emis	sions per	Phase					
5			* H * EFPOI							
6	0 0 - 0 -	(
7	CEEP	o: Constr	uction Exha	aust Emiss	ions (TON	s)				
8			Equipment		x -	,				
9			Total Work		vs)					
10			ed per Day		,					
11			n Factor for		(lb/hour)					
12			on Factor p							
13										
14			missions							
15	$VMT_{VE} = 1$	PA * 0.25 *	(1 / 27) * (1 / HC) * H	IT					
16										
17			Exhaust V	ehicle Mile	s Travel (n	niles)				
18	PA: F	Paving Area	a (ft²)							
19			of Paving							
20			sion Factor			ards (1 yd³	/ 27 ft³)			
21			auling Truc							
22			rsion Facto							
23	HT: A	Average Ha	auling Trucl	k Round Tr	rip Commu	te (mile/trip)			
24	., ,,									
25	$V_{POL} = (V)$	$MI_{VE} * 0.00$	02205 * EF	POL * VM) /	2000					
26	. /	. <i>.</i>								
27			missions (T		T					
28			Exhaust V			niles)				
29			ersion Fac							
30			Factor for							
31			haust On R			(%)				
32	2000:	Conversio	on Factor p	ounds to to	ons					
33	\\/ <u>~</u>	Tuine Ford	-	Dhees						
34 25			SSIONS PER	Phase						
35	VIVI I WT =	WD * WT *	1.25 " NE							
36	\ /K A T	. <i>\\\</i> مساد	Tring \/a-	olo Mileo T	rough /mail-	c)				
37			Trips Vehi			s)				
38			Total Work			-)				
39			orker Rour				atta Numah	on of \//	where a	
40						n Equipme	nt to Numb		DIKS	
41 42	NE: I	TO IBUILDA	Constructio	n ⊏quipme	SIIL					
42	$M_{-} = 0.0$	MT * 0.0	00005 * ୮୮	* \/\/\	2000					
43	$v_{POL} = (V)$	IVI I WT 0.0	02205 * EF	POL VIVI)/	2000					
44 45	\/ ·	Vahiala T	minaiana /T							
45 46			missions (T		roval (mil-	-)				
46			Trips Vehic			>)				
47 49			version Fac			-)				
48			n Factor for		grams/mile	=)				

	On Road Vehicle Mixture (%) Factor pounds to tons
- Off-Gassing Emissio	
VOC _P = (2.62 * PA) / 4	3560
VOC _₽ · Paving VO	C Emissions (TONs)
2.62: Emission Fa	
PA: Paving Area (
	n Factor square feet to acre (43560 ft2 / acre)² / acre)
La Luz 3	
1. General Informa	ation
- Action Location	
Base: HOLLOM	AN AFB
State: New Mex	
County(s): Oter	
	s): NOT IN A REGULATORY AREA
Action Title: La Luz	c Gate Alternative 3: Close and Demolish La Luz Gate
Project Number/s (if	applicable):
- Projected Action Sta	art Date: 1 / 2027
- Action Purpose and	Need:
	on and alignment of La Luz Gate does not meet modern anti-terrorism and force
	ds. Additionally, the remote location of La Luz Gate necessitates pre-positioning of
	l other emergency response personnel as response time to the gate is not adequate
Action Description:	
	and demolish current facilities and excess pavement. Erect a gate across La Luz
	boundary for use during emergencies.
Point of Contact	
Name:	Jessie Moore
Title:	Env. Scientist
Organization:	HazAir
Email:	jessie.moore@hazair.com
Phone Number:	5057025632
- Activity List:	
Activity Typ	De Activity Title
2. Construction / [
	air emission estimating methods come from the United States Air Force's Air ir Force Stationary Sources, Air Emissions Guide for Air Force Mobile Sources, and
	r Air Force Transitory Sources.

51 2. Construction / Demolition

1 2	2.1 Conoral Int	formation & Timeline Assu	umptions						
3			imptions						
4 5 6	- Activity Location County: Otero Regulatory Area(s): NOT IN A REGULATORY AREA								
7 8 9	- Activity Title:	Demolition of La Luz Gate							
9 10 11 12 13	- Activity Descri Includes dem areas.		l gate stat	ions, as well as s	ite grading of previously paved				
14	- Activity Start D	ate							
15	Start Month: Start Month:								
16 17	Start Wonth:	2027							
18	- Activity End Da	ate							
19	Indefinite:	False							
20 21	End Month: End Month:	2 2027							
21		2021							
23	- Activity Emissi	ons:							
	Pollutant	Total Emissions (TONs)		Pollutant	Total Emissions (TONs)				
	VOC	0.033309		PM 2.5	0.007013				
	SO _x NO _x	0.000607 0.191986		Pb NH₃	0.000000 0.000163				
	NUx	0.191900			0.000103				
	0.0	0 245902		COpe	60.6				
04	CO PM 10	0.245902 0.382672		CO ₂ e	60.6				
24 25 26 27 28 29 30 31	PM 10 2.1 Demolition	0.382672 Phase on Phase Timeline Assum te 1	ptions	CO ₂ e	60.6				
25 26 27 28 29	PM 10 2.1 Demolition 2.1.1 Demolition - Phase Start Da Start Month:	0.382672 Phase on Phase Timeline Assum te 1	ptions	CO ₂ e	60.6				
25 26 27 28 29 30 31 32 33 34 35 36	PM 10 2.1 Demolition 2.1.1 Demolition - Phase Start Da Start Month: Start Quarte	0.382672 Phase on Phase Timeline Assum te 1 r: 1 2027 h lonth: 1	ptions	CO ₂ e	60.6				
25 26 27 28 29 30 31 32 33 34 35 36 37 38	 PM 10 2.1 Demolition 2.1.1 Demolition	0.382672 Phase on Phase Timeline Assum te 1 r: 1 2027 h lonth: 1	ptions	CO ₂ e	60.6				
25 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42	 PM 10 2.1 Demolition 2.1.1 Demolition 2.1.1 Demolition 2.1.1 Demolition Start Month: Start Month: Start Quarte Start Year: Phase Duration Number of M Number of D 2.1.2 Demolition General Demol Area of Build 	0.382672 Phase on Phase Timeline Assum te 1 r: 1 2027 lonth: 1 ays: 0	8336	CO ₂ e	60.6				
25 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41	 PM 10 2.1 Demolition 2.1.1 Demolition 2.1.1 Demolition 2.1.1 Demolition Start Month: Start Month: Start Quarte Start Year: Phase Duration Number of M Number of D 2.1.2 Demolition General Demol Area of Build 	0.382672 Phase on Phase Timeline Assum te 1 r: 1 2027 n lonth: 1 bays: 0 on Phase Assumptions ition Information ding to be demolished (ft ²): ilding to be demolished (ft):	8336	CO2e	60.6				
25 226 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44	 PM 10 2.1 Demolition 2.1.1 Demolition 2.1.1 Demolition 2.1.1 Demolition Start Month: Start Quarte Start Year: Phase Duration Number of N Number of D 2.1.2 Demolition General Demol Area of Build Height of Build Default Setting 	0.382672 Phase on Phase Timeline Assum te 1 r: 1 2027 Non lonth: 1 ays: 0 on Phase Assumptions ition Information ding to be demolished (ft ²): ilding to be demolished (ft ²): ilding to be demolished (ft): s Used: Yes) worked per week: 5 (default	8336 20	CO2e	60.6				

Rubber ⁻			nent Name				nber Of ipment	nou	rs Per Da
Rubber ⁻	e/Industrial	Saws Con	nposite			- 44	1		8
	Tired Doze						1		1
Tractors	/Loaders/B						2		6
Avera Avera	Exhaust age Haulin age Haulin	g Truck R	ound Trip			default) 20 (defau	ult)		
Vehicle	Exhaust V		.DGT	HDGV	LDDV	LDD	DT	HDDV	MC
POVs	0		0	0	0	0		100.00	0
	age Worke Trips Vehi	icle Mixtur	e (%)						
	LDC		.DGT	HDGV	LDDV	LDD		HDDV	MC
POVs	50.	00 5	50.00	0	0	0		0	0
Constru	ction Exh	aust Emis		()	r) (default)			
Constru Concret	iction Exh e/Industria	aust Emis al Saws Co VOC	sion Facto omposite SO _x	ors (Ib/hou NO _x	CO	PM 10	PM 2.5	-	CO ₂ ¢
Constru Concret	ction Exh	aust Emis al Saws Co VOC 0.0336	sion Facto omposite SO _x 0.0006	ors (Ib/hou			PM 2.5 0.0093	-	
Constru Concret Emissior Rubber	nction Exh ac/Industria n Factors Tired Doz	aust Emis al Saws Co VOC 0.0336 ers Compo VOC	sion Facto omposite SO _x 0.0006 osite SO _x	NO _x 0.2470	CO 0.3705	PM 10 0.0093 PM 10	0.0093 PM 2.5	0.0030 6 CH₄) 58.53 CO ₂ e
Constru Concret Emissior Rubber Emissior	n Factors Tired Doz e	aust Emis al Saws Co VOC 0.0336 ers Compo VOC 0.1671	sion Facto omposite SO _x 0.0006 osite SO _x 0.0024	NO x 0.2470 NO x 1.0824	CO 0.3705	PM 10 0.0093	0.0093	0.0030 6 CH₄) 58.53 CO ₂ e
Constru Concret Emissior Rubber Emissior	nction Exh ac/Industria n Factors Tired Doz	aust Emis al Saws Co VOC 0.0336 ers Compo VOC 0.1671 Backhoes	sion Facto omposite SO _x 0.0006 osite SO _x 0.0024 Composit	NO _x 0.2470 NO _x 1.0824 te	CO 0.3705 CO 0.6620	PM 10 0.0093 PM 10 0.0418	0.0093 PM 2.5 0.0418	0.0030 6 CH ₄ 8 0.0150) 58.53 CO ₂ e
Constru Concret Emissior Rubber Emissior Tractors	n Factors Tired Dozo Factors	aust Emis al Saws Co VOC 0.0336 ers Compo VOC 0.1671 Backhoes VOC	sion Facto omposite SO _x 0.0006 osite SO _x 0.0024 Composit SO _x	NO _x 0.2470 NO _x 1.0824 te NO _x	CO 0.3705 CO 0.6620 CO	PM 10 0.0093 PM 10 0.0418 PM 10	0.0093 PM 2.5 0.0418 PM 2.5	6 0.0030 6 CH ₄ 6 0.0150 6 CH ₄) 58.53 CO ₂ e) 239.4 CO ₂ e
Constru Concret Emissior Rubber Emissior Tractors	iction Exhi ite/Industria In Factors Tired Doze In Factors s/Loaders/ In Factors	aust Emis al Saws Co VOC 0.0336 ers Compo VOC 0.1671 Backhoes VOC 0.0335	sion Facto omposite SO _x 0.0006 osite SO _x 0.0024 Composit SO _x 0.0007	NO _x 0.2470 NO _x 1.0824 te NO _x 0.1857	CO 0.3705 CO 0.6620 CO 0.3586	PM 10 0.0093 PM 10 0.0418 PM 10 0.0058	0.0093 PM 2.5 0.0418	 0.0030 CH₄ 0.0150 CH₄) 58.53 CO ₂ e) 239.4 CO ₂ e
Constru Concret Emissior Rubber Emissior Tractors	iction Exhi ie/Industria in Factors Tired Doz e in Factors s/Loaders/ in Factors Exhaust 8	aust Emis al Saws Co VOC 0.0336 ers Compo VOC 0.1671 Backhoes VOC 0.0335	sion Facto omposite SO _x 0.0006 osite SO _x 0.0024 Composit SO _x 0.0007	NO _x 0.2470 NO _x 1.0824 te NO _x 0.1857 sion Facto	CO 0.3705 CO 0.6620 CO 0.3586 ors (grams	PM 10 0.0093 PM 10 0.0418 PM 10 0.0058 /mile)	0.0093 PM 2.5 0.0418 PM 2.5 0.0058	6 0.0030 6 CH ₄ 6 0.0150 6 CH ₄ 6 0.0030) 58.53 CO26) 239.4 CO26) 66.87
Constru Concret Emissior Rubber Emissior Tractors Emissior Vehicle	iction Exhi ie/Industria in Factors Tired Doze in Factors s/Loaders/ in Factors Exhaust 8 VOC	aust Emis al Saws Co VOC 0.0336 ers Compo VOC 0.1671 Backhoes VOC 0.0335 & Worker T SOx	sion Facto omposite SO _x 0.0006 osite SO _x 0.0024 Composit SO _x 0.0007 rips Emis NO _x	NO _x 0.2470 NO _x 1.0824 te NO _x 0.1857 sion Facto CO	CO 0.3705 CO 0.6620 CO 0.3586 ors (grams PM 10	PM 10 0.0093 PM 10 0.0418 PM 10 0.0058 /mile) PM 2.5	0.0093 PM 2.5 0.0418 PM 2.5	 0.0030 CH4 0.0150 CH4 0.0030 	 58.53 CO₂e 239.4 CO₂e
Constru Concret Emissior Rubber Emissior Tractors Emissior Vehicle LDGV	iction Exh ice/Industria in Factors Tired Doze in Factors is/Loaders/ in Factors Exhaust 8 VOC 000.309	aust Emis al Saws Co VOC 0.0336 ers Compo VOC 0.1671 Backhoes VOC 0.0335 & Worker T SO _x 000.002	sion Facto mposite SO _x 0.0006 osite SO _x 0.0024 Composit SO _x 0.0007 rips Emis NO _x 000.239	NOx 0.2470 NOx 1.0824 te NOx 0.1857 sion Factor CO 003.421	CO 0.3705 CO 0.6620 CO 0.3586 rs (grams PM 10 000.007	PM 10 0.0093 PM 10 0.0418 PM 10 0.0058 /mile) PM 2.5 000.006	0.0093 PM 2.5 0.0418 PM 2.5 0.0058	 0.0030 CH4 0.0150 CH4 0.0030) 58.53 CO26) 239.4 CO26) 66.87 CO28 00318.88
Constru Concret Emissior Rubber Emissior Tractors Emissior Vehicle LDGV LDGV	iction Exhi ise/Industria in Factors Tired Doze in Factors s/Loaders/ in Factors Exhaust 8 VOC 000.309 000.374	aust Emis al Saws Co VOC 0.0336 ers Compo VOC 0.1671 Backhoes VOC 0.0335 a Worker T SO _x 000.002 000.003	sion Facto omposite SO _x 0.0006 osite SO _x 0.0024 Composit SO _x 0.0007 Trips Emis NO _x 000.239 000.418	NOx 0.2470 NOx 1.0824 te NOx 0.1857 sion Factor CO 003.421 004.700	CO 0.3705 CO 0.6620 CO 0.3586 PM 10 000.007 000.009	PM 10 0.0093 PM 10 0.0418 PM 10 0.0058 /mile) PM 2.5 000.006 000.008	0.0093 PM 2.5 0.0418 PM 2.5 0.0058	 0.0030 CH₄ 0.0150 CH₄ 0.0030) 58.53 CO26) 239.4 CO26) 66.87 CO26 00318.88 00411.18
Constru Concret Emissior Rubber Emissior Tractors Emissior Vehicle LDGV LDGT HDGV	iction Exh ice/Industria in Factors Tired Doze in Factors is/Loaders/ in Factors Exhaust 8 VOC 000.309	aust Emis al Saws Co VOC 0.0336 ers Compo VOC 0.1671 Backhoes VOC 0.0335 & Worker T SO _x 000.002	sion Facto omposite SO _x 0.0006 osite SO _x 0.0024 Composit SO _x 0.0007 Trips Emis NO _x 000.239 000.418 001.076	NOx 0.2470 NOx 1.0824 te NOx 0.1857 sion Factor CO 003.421	CO 0.3705 CO 0.6620 CO 0.3586 rs (grams PM 10 000.007	PM 10 0.0093 PM 10 0.0418 PM 10 0.0058 /mile) PM 2.5 000.006	0.0093 PM 2.5 0.0418 PM 2.5 0.0058	 0.0030 CH4 0.0150 CH4 0.0030) 58.53 CO26) 239.4 CO26) 66.87 CO28 00318.88
Constru Concret Emissior Rubber Emissior Tractors Emissior Vehicle LDGV LDGV LDGT HDGV LDDV	iction Exhi ise/Industria in Factors Tired Doze in Factors s/Loaders/ in Factors Exhaust 8 VOC 000.309 000.374 000.696	aust Emis al Saws Co VOC 0.0336 ers Compo VOC 0.1671 Backhoes VOC 0.0335 & Worker T SO _x 000.002 000.003 000.005	sion Facto omposite SO _x 0.0006 osite SO _x 0.0024 Composit SO _x 0.0007 Trips Emis NO _x 000.239 000.418	NOx 0.2470 NOx 1.0824 te NOx 0.1857 sion Factor 003.421 004.700 015.187	CO 0.3705 CO 0.6620 CO 0.3586 PM 10 000.007 000.009 000.021	PM 10 0.0093 PM 10 0.0418 PM 10 0.0058 /mile) PM 2.5 000.006 000.008 000.019	0.0093 PM 2.5 0.0418 PM 2.5 0.0058	 0.0030 CH₄ 0.0150 CH₄ 0.0030 	58.53 CO26 239.4 CO26 66.87 00318.89 00411.18 00758.53
Constru Concret Emissior Rubber Emissior Tractors	iction Exhi ise/Industria in Factors Tired Doze in Factors s/Loaders/ in Factors Exhaust 8 VOC 000.309 000.374 000.696 000.115	aust Emis al Saws Co VOC 0.0336 ers Compo VOC 0.1671 Backhoes VOC 0.0335 Worker T SO _x 000.002 000.003 000.005 000.003	sion Facto omposite SO _x 0.0006 osite SO _x 0.0024 Composit SO _x 0.0007 rips Emis NO _x 000.239 000.418 001.076 000.139	NOx 0.2470 NOx 1.0824 te NOx 0.1857 sion Factor 003.421 004.700 015.187 002.492	CO 0.3705 CO 0.6620 CO 0.3586 rs (grams PM 10 000.007 000.009 000.021 000.004	PM 10 0.0093 PM 10 0.0418 PM 10 0.0058 /mile) PM 2.5 000.006 000.008 000.019 000.004	0.0093 PM 2.5 0.0418 PM 2.5 0.0058	 0.0030 CH₄ 0.0150 CH₄ 0.0030 0.0030 NH₃ 000.023 000.024 000.044 000.008 	58.53 CO26 239.4 CO26 66.87 00318.89 00411.18 00758.53 00309.09

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Concrete/muustri	al Saws Co	Jinposite						
	VOC	SOx	NOx	CO	PM 10	PM 2.5	CH₄	CO ₂ e
Emission Factors	0.0336	0.0006	0.2470	0.3705	0.0093	0.0093	0.0030	58.539
Rubber Tired Doz	ers Compo	osite						
	VOC	SOx	NOx	СО	PM 10	PM 2.5	CH₄	CO ₂ e
Emission Factors	0.1671	0.0024	1.0824	0.6620	0.0418	0.0418	0.0150	239.45
Tractors/Loaders/	Backhoes	Composit	te					
	VOC	SOx	NOx	СО	PM 10	PM 2.5	CH₄	CO ₂ e
Emission Factors	0.0335	0.0007	0.1857	0.3586	0.0058	0.0058	0.0030	66.872

1011010	Exhlauot				ie (graine	///////////////////////////////////////			
	VOC	SOx	NOx	CO	PM 10	PM 2.5	Pb	NH ₃	CO ₂ e
LDGV	000.309	000.002	000.239	003.421	000.007	000.006		000.023	00318.896
LDGT	000.374	000.003	000.418	004.700	000.009	800.000		000.024	00411.188
HDGV	000.696	000.005	001.076	015.187	000.021	000.019		000.044	00758.535
LDDV	000.115	000.003	000.139	002.492	000.004	000.004		800.000	00309.094
LDDT	000.250	000.004	000.394	004.238	000.007	000.006		800.000	00438.938
HDDV	000.572	000.013	005.669	001.917	000.170	000.156		000.030	01506.304
MC	002.734	000.003	000.845	013.302	000.027	000.023		000.055	00396.858

- 2000: Conversion Factor pounds to tons

1 2	- Construction Exhaust Emissions per Phase CEE _{POL} = (NE * WD * H * EF _{POL}) / 2000
3	
4 5	CEE _{POL} : Construction Exhaust Emissions (TONs) NE: Number of Equipment
6	WD: Number of Total Work Days (days)
7	H: Hours Worked per Day (hours)
8 9	EF _{POL} : Emission Factor for Pollutant (lb/hour) 2000: Conversion Factor pounds to tons
9 10	2000. Conversion Factor pounds to tons
11	- Vehicle Exhaust Emissions per Phase
12	VMT _{VE} = BA * BH * (1 / 27) * 0.25 * (1 / HC) * HT
13	VMT Vehicle Exhaust Vehicle Miles Travel (miles)
14 15	VMT _{VE} : Vehicle Exhaust Vehicle Miles Travel (miles) BA: Area of Building being demolish (ft²)
16	BH: Height of Building being demolish (ft)
17	(1 / 27): Conversion Factor cubic feet to cubic yards (1 yd ³ / 27 ft ³)
18 10	0.25: Volume reduction factor (material reduced by 75% to account for air space)
19 20	HC: Average Hauling Truck Capacity (yd ³) (1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd ³)
21	HT: Average Hauling Truck Round Trip Commute (mile/trip)
22	
23	V _{POL} = (VMT _{VE} * 0.002205 * EF _{POL} * VM) / 2000
24 25	VPOL: Vehicle Emissions (TONs)
26	VMTve: Vehicle Exhaust Vehicle Miles Travel (miles)
27	0.002205: Conversion Factor grams to pounds
28	EF _{POL} : Emission Factor for Pollutant (grams/mile)
29 30	VM: Vehicle Exhaust On Road Vehicle Mixture (%) 2000: Conversion Factor pounds to tons
31	
32	- Worker Trips Emissions per Phase
33	VMT _{WT} = WD * WT * 1.25 * NE
34 35	VMTwr: Worker Trips Vehicle Miles Travel (miles)
36	WD: Number of Total Work Days (days)
37	WT: Average Worker Round Trip Commute (mile)
38	1.25: Conversion Factor Number of Construction Equipment to Number of Works
39	NE: Number of Construction Equipment
40 41	V _{POL} = (VMT _{WT} * 0.002205 * EF _{POL} * VM) / 2000
42	
43	VPOL: Vehicle Emissions (TONs)
44	VMTwt: Worker Trips Vehicle Miles Travel (miles)
45 46	0.002205: Conversion Factor grams to pounds EF _{POL} : Emission Factor for Pollutant (grams/mile)
40 47	VM: Worker Trips On Road Vehicle Mixture (%)
48	2000: Conversion Factor pounds to tons
49	
50	2.2 Site Grading Phase
51 52	2.2.1 Site Grading Dhase Timeline Accumptions
52 53	2.2.1 Site Grading Phase Timeline Assumptions
54	- Phase Start Date
55	Start Month: 2
56	Start Quarter: 1

Number Of

Equipment

1 1

1

1

20 (default)

LDDT

0

LDDT

0

PM 2.5

0.0147

PM 2.5

0.0068

PM 2.5

0.0418

PM 2.5

0.0058

0.0147

0.0068

0.0418

PM 10

0.0058

HDDV

100.00

HDDV

0

CH₄

0.0061

CH₄ 0.0039

CH₄

0.0150

CH₄

0.0030

Hours Per Day

6

8

6

7

MC

0

MC

0

CO₂e 132.89

CO₂e

122.60

CO₂e

239.45

CO₂e

66.872

Number o 2.2.2 Site G General Site Area of S Amount o	of Month: 1 of Days: 0 rading Pha				
Number o Number o 2.2.2 Site G General Site Area of Si Amount o	of Month: 1 of Days: 0 rading Pha				
Number o 2.2.2 Site G General Site Area of S Amount o	of Days: 0 rading Pha				
2.2.2 Site G General Site Area of Si Amount o	rading Pha				
General Site Area of Si Amount o	C				
Area of Si Amount o		ase Assump	otions		
Amount o					
			o o:/ / 13	34240	
Amount o	of Material t	o be Hauled	SIT-SITE (ya	'): 0	
Site Grading	n Dofault So	ttings			
	ettings Use		Yes		
		ted per week:			
Average	buy(s) work				
Constructio					-
	Eq	uipment Nan	ne		E
Graders Corr	nposite				
		oment Compo	site		
Rubber Tired	Dozers Co	mposite			
		es Composite	į		
Vahiala Euh	•		•	e (mile):	20 (de
Vonicio Eyna	aust Vohiel	o Mixturo (%)		` ,	20 (de
	aust Vehicl LDGV	e Mixture (%) LDGT			20 (de
POVs			HDGV 0		,
POVs	LDGV 0	LDGT	HDGV	LDDV	,
POVs Worker Trips	LDGV 0 s	LDGT 0	HDGV 0	LDDV 0	L
POVs Worker Trips	LDGV 0 s	LDGT	HDGV 0	LDDV 0	L
POVs Worker Trips Average V	LDGV 0 s Worker Rou	LDGT 0 Ind Trip Com	HDGV 0	LDDV 0	L
POVs Worker Trips	LDGV 0 s Worker Rou	LDGT 0 Ind Trip Com	HDGV 0	LDDV 0	L

0.1671

0.0335

Tractors/Loaders/Backhoes Composite VOC

0.0024

SO_x

0.0007

1.0824

NO_x

0.1857

0.6620

СО

0.3586

Emission Factors

Emission Factors

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

	Exhaust 0				na (granna	///////////////////////////////////////			
	VOC	SOx	NOx	СО	PM 10	PM 2.5	Pb	NH ₃	CO ₂ e
LDGV	000.309	000.002	000.239	003.421	000.007	000.006		000.023	00318.896
LDGT	000.374	000.003	000.418	004.700	000.009	800.000		000.024	00411.188
HDGV	000.696	000.005	001.076	015.187	000.021	000.019		000.044	00758.535
LDDV	000.115	000.003	000.139	002.492	000.004	000.004		800.000	00309.094
LDDT	000.250	000.004	000.394	004.238	000.007	000.006		000.008	00438.938
HDDV	000.572	000.013	005.669	001.917	000.170	000.156		000.030	01506.304
MC	002.734	000.003	000.845	013.302	000.027	000.023		000.055	00396.858

10

12

13

18

36

2.2.4 Site Grading Phase Formula(s)

- Fugitive Dust Emissions per Phase

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

- 17 20
- PM10_{FD}: Fugitive Dust PM 10 Emissions (TONs)
- 20: Conversion Factor Acre Day to pounds (20 lb / 1 Acre Day)
- 11 ACRE: Total acres (acres)
 - WD: Number of Total Work Days (days)
 - 2000: Conversion Factor pounds to tons

14 15 - Construction Exhaust Emissions per Phase

- CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000 16
 - CEEPOL: Construction Exhaust Emissions (TONs)
- NE: Number of Equipment 19
 - WD: Number of Total Work Days (days)
- H: Hours Worked per Day (hours) 21
- EF_{POL}: Emission Factor for Pollutant (lb/hour) 22
- 2000: Conversion Factor pounds to tons 23 24

25 - Vehicle Exhaust Emissions per Phase

- 26 VMT_{VE} = (HA_{OnSite} + HA_{OffSite}) * (1 / HC) * HT 27
- 28 VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
- 29 HAOnSite: Amount of Material to be Hauled On-Site (yd³)
- HA_{OffSite}: Amount of Material to be Hauled Off-Site (vd³) 30
- HC: Average Hauling Truck Capacity (yd³) 31
- (1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd³) 32
- 33 HT: Average Hauling Truck Round Trip Commute (mile/trip) 34
- VPOL = (VMTVE * 0.002205 * EFPOL * VM) / 2000 35

```
37
             V<sub>POL</sub>: Vehicle Emissions (TONs)
```

- VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles) 38
- 0.002205: Conversion Factor grams to pounds 39
- EF_{POL}: Emission Factor for Pollutant (grams/mile) 40
- VM: Vehicle Exhaust On Road Vehicle Mixture (%) 41
- 42 2000: Conversion Factor pounds to tons 43
- Worker Trips Emissions per Phase 44
- VMT_{WT} = WD * WT * 1.25 * NE 45
- 46 VMTwT: Worker Trips Vehicle Miles Travel (miles) 47
- WD: Number of Total Work Days (days) 48

	ker Round Trip Commute (mile)	
	Factor Number of Construction Equipment to Number of Works	
NE: Number of Co	onstruction Equipment	
VPOL = (VMTwt * 0.0022	205 * EF _{POL} * VM) / 2000	
VPOL: Vehicle Emis		
	rips Vehicle Miles Travel (miles)	
	sion Factor grams to pounds	
	Factor for Pollutant (grams/mile)	
	On Road Vehicle Mixture (%)	
2000. Conversion	Factor pounds to tons	
Main Gate		
1. General Informa	ation	
- Action Location		
Base: HOLLOM	AN AFB	
State: New Mexi	ico	
County(s): Otero	Ö	
	s): NOT IN A REGULATORY AREA	
- Action Title: Reposi	itioning of Main Gate	
- Project Number/s (if	i applicable):	
- Projected Action Sta	art Date: 1 / 2027	
- Action Purpose and		
Improve gate secur	rity, increase safety, and reduce traffic congestion.	
- Action Description:		
-	e HAFB Main Gate and adding additional access control facilities.	
- Point of Contact		
Name:	Jessie Moore	
	Env. Scientist	
Title:		
Title: Organization:	HazAir	
	HazAir jessie.moore@hazair.com	
Organization:		
Organization: Email: Phone Number: - Activity List:	jessie.moore@hazair.com 5057025632	
Organization: Email:	jessie.moore@hazair.com 5057025632 pe Activity Title	

- Air Emissions Guide for Air Force Stationary Sources, Air Emissions Guide for Air Force Mobile Sources, and 45 Air Emissions Guide for Air Force Transitory Sources. 46
- 47 48
- 2. Construction / Demolition 49
- 50
- 2.1 General Information & Timeline Assumptions 51

1					
2	- Activity Location	on			
3	County: O				
4	Regulatory A	Area(s): NOT IN A REGULATO	IRT AREA		
5					
6	 Activity Title: 	Repositioning of the Main Gate	9		
7					
8	- Activity Descri	ption:			
9	Includes cons	struction of new gate facilities, v	isitor's center, gu	ardhouse, traffic, a	nd parking pavement
10		ude demolition of existing faciliti			
11				J	
12	- Activity Start D	late			
13	Start Month:				
14	Start Month:	2027			
15					
16	- Activity End Da	ate			
17	Indefinite:	False			
18	End Month:	7			
19	End Month:	2027			
20					
21	- Activity Emissi	ions:			
	Pollutant	Total Emissions (TONs)	Poll	utant Total E	Emissions (TONs)
	VOC	0.314966	PM 2.5		0.040330
)	
	SO _x	0.003486	Pb		0.000000
	NOx	1.029977	NH ₃		0.000934
	CO	1.521753	CO ₂ e		341.1
	PM 10	7.766904			
23	2.1 Demolition	Phase			
24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44	 2.1.1 Demolitie Phase Start Da Start Month: Start Quarte Start Year: Phase Duration Number of N Number of D 2.1.2 Demolitie General Demol Area of Built Height of Built Default Setting 	on Phase Timeline Assump te 6 7: 1 2027 n Month: 2 Days: 0 on Phase Assumptions ition Information ding to be demolished (ft ²): ilding to be demolished (ft):	10686 20		
24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45	 2.1.1 Demolitie Phase Start Da Start Month: Start Quarte Start Year: Phase Duration Number of N Number of D 2.1.2 Demolitie General Demol Area of Build Height of Build Default Setting Average Day(s) 	on Phase Timeline Assump te 6 7: 1 2027 1 Month: 2 Days: 0 on Phase Assumptions lition Information ding to be demolished (ft ²): illding to be demolished (ft ²): illding to be demolished (ft): is Used: Yes) worked per week: 5 (default)	10686 20		
24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44	 2.1.1 Demolitie Phase Start Da Start Month: Start Quarte Start Year: Phase Duration Number of N Number of D 2.1.2 Demolitie General Demol Area of Build Height of Build Default Setting Average Day(s) 	on Phase Timeline Assump te 6 7: 1 2027 1 Month: 2 Days: 0 on Phase Assumptions lition Information ding to be demolished (ft ²): ilding to be demolished (ft ²): ilding to be demolished (ft): Is Used: Yes) worked per week: 5 (default) Exhaust (default)	10686 20	Number Of	Hours Per Day
24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45	 2.1.1 Demolitie Phase Start Da Start Month: Start Quarte Start Year: Phase Duration Number of N Number of D 2.1.2 Demolitie General Demol Area of Build Height of Build Default Setting Average Day(s) 	on Phase Timeline Assump te 6 7: 1 2027 1 Month: 2 Days: 0 on Phase Assumptions lition Information ding to be demolished (ft ²): illding to be demolished (ft ²): illding to be demolished (ft): is Used: Yes) worked per week: 5 (default)	10686 20	Number Of	Hours Per Day
24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45	 2.1.1 Demolitie Phase Start Da Start Month: Start Quarte Start Year: Phase Duration Number of D 2.1.2 Demolitie General Demol Area of Build Height of Build Height of Build Default Setting Average Day(s Construction E 	on Phase Timeline Assump te 6 7: 1 2027 1 Month: 2 Days: 0 on Phase Assumptions lition Information ding to be demolished (ft ²): ilding to be demolished (ft ²): ilding to be demolished (ft): Is Used: Yes) worked per week: 5 (default) Exhaust (default)	10686 20	Number Of Equipment	Hours Per Day

Rubber Tired Dozers Composite	1	1
Tractors/Loaders/Backhoes Composite	2	6

- Vehicle Exhaust

- Average Hauling Truck Capacity (yd³): 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

13 2.1.3 Demolition Phase Emission Factor(s)

14 15

12

1 2

3

4

5 6

7 8

9

10

11

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

Concrete/Industria	al Saws Co	omposite						
	VOC	SOx	NOx	СО	PM 10	PM 2.5	CH4	CO ₂ e
Emission Factors	0.0336	0.0006	0.2470	0.3705	0.0093	0.0093	0.0030	58.539
Rubber Tired Doz	ers Compo	osite						
	VOC	SOx	NOx	СО	PM 10	PM 2.5	CH₄	CO ₂ e
Emission Factors	0.1671	0.0024	1.0824	0.6620	0.0418	0.0418	0.0150	239.45
Tractors/Loaders/	Backhoes	Composit	te					
	VOC	SOx	NOx	СО	PM 10	PM 2.5	CH₄	CO ₂ e
Emission Factors	0.0335	0.0007	0.1857	0.3586	0.0058	0.0058	0.0030	66.872

16 17

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

	VOC	SOx	NOx	CO	PM 10	PM 2.5	Pb	NH ₃	CO ₂ e
LDGV	000.309	000.002	000.239	003.421	000.007	000.006		000.023	00318.896
LDGT	000.374	000.003	000.418	004.700	000.009	800.000		000.024	00411.188
HDGV	000.696	000.005	001.076	015.187	000.021	000.019		000.044	00758.535
LDDV	000.115	000.003	000.139	002.492	000.004	000.004		800.000	00309.094
LDDT	000.250	000.004	000.394	004.238	000.007	000.006		800.000	00438.938
HDDV	000.572	000.013	005.669	001.917	000.170	000.156		000.030	01506.304
MC	002.734	000.003	000.845	013.302	000.027	000.023		000.055	00396.858

18

19 2.1.4 Demolition Phase Formula(s)

20 21 - Fugitive Dust Emi

- Fugitive Dust Emissions per Phase
 PM10_{FD} = (0.00042 * BA * BH) / 2000
- 22 PMITUFD (0.00042 BA BH) / 2000 23
- 24 PM10_{FD}: Fugitive Dust PM 10 Emissions (TONs)
- 25 0.00042: Emission Factor (lb/ft³)
- 26 BA: Area of Building to be demolished (ft²)
- 27 BH: Height of Building to be demolished (ft)
- 28 2000: Conversion Factor pounds to tons
- 2930 Construction Exhaust Emissions per Phase
- 31 CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000

CEEPOL: Construction Exhaust Emissions (TONs) 1 2 NE: Number of Equipment 3 WD: Number of Total Work Days (days) H: Hours Worked per Day (hours) 4 EFPOL: Emission Factor for Pollutant (lb/hour) 5 2000: Conversion Factor pounds to tons 6 7 8 - Vehicle Exhaust Emissions per Phase 9 VMT_{VE} = BA * BH * (1 / 27) * 0.25 * (1 / HC) * HT 10 VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles) 11 BA: Area of Building being demolish (ft²) 12 BH: Height of Building being demolish (ft) 13 (1 / 27): Conversion Factor cubic feet to cubic yards (1 yd³ / 27 ft³) 14 0.25: Volume reduction factor (material reduced by 75% to account for air space) 15 HC: Average Hauling Truck Capacity (vd³) 16 17 (1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd³) 18 HT: Average Hauling Truck Round Trip Commute (mile/trip) 19 20 VPOL = (VMTVE * 0.002205 * EFPOL * VM) / 2000 21 22 VPOL: Vehicle Emissions (TONs) VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles) 23 0.002205: Conversion Factor grams to pounds 24 EF_{POL}: Emission Factor for Pollutant (grams/mile) 25 VM: Vehicle Exhaust On Road Vehicle Mixture (%) 26 2000: Conversion Factor pounds to tons 27 28 - Worker Trips Emissions per Phase 29 VMT_{WT} = WD * WT * 1.25 * NE 30 31 VMTwT: Worker Trips Vehicle Miles Travel (miles) 32 WD: Number of Total Work Days (days) 33 34 WT: Average Worker Round Trip Commute (mile) 1.25: Conversion Factor Number of Construction Equipment to Number of Works 35 NE: Number of Construction Equipment 36 37 VPOL = (VMTwt * 0.002205 * EFPOL * VM) / 2000 38 39 40 VPOL: Vehicle Emissions (TONs) VMTwT: Worker Trips Vehicle Miles Travel (miles) 41 0.002205: Conversion Factor grams to pounds 42 EFPOL: Emission Factor for Pollutant (grams/mile) 43 VM: Worker Trips On Road Vehicle Mixture (%) 44 2000: Conversion Factor pounds to tons 45 46 2.2 Site Grading Phase 47 48 49 2.2.1 Site Grading Phase Timeline Assumptions 50 - Phase Start Date 51 Start Month: 52 1 53 Start Quarter: 1 54 Start Year: 2027 55 56 - Phase Duration

Number of	Month: 2							
Number of	Days: 0							
222 Site Gr	ading Phase	Accumpt	ione					
L.Z.Z Site Gi	aung Fliase	Assumpt	10115					
	Grading Inforn							
	te to be Gradeo			385585				
	f Material to be							
Amount of	f Material to be	Hauled Of	ff-Site (yd ³): 0				
o., o								
	Default Setting		Yes					
	ttings Used: ay(s) worked p							
Average D	ay(s) worked p	er week.	(delault)					
- Construction	ı Exhaust (defa	ult)						
	Equipr	nent Name	e			nber Of	Hours	Per Day
					Equ	ipment		-
Excavators Co						1		8
Graders Com		+ O	4			1		8
	Iction Equipmer		le			1		8
	Dozers Compos					<u>1</u> 3		<u>8</u> 8
Tractors/Load	ers/Backhoes C	Jomposite				ა		0
POVs	LDGV I	L DGT	HDGV 0	LDDV	LD		IDDV 00.00	MC
POVS	0	0	0	0	0		00.00	0
- Worker Trips	í							
	orker Round 1	rip Comm	nute (mile):	20 (default	t)			
-		-			,			
- Worker Trips	Vehicle Mixtu							
		<u> </u>						
	-	LDĠT	HDGV	LDDV)T H		MC
POVs		<u> </u>	HDGV 0	LDDV	LD)T F	IDDV 0	MC 0
-	50.00	L DGT 50.00	0	0)T F		
-		L DGT 50.00	0	0)T F		
2.2.3 Site Gr	50.00	LDGT 50.00 Emission	0 Factor(s)	0	0	DT F		
2.2.3 Site Gr	50.00 ading Phase Exhaust Emis composite	LDGT 50.00 Emission ssion Facto	0 Factor(s) ors (Ib/hou)) (default))		0	0
2.2.3 Site Gra - Construction Excavators C	50.00 ading Phase Exhaust Emis Composite VOC	LDGT 50.00 Emission ssion Facto SO _x	0 Factor(s) ors (Ib/hou NOx	0) ir) (default) CO	0) PM 10	PM 2.5	0 CH4	0 CO26
2.2.3 Site Gra - Construction Excavators C Emission Fact	50.00 ading Phase Exhaust Emis composite VOC tors 0.0559	LDGT 50.00 Emission ssion Facto	0 Factor(s) ors (Ib/hou)) (default))		0	0 CO26
2.2.3 Site Gra- - Construction Excavators C	50.00 ading Phase Exhaust Emis composite VOC tors 0.0559 posite	LDGT 50.00 Emission ssion Facto SO _x 0.0013	0 Factor(s) ors (lb/hou NOx 0.2269	0)) (default) CO 0.5086) PM 10 0.0086	PM 2.5 0.0086	0 CH4 0.0050	0 CO 26 119.7
2.2.3 Site Gra- Construction Excavators C Emission Fact Graders Com	50.00 ading Phase Exhaust Emis composite VOC tors 0.0559 posite VOC	LDGT 50.00 Emission ssion Facto SOx 0.0013 SOx	0 Factor(s) ors (lb/hou NOx 0.2269 NOx	0 (default) 0.5086 CO	0 0.0086 0.0086	PM 2.5 0.0086 PM 2.5	0 CH4 0.0050 CH4	0 CO2e 119.7 CO2e
2.2.3 Site Gra - Construction Excavators C Emission Fact Graders Com Emission Fact	50.00 ading Phase Exhaust Emis composite VOC tors 0.0559 posite VOC tors 0.0676	LDGT 50.00 Emission ssion Factor SOx 0.0013 SOx 0.0014	0 Factor(s) ors (lb/hou NOx 0.2269 NOx 0.3314	0)) (default) CO 0.5086) PM 10 0.0086	PM 2.5 0.0086	0 CH4 0.0050	0 CO2e 119.7 CO2e
2.2.3 Site Gra - Construction Excavators C Emission Fact Graders Com Emission Fact	50.00 state ading Phase Exhaust Emis composite VOC tors 0.0559 posite VOC tors 0.0676 ruction Equipmediate	LDGT 50.00 Emission ssion Factor SOx 0.0013 SOx 0.0014 ent Comp	0 Factor(s) ors (lb/hou 0.2269 NO _x 0.3314 osite	0 (default) 0.5086 0.5695	PM 10 0.0086 PM 10 0.0147	PM 2.5 0.0086 PM 2.5 0.0147	0 CH4 0.0050 CH4 0.0061	0 CO2e 119.7 CO2e 132.8
2.2.3 Site Gra - Construction Excavators C Emission Fact Graders Com Emission Fact Other Constr	50.00 ading Phase Exhaust Emis composite VOC tors 0.0559 posite VOC tors 0.0676 uction Equipm VOC	LDGT 50.00 Emission ssion Factor SOx 0.0013 SOx 0.0014 ent Comp SOx	0 Factor(s) ors (lb/hou NOx 0.2269 NOx 0.3314 osite NOx	0 (default) 0.5086 0.5695 CO	PM 10 0.0086 PM 10 0.0147 PM 10	PM 2.5 0.0086 PM 2.5 0.0147 PM 2.5	0 CH4 0.0050 CH4 0.0061 CH4	0 CO26 119.7 CO26 132.8 CO26
2.2.3 Site Gra- Construction Excavators C Emission Fact Graders Com Emission Fact Other Constr Emission Fact	50.00ading Phaseading PhaseExhaust EmisOmpositeVOCtors0.0559positeVOCtors0.0676vocvocvocvoctors0.0442	LDGT 50.00 Emission ssion Factor SOx 0.0013 SOx 0.0014 nent Comp SOx 0.0012	0 Factor(s) ors (lb/hou 0.2269 NO _x 0.3314 osite	0 (default) 0.5086 0.5695	PM 10 0.0086 PM 10 0.0147	PM 2.5 0.0086 PM 2.5 0.0147	0 CH4 0.0050 CH4 0.0061	0 CO2e 119.7 CO2e 132.8 CO2e
2.2.3 Site Gra- Construction Excavators C Emission Fact Graders Com Emission Fact Other Constr Emission Fact	50.00 state ading Phase base ading Phase ading Phase base base	LDGT 50.00 Emission ssion Factor SOx 0.0013 SOx 0.0014 ent Comp SOx 0.0012 osite	0 Factor(s) ors (lb/hou NOx 0.2269 NOx 0.3314 osite NOx 0.2021	0 (default) CO 0.5086 CO 0.5695 CO 0.3473	0 PM 10 0.0086 PM 10 0.0147 PM 10 0.0068	PM 2.5 0.0086 PM 2.5 0.0147 PM 2.5 0.0068	0 CH4 0.0050 CH4 0.0061 CH4 0.0039	0 CO2e 119.7 CO2e 132.8 CO2e 122.6
2.2.3 Site Gra - Construction Excavators C Emission Fact Graders Com Emission Fact Other Constr Emission Fact Rubber Tired	50.00 ading Phase Exhaust Emis composite VOC tors 0.0559 posite VOC tors 0.0676 voc tors 0.0442 Dozers Comp VOC	LDGT 50.00 Emission ssion Factor SOx 0.0013 SOx 0.0014 ent Comp SOx 0.0012 osite SOx	0 Factor(s) ors (lb/hou NOx 0.2269 NOx 0.3314 osite NOx 0.2021 NOx	0 (default) CO 0.5086 CO 0.3473 CO	● 0 ● 0.0086 ● 0.0086 ● 0.0047 ● 0.0147 ● 0.0068 ■ 0.0068	PM 2.5 0.0086 PM 2.5 0.0147 PM 2.5 0.0068 PM 2.5	0 CH4 0.0050 CH4 0.0061 CH4 0.0039 CH4	0 CO2e 119.7 CO2e 132.8 CO2e 122.6
2.2.3 Site Gra - Construction Excavators C Emission Fact Graders Com Emission Fact Other Constr Emission Fact Rubber Tired Emission Fact	50.00 ading Phase ading Phase Exhaust Emis composite VOC tors 0.0559 posite VOC tors 0.0676 ruction Equipm VOC tors 0.0442 Dozers Comp VOC tors 0.1671	LDGT 50.00 Emission ssion Factor SOx 0.0013 SOx 0.0014 eent Comp SOx 0.0012 osite SOx 0.0024	0 Factor(s) ors (lb/hou 0.2269 NOx 0.3314 osite NOx 0.2021 NOx 1.0824	0 (default) CO 0.5086 CO 0.5695 CO 0.3473	0 PM 10 0.0086 PM 10 0.0147 PM 10 0.0068	PM 2.5 0.0086 PM 2.5 0.0147 PM 2.5 0.0068	0 CH4 0.0050 CH4 0.0061 CH4 0.0039	0 CO2e 119.7 CO2e 132.8 CO2e 122.6
2.2.3 Site Gra - Construction Excavators C Emission Fact Graders Com Emission Fact Other Constr Emission Fact Rubber Tired Emission Fact	50.00 ading Phase Exhaust Emis composite VOC tors 0.0559 posite VOC tors 0.0676 voc tors 0.0442 Dozers Comp VOC	LDGT 50.00 Emission ssion Factor SOx 0.0013 SOx 0.0014 eent Comp SOx 0.0012 osite SOx 0.0024	0 Factor(s) ors (lb/hou 0.2269 NOx 0.3314 osite NOx 0.2021 NOx 1.0824	0 (default) CO 0.5086 CO 0.3473 CO	● 0 ● 0.0086 ● 0.0086 ● 0.0047 ● 0.0147 ● 0.0068 ■ 0.0068	PM 2.5 0.0086 PM 2.5 0.0147 PM 2.5 0.0068 PM 2.5	0 CH4 0.0050 CH4 0.0061 CH4 0.0039 CH4	0 CO26 119.7 CO26 132.8 CO26 122.6

0.0058

0.0058

0.0030

66.872

1 2

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

0.0007 0.1857

	VOC	SOx	NOx	СО	PM 10	PM 2.5	Pb	NH ₃	CO ₂ e
LDGV	000.309	000.002	000.239	003.421	000.007	000.006		000.023	00318.896
LDGT	000.374	000.003	000.418	004.700	000.009	800.000		000.024	00411.188
HDGV	000.696	000.005	001.076	015.187	000.021	000.019		000.044	00758.535
LDDV	000.115	000.003	000.139	002.492	000.004	000.004		800.000	00309.094
LDDT	000.250	000.004	000.394	004.238	000.007	000.006		800.000	00438.938
HDDV	000.572	000.013	005.669	001.917	000.170	000.156		000.030	01506.304
MC	002.734	000.003	000.845	013.302	000.027	000.023		000.055	00396.858

0.3586

2.2.4 Site Grading Phase Formula(s)

Fugitive Dust Emissions per Phase

Emission Factors 0.0335

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

- 9 PM10_{FD}: Fugitive Dust PM 10 Emissions (TONs)
- 10 20: Conversion Factor Acre Day to pounds (20 lb / 1 Acre Day)
- 11 ACRE: Total acres (acres)
- 12 WD: Number of Total Work Days (days)
- 13 2000: Conversion Factor pounds to tons
- 14 15

- Construction Exhaust Emissions per Phase

- 16 CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000
- 17
 18 CEE_{POL}: Construction Exhaust Emissions (TONs)
- 19 NE: Number of Equipment
- 20 WD: Number of Total Work Days (days)
- 21 H: Hours Worked per Day (hours)
- 22 EF_{POL}: Emission Factor for Pollutant (lb/hour)
- 23 2000: Conversion Factor pounds to tons

2425 - Vehicle Exhaust Emissions per Phase

- 26 VMT_{VE} = (HA_{OnSite} + HA_{OffSite}) * (1 / HC) * HT
- 27
 28 VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
- 29 HA_{OnSite} : Amount of Material to be Hauled On-Site (vd³)
- 30 $HA_{Offsite}$: Amount of Material to be Hauled Off-Site (yd³)
- 31 HC: Average Hauling Truck Capacity (yd³)
- 32 (1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd³)
- 33 HT: Average Hauling Truck Round Trip Commute (mile/trip)
- 35 VPOL = (VMTVE * 0.002205 * EFPOL * VM) / 2000
 - V_{POL}: Vehicle Emissions (TONs)
- 38 VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
- 39 0.002205: Conversion Factor grams to pounds
- 40 EF_{POL}: Emission Factor for Pollutant (grams/mile)
- 41 VM: Vehicle Exhaust On Road Vehicle Mixture (%)
- 42 2000: Conversion Factor pounds to tons 43

44 - Worker Trips Emissions per Phase

- 45 VMT_{wT} = WD * WT * 1.25 * NE
- 46

34

36

37

47 VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)

	Number 2.3.2 Trend - General Tre Area of S Amount Amount - Trenching Default S Average - Construction Excavators Other Gene Tractors/Loa - Vehicle Exl Average Average	of Days: 0 ching / Exca enching/Exca Site to be Tre of Material to of Material to Default Settin Settings Used Day(s) work on Exhaust (on Eq Composite ral Industrial F aders/Backho haust Hauling True	avating Info enched/Exca o be Hauled o be Hauled ngs d: ed per weel default) uipment Na Equipment C es Composi ck Capacity ck Round T	avated (ft ²): I On-Site (yd ³) I Off-Site (yd ³) Yes k: 5 (default) ame Composite ite (yd ³): 'rip Commute	1003 : 0 : 0 20 (de	Number C Equipmer 2 1 1 fault) 20 (default)		Hours Per
	Number 2.3.2 Trend - General Tre Area of S Amount Amount - Trenching Default S Average - Construction Excavators Other Gene Tractors/Loa - Vehicle Exl Average Average	of Days: 0 ching / Exca enching/Exca Site to be Tre of Material to of Material to Default Settin Settings Used Day(s) work on Exhaust (in Eq Composite ral Industrial E aders/Backho haust Hauling True	avating Info enched/Exca o be Hauled o be Hauled ngs d: ed per weel default) uipment Na Equipment C es Composi ck Capacity ck Round T	ormation avated (ft ²): d On-Site (yd ³) d Off-Site (yd ³) Yes k: 5 (default) ame Composite ite	1003 : 0 : 0 20 (de	Equipmer 2 1 1 fault)		8
	Number 2.3.2 Trend - General Tre Area of S Amount Amount - Trenching Default S Average - Construction Excavators Other Gene Tractors/Loa - Vehicle Exl Average	of Days: 0 ching / Exca enching/Exca Site to be Tre of Material to of Material to Default Settin Settings Used Day(s) work on Exhaust (on Eq Composite ral Industrial F aders/Backho haust Hauling True	avating Info enched/Exca o be Hauled o be Hauled ngs d: .ed per weel default) uipment Na Equipment C es Composi	ormation avated (ft ²): d On-Site (yd ³) d Off-Site (yd ³) Yes k: 5 (default) ame Composite ite	1003 : 0 : 0 20 (de	Equipmer 2 1 1 fault)		8
	Number 2.3.2 Trend - General Tre Area of S Amount Amount - Trenching Default S Average - Construction Excavators Other Gene Tractors/Loa	of Days: 0 ching / Exca enching/Exca Site to be Tre of Material to of Material to Default Settin Settings Used Day(s) work on Exhaust (on Exhaust (on Eaders/Backhoon haust	avating Info enched/Exca o be Hauled ngs d: ed per week default) uipment Na Equipment Co bes Composi	ormation avated (ft ²): I On-Site (yd ³) I Off-Site (yd ³) Yes k: 5 (default) ame Composite	1003 : 0 : 0	Equipmer 2 1 1		8
	Number 2.3.2 Trend - General Tre Area of S Amount Amount - Trenching Default S Average - Construction Excavators Other Gene Tractors/Loa	of Days: 0 ching / Exca enching/Exca Site to be Tre of Material to of Material to Default Settin Settings Used Day(s) work on Exhaust (on Eq Composite ral Industrial E aders/Backho	avating Info enched/Exca o be Hauled o be Hauled ngs d: ed per week default) uipment Na	ormation avated (ft ²): d On-Site (yd ³) d Off-Site (yd ³) Yes k: 5 (default) ame	1003 : 0	Equipmer 2 1		8
-	Number 2.3.2 Trend - General Tre Area of S Amount Amount - Trenching Default S Average - Construction Excavators Other Gene	of Days: 0 ching / Exca enching/Exca Site to be Tre of Material to of Material to Default Settin Settings Used Day(s) work Day(s) work on Exhaust (n Eq Composite ral Industrial E	avating Info enched/Exca o be Hauled o be Hauled ngs d: ed per weel default) uipment Na	ormation avated (ft ²): d On-Site (yd ³) d Off-Site (yd ³) Yes k: 5 (default) ame	1003 : 0	Equipmer 2 1		8
-	Number 2.3.2 Trend - General Tre Area of S Amount Amount - Trenching Default S Average - Construction Excavators	of Days: 0 ching / Exca enching/Exca Site to be Tre of Material to of Material to Default Settin Settings Used Day(s) work on Exhaust (on Eq Composite	avating Info enched/Exca o be Hauled o be Hauled ngs d: ed per weel default) uipment Na	ormation avated (ft ²): d On-Site (yd ³) d Off-Site (yd ³) Yes k: 5 (default) ame	1003 : 0	Equipmer 2		8
-	Number 2.3.2 Trend - General Tre Area of S Amount Amount - Trenching Default S Average - Constructio	of Days: 0 ching / Exca enching/Exca Site to be Tre of Material to of Material to Default Settin Settings Used Day(s) work on Exhaust (on Eq	avating Info enched/Exca o be Hauled o be Hauled ngs d: ed per weel default)	ormation avated (ft²): I On-Site (yd³) I Off-Site (yd³) Yes K: 5 (default)	1003 : 0	Equipmer		
-	Number 2.3.2 Trend - General Tre Area of S Amount Amount - Trenching Default S Average	of Days: 0 ching / Exca enching/Exca Site to be Tre of Material to of Material to Default Settin Settings Used Day(s) work on Exhaust (o	avating Info enched/Exca o be Hauled o be Hauled ngs d: ed per weel default)	ormation avated (ft²): I On-Site (yd³) I Off-Site (yd³) Yes K: 5 (default)	1003 : 0			lours Per
-	Number 2.3.2 Trend - General Tre Area of S Amount Amount - Trenching Default S Average	of Days: 0 ching / Exca enching/Exca Site to be Tre of Material to of Material to Default Settin Settings Used Day(s) work on Exhaust (o	avating Info enched/Exca o be Hauled o be Hauled ngs d: ed per weel default)	ormation avated (ft²): I On-Site (yd³) I Off-Site (yd³) Yes K: 5 (default)	1003 : 0			
-	Number 2.3.2 Trend - General Tre Area of S Amount Amount - Trenching Default S Average	of Days: 0 ching / Exca enching/Exca Site to be Tre of Material to of Material to Default Settin Settings Used Day(s) work	avating Info enched/Exca o be Hauled o be Hauled ngs d: ed per weel	ormation avated (ft²): I On-Site (yd³) I Off-Site (yd³) Yes	1003 : 0			
-	Number 2.3.2 Trend - General Tre Area of S Amount Amount - Trenching Default S	of Days: 0 ching / Exca enching/Exca Site to be Tre of Material to of Material to Default Settin Settings Used	avating Info enched/Exca o be Hauled o be Hauled ngs d:	ormation avated (ft²): I On-Site (yd³) I Off-Site (yd³) Yes	1003 : 0			
-	Number 2.3.2 Trend - General Tre Area of S Amount Amount - Trenching	of Days: 0 ching / Exca enching/Exca Site to be Tre of Material to of Material to Default Settin	avating Info enched/Exca o be Hauled o be Hauled ngs	ormation avated (ft²): I On-Site (yd³) I Off-Site (yd³)	1003 : 0			
-	Number 2.3.2 Trend - General Tre Area of S Amount Amount	of Days: 0 ching / Exca enching/Exca Site to be Tre of Material to of Material to	avating Info enched/Exca o be Hauled o be Hauled	ormation avated (ft²): I On-Site (yd³)	1003 : 0			
	Number 2.3.2 Trend - General Tre Area of S Amount	of Days: 0 ching / Exca enching/Exca Site to be Tre of Material to	avating Info enched/Exca o be Hauled	ormation avated (ft²): I On-Site (yd³)	1003 : 0			
	Number 2.3.2 Trenc - General Tro Area of S	of Days: 0 ching / Exca enching/Exca Site to be Tre	avating Info enched/Exca	ormation avated (ft ²):	1003			
	Number 2.3.2 Trenc - General Tre	of Days: 0 ching / Exca enching/Exca	avating Info	ormation				
	Number 2.3.2 Trend	of Days: 0 hing / Exca:	•		tions			
2	Number	of Days : 0	wating Pha	ase Assump	tions			
	Number	of Days : 0						
	Number							
-		of Month: 1						
	- Phase Dura	otion						
	Start Yea	ar: 2027						
	Start Qu							
-	Start Mo							
_	- Phase Star	t Dato						
2	2.3.1 Trend	ching / Exca	vating Pha	ase Timeline	Assumpti	ons		
1	2.3 Trench	ing/Excavat	ting Phase)				
	2000. 00							
		onversion Fac		le Mixture (%)				
				ant (grams/mile	e)			
		: Conversion						
	VMT _{WT} :	Worker Trips	Vehicle Mile	es Travel (mile	S)			
	V _{POI} ·Ve	hicle Emissio	ns (TONs)					
١	V _{POL} = (VMT _V	vт * 0.002205	* EF _{POL} * VI	M) / 2000				
		hber of Constr			- Equipmont			
			tor Numbor				VUIKS	
			Round I rip	Commute (mile		to Number of V	Vorks	

48 Average Worker Round Trip Commute (mile): 20 (default)

Day

> 3 4

> 5

6

- Worker Trips Vehicle Mixture (%)

		ixtui 0 (70)					
	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

2.3.3 Trenching / Excavating Phase Emission Factor(s)

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

Excavators Comp	osite							
	VOC	SOx	NOx	СО	PM 10	PM 2.5	CH₄	CO ₂ e
Emission Factors	0.0559	0.0013	0.2269	0.5086	0.0086	0.0086	0.0050	119.70
Graders Composit	te							
	VOC	SOx	NOx	СО	PM 10	PM 2.5	CH₄	CO ₂ e
Emission Factors	0.0676	0.0014	0.3314	0.5695	0.0147	0.0147	0.0061	132.89
Other Constructio	n Equipm	ent Comp	osite					
	VOC	SOx	NOx	CO	PM 10	PM 2.5	CH₄	CO ₂ e
Emission Factors	0.0442	0.0012	0.2021	0.3473	0.0068	0.0068	0.0039	122.60
Rubber Tired Doze	ers Compo	osite						
	VOC	SOx	NOx	CO	PM 10	PM 2.5	CH₄	CO ₂ e
Emission Factors	0.1671	0.0024	1.0824	0.6620	0.0418	0.0418	0.0150	239.45
Tractors/Loaders/	Backhoes	Composit	e					
	VOC	SOx	NOx	CO	PM 10	PM 2.5	CH₄	CO ₂ e
Emission Factors	0.0335	0.0007	0.1857	0.3586	0.0058	0.0058	0.0030	66.872

7 8

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

10111010									
	VOC	SOx	NOx	CO	PM 10	PM 2.5	Pb	NH ₃	CO ₂ e
LDGV	000.309	000.002	000.239	003.421	000.007	000.006		000.023	00318.896
LDGT	000.374	000.003	000.418	004.700	000.009	800.000		000.024	00411.188
HDGV	000.696	000.005	001.076	015.187	000.021	000.019		000.044	00758.535
LDDV	000.115	000.003	000.139	002.492	000.004	000.004		800.000	00309.094
LDDT	000.250	000.004	000.394	004.238	000.007	000.006		800.000	00438.938
HDDV	000.572	000.013	005.669	001.917	000.170	000.156		000.030	01506.304
MC	002.734	000.003	000.845	013.302	000.027	000.023		000.055	00396.858

9 10

13

16

20

2.3.4 Trenching / Excavating Phase Formula(s)

11 - Fugitive Dust Emissions per Phase 12

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

- 14 15 PM10_{FD}: Fugitive Dust PM 10 Emissions (TONs)
 - 20: Conversion Factor Acre Day to pounds (20 lb / 1 Acre Day)
- ACRE: Total acres (acres) 17
- WD: Number of Total Work Days (days) 18 19
 - 2000: Conversion Factor pounds to tons

21 - Construction Exhaust Emissions per Phase

22 CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000 23

- CEEPOL: Construction Exhaust Emissions (TONs) 24
- NE: Number of Equipment 25
- WD: Number of Total Work Days (days) 26
- H: Hours Worked per Day (hours) 27
- EF_{POL}: Emission Factor for Pollutant (lb/hour) 28
- 2000: Conversion Factor pounds to tons 29
- 30

1	- Vehicle Exhaust Emissions per Phase
2	$VMT_{VE} = (HA_{OnSite} + HA_{OffSite}) * (1 / HC) * HT$
3	
4	VMTve: Vehicle Exhaust Vehicle Miles Travel (miles)
5	HA _{onSite} : Amount of Material to be Hauled On-Site (yd^3)
6	HA _{OffSite} : Amount of Material to be Hauled Off-Site (yd ³)
7	HC: Average Hauling Truck Capacity (yd ³)
8	(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd ³)
9	HT: Average Hauling Truck Round Trip Commute (mile/trip)
10	
11	V _{POL} = (VMT _{VE} * 0.002205 * EF _{POL} * VM) / 2000
12	V() () () () () () () () () ()
13	V _{POL} : Vehicle Emissions (TONs)
14	VMT _{VE} : Vehicle Exhaust Vehicle Miles Travel (miles)
15	0.002205: Conversion Factor grams to pounds
16	EF _{POL} : Emission Factor for Pollutant (grams/mile)
17	VM: Vehicle Exhaust On Road Vehicle Mixture (%)
18	2000: Conversion Factor pounds to tons
19	
20	- Worker Trips Emissions per Phase
21	VMT _{WT} = WD * WT * 1.25 * NE
22	
23	VMTwT: Worker Trips Vehicle Miles Travel (miles)
24	WD: Number of Total Work Days (days)
25	WT: Average Worker Round Trip Commute (mile)
26	1.25: Conversion Factor Number of Construction Equipment to Number of Works
27	NE: Number of Construction Equipment
28	
29	V _{POL} = (VMT _{WT} * 0.002205 * EF _{POL} * VM) / 2000
	VPOL = (VWITWI 0.002203 EFPOL VWI)/2000
30	
31	V _{POL} : Vehicle Emissions (TONs)
32	VMT _{VE} : Worker Trips Vehicle Miles Travel (miles)
33	0.002205: Conversion Factor grams to pounds
34	EF _{POL} : Emission Factor for Pollutant (grams/mile)
35	VM: Worker Trips On Road Vehicle Mixture (%)
36	2000: Conversion Factor pounds to tons
37	
38	2.4 Building Construction Phase
39	
40	2.4.1 Building Construction Phase Timeline Assumptions
41	
42	- Phase Start Date
43	Start Month: 3
44	Start Quarter: 1
45	Start Year: 2027
46	
47	- Phase Duration
48	Number of Month: 3
49	Number of Days: 0
50	
51	2.4.2 Building Construction Phase Assumptions
52	
53	- General Building Construction Information
54	Building Category: Office or Industrial
55	Area of Building (ft ²): 10028
56	Height of Building (ft): 20
50	

Num	ber of Unit	s: N	I/A						
- Buildin	g Construc	tion Defa	ult Settina	s					
	ult Setting		-	'es					
Aver	age Day(s)	worked p	er week: 5	(default)					
Constru	uction Exh								
		Equipn	nent Name	•			nber Of ipment		rs Per Da
Cranes	Composite					<u> </u>	1		4
	Composite	;					2		6
Tractors	s/Loaders/B	ackhoes C	omposite				1		8
	e Exhaust rage Haulin	g Truck R	ound Trip	Commute	(mile):	20 (defau	ult)		
Vehicle	Exhaust V						.		MO
			DGT	HDGV	LDDV			HDDV	MC
POVs	0		0	0	0	0		100.00	0
- Worker Aver	[.] Trips age Worke	r Round T	rip Comm	ute (mile):	20 (defaulf	t)			
Worker	Trips Vehi						_		
POVs	LDC 50.0		_DGT	HDGV 0	LDDV		Т	HDDV 0	MC
1003	50.		0.00	0	0	0		0	U
	rage Vendo Trips Vehi	icle Mixtur		ute (mile):	40 (default	t)	T	HDDV	MC
POVs	0		0	0	0	0	/1	100.00	
2.4.3 Bi	uilding Co uction Exh	onstructio	on Phase	Emission	Factor(s)			
Cranes	Composite			1					
		VOC	SOx	NOx	CO	PM 10	PM 2.		CO ₂
	n Factors	0.0680	0.0013	0.4222	0.3737	0.0143	0.0143	3 0.0061	1 128.7
FORKIIT	s Composi	voc	SOx	NOx	CO	PM 10	PM 2.	5 CH4	<u> </u>
Emissio	n Factors	0.0236	0.0006	0.0859	0.2147	0.0025	0.002		CO ₂ 1 54.44
	s/Loaders/				0.2147	0.0020	0.002	0.002	J 4 .44
Tactor	S/LUQUEIS/	VOC	SOx	NOx	CO	PM 10	PM 2.	5 CH4	CO ₂
Emissio	n Factors	0.0335	0.0007	0.1857	0.3586	0.0058	0.0058		
- Vehicle	Exhaust 8						DI	N 111	
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	Pb	NH ₃	CO 2 e
LDGV	000.309	000.002	000.239	003.421	000.007	000.006		000.023	00318.8
LDGT HDGV	000.374	000.003	000.418	004.700 015.187	000.009	000.008		000.024	00411.1 00758.5
	000.090	000.000	1 001 070	L U L'N LO/					
LDDV	000.115	000.003	000.139	002.492	000.004	000.004		000.044	00309.0

004.238

001.917

000.007

000.170

000.006

000.156

000.394

005.669

LDDT

HDDV

000.250 000.004

000.572 000.013

00438.938

01506.304

800.000

000.030

MC	00	2.734	000.003	000.845	013.30	2 000.027	7 000.023	000.055	00396.858
2.4.4	Build	ing Co	onstructi	on Phase	Formul	a(s)			
- Con	structio	on Exh	aust Emi	ssions per	Phase				
			* H * EF _P						
				haust Emis	sions (TO	Ns)			
			Equipmer						
			ed per Dav	rk Days (da v (bours)	ays)				
				or Pollutant	(lb/hour)				
				pounds to					
			Emission: (0.42 / 100	s per Phas 00) * HT	e				
				Vehicle Mile	es Travel	(miles)			
			Iding (ft ²)	\					
			Suilding (ft)		to trips (0	.42 trip / 10	(00 ft^3)		
						nute (mile/ti			
V _{POL} :	= (VMT _v	e * 0.0	02205 * E	Fpol * VM)	/ 2000				
V	POL: Ve	hicle E	missions ((TONs)					
V	MT _{VE} : \	/ehicle	Exhaust	Vehicle Mile					
				ictor grams					
				or Pollutant					
				ad Vehicle pounds to		~o)			
Ma	dean Triv	o Emi							
			ssions pe * 1.25 * NI						
• • • • • •	11 112	••••		_					
				nicle Miles		iles)			
				rk Days (da					
				und Trip Co			ant to Numbe	 a rika	
				ion Equipm		ion Equipm	nent to Numbe	UIKS	
			Conolido						
V _{POL} :	= (VMTv	л * 0.0	02205 * E	FPOL * VM)	/ 2000				
V	POI: Ve	hicle E	missions ((TONs)					
				nicle Miles	Travel (mi	iles)			
				ictor grams					
				or Pollutant					
				ad Vehicle		%)			
2	000: 00	nversi	on Factor	pounds to	lons				
- Ven	der Trin	os Emi	ssions pe	er Phase					
			(0.38 / 100						
		1	Tuine M. 1		Factor 1 d - 1	1)			
			I rips Ver ilding (ft ²)	nicle Miles	ravel (mi	ies)			
			uilding (It-))					
D				/					

	000): Convers			8 trip / 1000 ft ³ te (mile/trip)	³)	
V _{POL} = (VMT	vt * 0.002205	* EF _{POL} * VM) / 2000			
VMTvt: 0.002209 EF _{POL} : E VM: Wo	ehicle Emissio Vender Trips ' 5: Conversion Emission Facto rker Trips On onversion Fac	Vehicle Miles n Factor gram or for Pollutar Road Vehicle	s to pounds nt (grams/mile e Mixture (%)	e)		
2.5 Archite	ectural Coat	ings Phase				
2.5.1 Arch	itectural Co	atings Phas	se Timeline	Assumptio	ns	
- Phase Star Start Mo Start Qu						
Start Ye						
	ation of Month: 1 of Days: 0					
2.5.2 Arch	itectural Co	atings Phas	se Assumpt	tions		
Building Total Sq	chitectural C Category: uare Footage of Units:	Non-Resid				
Default	ral Coatings Settings Use Day(s) work	d:	Yes			
- Worker Tri Average	Worker Rou		mute (mile):	20 (default)		
	na Vahiala M	ixture (%)				
- Worker Tri		LDGT	HDGV	LDDV	LDDT	H

43 44

- Worker Trips Emission Factors (grams/mile)

	VOC	SOx	NOx	СО	PM 10	PM 2.5	Pb	NH ₃	CO ₂ e
LDGV	000.309	000.002	000.239	003.421	000.007	000.006		000.023	00318.896
LDGT	000.374	000.003	000.418	004.700	000.009	800.000		000.024	00411.188
HDGV	000.696	000.005	001.076	015.187	000.021	000.019		000.044	00758.535
LDDV	000.115	000.003	000.139	002.492	000.004	000.004		800.000	00309.094
LDDT	000.250	000.004	000.394	004.238	000.007	000.006		000.008	00438.938
HDDV	000.572	000.013	005.669	001.917	000.170	000.156		000.030	01506.304
MC	002.734	000.003	000.845	013.302	000.027	000.023		000.055	00396.858

45

MC

0

	Emissions per Pl	hase			
VMT _{WT} = (1 * V					
,	,				
	orker Trips Vehicle				
	sion Factor man da				
	age Worker Round	Trip Commute (mil	e)		
PA: Paint		.	(4.52) (4.54)	,	
800: Conv	ersion Factor squa	re feet to man day	s (1 ft² / 1 man * da	y)	
$V_{POL} = (VMT_{WT})$	* 0.002205 * EF _{POL}	⊤ * VM) / 2000			
	0.002200 2.10	2 000			
VPOL: Vehi	cle Emissions (TO	Ns)			
	/orker Trips Vehicle		s)		
0.002205:	Conversion Factor	grams to pounds			
	ission Factor for Po				
	er Trips On Road V	()			
2000: Cor	version Factor pou	inds to tons			
Off Gasaina	Emissions nor Dh				
	Emissions per Ph 2.0 * 0.0116) / 200				
	2.0 0.0110//200	0.0			
VOCAC: A	chitectural Coating	VOC Emissions ((ONs)		
	of Building (ft ²)	,	,		
	ersion Factor total a	area to coated area	a (2.0 ft ² coated are	a / total area)	
	mission Factor (lb/ft		v	,	
2000: Cor	version Factor pou	inds to tons			
2.6 Paving F	hase				
261 Doving	Dhace Timeline	Accumptions			
2.0.1 Faviliy	Phase Timeline	Assumptions			
- Phase Start	Date				
Start Mon					
Start Quar					
Start Year					
- Phase Durat					
	f Month: 2				
Number o	f Days: 0				
262 Daving	Phase Assumpt	tions			
2.0.2 Favily	rnase Assump				
- General Pavi	ing Information				
Paving Ar	ea (ft ²): 241089				
	() =				
- Paving Defa	ult Settings				
	ettings Used:	Yes			
Default Se					
	ay(s) worked per	week: 5 (default)			
Average D		, , , , , , , , , , , , , , , , , , ,			
Average D	ay(s) worked per n Exhaust (default) Equipmer)		lumber Of	Hours Per

Paving Equipment Composite	2	6
Rollers Composite	2	6

- Vehicle Exhaust

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13 14 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 2.6.3 Paving Phase Emission Factor(s)

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

Excavators Composite

LACavators Comp	USILE									
	VOC	SOx	NOx	СО	PM 10	PM 2.5	CH₄	CO ₂ e		
Emission Factors	0.0559	0.0013	0.2269	0.5086	0.0086	0.0086	0.0050	119.70		
Graders Composi	Graders Composite									
	VOC	SOx	NOx	СО	PM 10	PM 2.5	CH₄	CO ₂ e		
Emission Factors	0.0676	0.0014	0.3314	0.5695	0.0147	0.0147	0.0061	132.89		
Other Construction Equipment Composite										
	VOC	SOx	NOx	СО	PM 10	PM 2.5	CH₄	CO ₂ e		
Emission Factors	0.0442	0.0012	0.2021	0.3473	0.0068	0.0068	0.0039	122.60		
Rubber Tired Doz	ers Compo	osite								
	VOC	SOx	NOx	CO	PM 10	PM 2.5	CH₄	CO ₂ e		
Emission Factors	0.1671	0.0024	1.0824	0.6620	0.0418	0.0418	0.0150	239.45		
Tractors/Loaders/Backhoes Composite										
	VOC	SOx	NOx	СО	PM 10	PM 2.5	CH₄	CO ₂ e		
Emission Factors	0.0335	0.0007	0.1857	0.3586	0.0058	0.0058	0.0030	66.872		

15 16

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

	VOC	SOx	NOx	CO	PM 10	PM 2.5	Pb	NH ₃	CO ₂ e
LDGV	000.309	000.002	000.239	003.421	000.007	000.006		000.023	00318.896
LDGT	000.374	000.003	000.418	004.700	000.009	800.000		000.024	00411.188
HDGV	000.696	000.005	001.076	015.187	000.021	000.019		000.044	00758.535
LDDV	000.115	000.003	000.139	002.492	000.004	000.004		000.008	00309.094
LDDT	000.250	000.004	000.394	004.238	000.007	000.006		800.000	00438.938
HDDV	000.572	000.013	005.669	001.917	000.170	000.156		000.030	01506.304
MC	002.734	000.003	000.845	013.302	000.027	000.023		000.055	00396.858

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18 2.6.4 Paving Phase Formula(s)

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20 - Construction Exhaust Emissions per Phase

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

- 22
- 23 CEE_{POL}: Construction Exhaust Emissions (TONs)
- 24 NE: Number of Equipment
- 25 WD: Number of Total Work Days (days)
- 26 H: Hours Worked per Day (hours)

1	EFPOL: Emission Factor for Pollutant (lb/hour)
2	2000: Conversion Factor pounds to tons
3	
4	- Vehicle Exhaust Emissions per Phase
5	$VMT_{VE} = PA * 0.25 * (1 / 27) * (1 / HC) * HT$
6	
7	VMTve: Vehicle Exhaust Vehicle Miles Travel (miles)
8	PA: Paving Area (ft^2)
9	0.25: Thickness of Paving Area (ft)
10	$(1 / 27)$: Conversion Factor cubic feet to cubic yards $(1 \text{ yd}^3 / 27 \text{ ft}^3)$
11	HC: Average Hauling Truck Capacity (yd^3)
12	(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd ³)
13	HT: Average Hauling Truck Round Trip Commute (mile/trip)
14	TT: Average hadning truck tound the commute (mile/the)
15	V _{POL} = (VMT _{VE} * 0.002205 * EF _{POL} * VM) / 2000
16	$\nabla POL = (\nabla W \nabla E = 0.002200 \text{ El } POL = \nabla W 7.2000$
17	VPOL: Vehicle Emissions (TONs)
18	VPOL Vehicle Exhaust Vehicle Miles Travel (miles)
19	0.002205: Conversion Factor grams to pounds
20	EF_{POL} : Emission Factor for Pollutant (grams/mile)
20	VM: Vehicle Exhaust On Road Vehicle Mixture (%)
22	2000: Conversion Factor pounds to tons
22	
23 24	- Worker Trips Emissions per Phase
24 25	$VMT_{WT} = WD * WT * 1.25 * NE$
25 26	VWIWI = VVD VVI I.23 INE
20	VMT _{WT} : Worker Trips Vehicle Miles Travel (miles)
28	WD: Number of Total Work Days (days)
29	WT: Average Worker Round Trip Commute (mile)
29 30	1.25: Conversion Factor Number of Construction Equipment to Number of Works
31	NE: Number of Construction Equipment
32	
33	V _{POL} = (VMT _{WT} * 0.002205 * EF _{POL} * VM) / 2000
34	$V_{POL} = (V_{W1} V_{W1} V_{V1} V_{V2} V_{V2} V_{V1} V_{V2} V_{$
35	VPOL: Vehicle Emissions (TONs)
36	VMT _{VE} : Worker Trips Vehicle Miles Travel (miles)
37	0.002205: Conversion Factor grams to pounds
38	EF_{POL} : Emission Factor for Pollutant (grams/mile)
39	VM: Worker Trips On Road Vehicle Mixture (%)
40	2000: Conversion Factor pounds to tons
41	
41	- Off-Gassing Emissions per Phase
42	$VOC_P = (2.62 * PA) / 43560$
43 44	$V \cup OP = \{Z, UZ \in P_{i} \mid H \cup J \cup U \}$
44 45	VOC _P : Paving VOC Emissions (TONs)
45 46	2.62: Emission Factor (Ib/acre)
40 47	PA: Paving Area (ft^2)
47 48	43560: Conversion Factor square feet to acre (43560 ft2 / acre) ² / acre)

1 C.2.2 Summary Air Conformity Applicability Model Report Record of Air Analysis (ROAA)

2 Airfield

3 1. General Information

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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 Manual 32-7002,
Environmental Compliance and Pollution Prevention; 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.

- 10 11 a. Action Location:
 - Base: HOLLOMAN AFB State: New Mexico
 - County(s): Otero
 - Regulatory Area(s): NOT IN A REGULATORY AREA
- 1617 b. Action Title: Airfield Improvements
- 19 c. Project Number/s (if applicable):
- 21 d. Projected Action Start Date: 1 / 2025

23 e. Action Description:

The airfield improvements would consist of expanding the number of end of the runway (EOR) arm/dearm pads from 23 to 48 to increase stage, arm, and launch volume; increasing blast dissipation pavement; providing shelter for EOR crews; and extending two taxiways to improve airfield geometry. In addition, excess buildings

located within and adjacent to the planned routes for the taxiway extensions would be demolished.

31 f. Point of Contact:

32	Name:	Jessie Moore
33	Title:	Env. Scientist
34	Organization:	HazAir
35	Email:	jessie.moore@hazair.com
36	Phone Number:	5057025632

37 38

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

41	
42	applicable
43	X not applicable
44	

Total net direct and indirect emissions associated with the action were estimated through ACAM on a calendar-year basis for the start of the action through achieving "steady state" (i.e., net gain/loss upon action fully implemented) emissions. The ACAM analysis used the latest and most accurate emission estimation techniques available; all algorithms, emission factors, and methodologies used are described in detail in the USAF Air Emissions Guide for Air Force Stationary Sources, the USAF Air Emissions Guide for Air Force Mobile Sources, and the USAF Air Emissions Guide for Air Force Transitory Sources.

"Insignificance Indicators" were used in the analysis to provide an indication of the significance of potential 1 2 impacts to air quality based on current ambient air quality relative to the National Ambient Air Quality Standards (NAAQSs). These insignificance indicators are the 250 ton/yr Prevention of Significant 3 4 Deterioration (PSD) major source threshold for actions occurring in areas that are "Clearly Attainment" (i.e., not within 5% of any NAAQS) and the GCR de minimis values (25 ton/vr for lead and 100 ton/vr for all other 5 criteria pollutants) for actions occurring in areas that are "Near Nonattainment" (i.e., within 5% of any 6 NAAQS). These indicators do not define a significant impact; however, they do provide a threshold to 7 identify actions that are insignificant. Any action with net emissions below the insignificance indicators for 8 9 all criteria pollutant is considered so insignificant that the action will not cause or contribute to an exceedance on one or more NAAQSs. For further detail on insignificance indicators see chapter 4 of the 10 Air Force Air Quality Environmental Impact Analysis Process (EIAP) Guide, Volume II - Advanced 11 12 Assessments.

13

The action's net emissions for every year through achieving steady state were compared against the Insignificance Indicator and are summarized below.

1617 Analysis Summary:

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2025 Pollutant Action Emissions **INSIGNIFICANCE INDICATOR** Exceedance (Yes or (ton/yr) Indicator (ton/yr) No) NOT IN A REGULATORY AREA VOC 1.973 250 No NOx 10.353 250 No 12.781 СО 250 No SOx 0.029 250 No PM 10 106.197 250 Yes PM 2.5 0.463 250 No Pb 0.000 25 No NH3 0.009 250 No CO2e 2881.8

20 21

2026 - (Steady State)

Pollutant	Action Emissions INSIGNIFICANCE INDICATOR		CE INDICATOR
	(ton/yr)	Indicator (ton/yr)	Exceedance (Yes or No)
NOT IN A REGULATORY	Y AREA		
VOC	0.000	250	No
NOx	0.000	250	No
CO	0.000	250	No
SOx	0.000	250	No
PM 10	0.000	250	No
PM 2.5	0.000	250	No
Pb	0.000	25	No
NH3	0.000	250	No
CO2e	0.0		

1 The estimated annual net emissions associated with this action temporarily exceed the insignificance 2 indicators. However, the steady state estimated annual net emissions are below the insignificance 3 indicators showing no significant long-term impact to air quality. Therefore, the action will not cause or 4 contribute to an exceedance on one or more NAAQSs. No further air assessment is needed.

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Jessie Moore, Env. Scientist

1/25/2022

DATE

12 La Luz 1

13 **1. General Information**

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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 Manual 32-7002, Environmental Compliance and Pollution Prevention; 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: HOLLOMAN AFB

- State: New Mexico
- Countv(s): Otero
- Regulatory Area(s): NOT IN A REGULATORY AREA
- b. Action Title: La Luz Gate Alternative 1: Reposition La Luz Gate
- 29 c. Project Number/s (if applicable):
- 30
 31 d. Projected Action Start Date: 1 / 2027
- 33 e. Action Description:34

Relocate gate entrance approximately 2.5 to 3 miles south, to include a guardhouse, three identification check lanes with booths, a 2-lane inspection building, and an overwatch tower or pad. Extend security fence and cable barriers to meet the relocated entrance. Demolish current facilities and excess pavement.

3940 f. Point of Contact:

- 41Name:Jessie Moore42Title:Env. Scientist43Organization:HazAir44Email:jessie.moore@hazair.com45Phone Number:5057025632
- 46 47

48 **2. Air Impact Analysis:** Based on the attainment status at the action location, the requirements of 49 the General Conformity Rule are:

50	
51	applicable
52	X not applicable
53	

Total net direct and indirect emissions associated with the action were estimated through ACAM on a calendar-year basis for the start of the action through achieving "steady state" (i.e., net gain/loss upon action fully implemented) emissions. The ACAM analysis used the latest and most accurate emission estimation techniques available; all algorithms, emission factors, and methodologies used are described in detail in the USAF Air Emissions Guide for Air Force Stationary Sources, the USAF Air Emissions Guide for Air Force Mobile Sources, and the USAF Air Emissions Guide for Air Force Transitory Sources.

8 "Insignificance Indicators" were used in the analysis to provide an indication of the significance of potential 9 impacts to air quality based on current ambient air quality relative to the National Ambient Air Quality Standards (NAAQSs). These insignificance indicators are the 250 ton/yr Prevention of Significant 10 Deterioration (PSD) major source threshold for actions occurring in areas that are "Clearly Attainment" (i.e., 11 not within 5% of any NAAQS) and the GCR de minimis values (25 ton/yr for lead and 100 ton/yr for all other 12 criteria pollutants) for actions occurring in areas that are "Near Nonattainment" (i.e., within 5% of any 13 NAAQS). These indicators do not define a significant impact: however, they do provide a threshold to 14 identify actions that are insignificant. Any action with net emissions below the insignificance indicators for 15 all criteria pollutant is considered so insignificant that the action will not cause or contribute to an 16 17 exceedance on one or more NAAQSs. For further detail on insignificance indicators see chapter 4 of the Air Force Air Quality Environmental Impact Analysis Process (EIAP) Guide, Volume II - Advanced 18 19 Assessments.

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The action's net emissions for every year through achieving steady state were compared against the Insignificance Indicator and are summarized below.

24 Analysis Summary:

25 26

2027			
Pollutant	Action Emissions	INSIGNIFICAN	ICE INDICATOR
	(ton/yr)	Indicator (ton/yr)	Exceedance (Yes or No)
NOT IN A REGULATOR	Y AREA		
VOC	0.228	250	No
NOx	0.703	250	No
CO	1.028	250	No
SOx	0.002	250	No
PM 10	1.749	250	No
PM 2.5	0.028	250	No
Pb	0.000	25	No
NH3	0.001	250	No
CO2e	226.3		

27 28

2028 - (Steady State) **Action Emissions INSIGNIFICANCE INDICATOR** Pollutant Indicator (ton/yr) Exceedance (Yes or (ton/yr) No) NOT IN A REGULATORY AREA VOC 0.000 250 No NOx 0.000 250 No CO 0.000 250 No SOx 0.000 250 No **PM 10** 0.000 250 No PM 2.5 0.000 250 No Pb 0.000 25 No NH3 0.000 250 No CO2e 0.0

None of estimated annual net emissions associated with this action are above the insignificance

indicators, indicating no significant impact to air guality. Therefore, the action will not cause or contribute

to an exceedance on one or more NAAQSs. No further air assessment is needed. 3 4 Jessien 5 1/25/2022 6 7 Jessie Moore, Env. Scientist DATE 8 9 La Luz 2 10 1. General Information 11 12 The Air Force's Air Conformity Applicability Model (ACAM) was used to perform an analysis to assess the 13 potential air quality impact/s associated with the action in accordance with the Air Force Manual 32-7002, 14 Environmental Compliance and Pollution Prevention; the Environmental Impact Analysis Process (EIAP, 15 32 CFR 989); and the General Conformity Rule (GCR, 40 CFR 93 Subpart B). This report provides a 16 summary of the ACAM analysis. 17 18 19 a. Action Location: Base: HOLLOMAN AFB 20 21 State: New Mexico 22 County(s): Otero 23 Regulatory Area(s): NOT IN A REGULATORY AREA 24 25 b. Action Title: La Luz Gate Alternative 2: Renovate Existing Facilities at La Luz Gate 26 27 c. Project Number/s (if applicable): 28 d. Projected Action Start Date: 29 1/2027 30 31 e. Action Description: 32 33 Renovate current facilities, expand to three identification check stations with booths, add a 2-lane 34 inspection building and an overwatch tower or pad. 35 36 f. Point of Contact: Name: 37 Jessie Moore Title: Env. Scientist 38 Organization: HazAir 39 Email: jessie.moore@hazair.com 40 Phone Number: 5057025632 41 42 43 **2. Air Impact Analysis:** Based on the attainment status at the action location, the requirements of 44 the General Conformity Rule are: 45 46 47

47	applicable
48	X not applicable
49	

1

Total net direct and indirect emissions associated with the action were estimated through ACAM on a calendar-year basis for the start of the action through achieving "steady state" (i.e., net gain/loss upon action fully implemented) emissions. The ACAM analysis used the latest and most accurate emission estimation techniques available; all algorithms, emission factors, and methodologies used are described in detail in the USAF Air Emissions Guide for Air Force Stationary Sources, the USAF Air Emissions Guide for Air Force Mobile Sources, and the USAF Air Emissions Guide for Air Force Transitory Sources.

8 "Insignificance Indicators" were used in the analysis to provide an indication of the significance of potential 9 impacts to air quality based on current ambient air quality relative to the National Ambient Air Quality Standards (NAAQSs). These insignificance indicators are the 250 ton/yr Prevention of Significant 10 Deterioration (PSD) major source threshold for actions occurring in areas that are "Clearly Attainment" (i.e., 11 not within 5% of any NAAQS) and the GCR de minimis values (25 ton/yr for lead and 100 ton/yr for all other 12 criteria pollutants) for actions occurring in areas that are "Near Nonattainment" (i.e., within 5% of any 13 NAAQS). These indicators do not define a significant impact: however, they do provide a threshold to 14 identify actions that are insignificant. Any action with net emissions below the insignificance indicators for 15 all criteria pollutant is considered so insignificant that the action will not cause or contribute to an 16 17 exceedance on one or more NAAQSs. For further detail on insignificance indicators see chapter 4 of the Air Force Air Quality Environmental Impact Analysis Process (EIAP) Guide, Volume II - Advanced 18 19 Assessments.

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The action's net emissions for every year through achieving steady state were compared against the Insignificance Indicator and are summarized below.

24 Analysis Summary:

25 26

2027			
Pollutant	Action Emissions	INSIGNIFICAN	ICE INDICATOR
	(ton/yr)	Indicator (ton/yr)	Exceedance (Yes or No)
NOT IN A REGULATORY	Y AREA		
VOC	0.167	250	No
NOx	0.371	250	No
CO	0.503	250	No
SOx	0.001	250	No
PM 10	1.012	250	No
PM 2.5	0.017	250	No
Pb	0.000	25	No
NH3	0.000	250	No
CO2e	100.3		

27 28

2028 - (Steady State) **Action Emissions INSIGNIFICANCE INDICATOR** Pollutant Indicator (ton/yr) Exceedance (Yes or (ton/yr) No) NOT IN A REGULATORY AREA VOC 0.000 250 No NOx 0.000 250 No CO 0.000 250 No SOx 0.000 250 No **PM 10** 0.000 250 No PM 2.5 0.000 250 No Pb 0.000 25 No NH3 0.000 250 No CO2e 0.0

- 1 None of estimated annual net emissions associated with this action are above the insignificance 2 indicators, indicating no significant impact to air guality. Therefore, the action will not cause or contribute
- 3 to an exceedance on one or more NAAQSs. No further air assessment is needed.

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Jessie Moore, Env. Scientist

1/25/2022

DATE

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13 La Luz 3

14 **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 Manual 32-7002,
Environmental Compliance and Pollution Prevention; 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: HOLLOMAN AFB State: New Mexico County(s): Otero Regulatory Area(s): NOT IN A REGULATORY AREA
- 28 **b. Action Title:** La Luz Gate Alternative 3: Close and Demolish La Luz Gate
- 30 c. Project Number/s (if applicable):31
- 32 d. Projected Action Start Date: 1 / 2027

e. Action Description:

Permanently close and demolish current facilities and excess pavement. Erect a gate across La Luz Gate Road at base boundary for use during emergencies.

f. Point of Contact:

40	Name:	Jessie Moore
41	Title:	Env. Scientist
42	Organization:	HazAir
43	Email:	jessie.moore@hazair.com
44	Phone Number:	5057025632

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47 2. Air Impact Analysis: Based on the attainment status at the action location, the requirements of
 48 the General Conformity Rule are:
 49

50	applicable
51	X not applicable
52	

Total net direct and indirect emissions associated with the action were estimated through ACAM on a calendar-year basis for the start of the action through achieving "steady state" (i.e., net gain/loss upon action fully implemented) emissions. The ACAM analysis used the latest and most accurate emission estimation techniques available; all algorithms, emission factors, and methodologies used are described in detail in the USAF Air Emissions Guide for Air Force Stationary Sources, the USAF Air Emissions Guide for Air Force Mobile Sources, and the USAF Air Emissions Guide for Air Force Transitory Sources.

8 "Insignificance Indicators" were used in the analysis to provide an indication of the significance of potential 9 impacts to air quality based on current ambient air quality relative to the National Ambient Air Quality Standards (NAAQSs). These insignificance indicators are the 250 ton/yr Prevention of Significant 10 Deterioration (PSD) major source threshold for actions occurring in areas that are "Clearly Attainment" (i.e., 11 not within 5% of any NAAQS) and the GCR de minimis values (25 ton/yr for lead and 100 ton/yr for all other 12 criteria pollutants) for actions occurring in areas that are "Near Nonattainment" (i.e., within 5% of any 13 NAAQS). These indicators do not define a significant impact: however, they do provide a threshold to 14 identify actions that are insignificant. Any action with net emissions below the insignificance indicators for 15 all criteria pollutant is considered so insignificant that the action will not cause or contribute to an 16 17 exceedance on one or more NAAQSs. For further detail on insignificance indicators see chapter 4 of the Air Force Air Quality Environmental Impact Analysis Process (EIAP) Guide, Volume II - Advanced 18 19 Assessments.

20

The action's net emissions for every year through achieving steady state were compared against the Insignificance Indicator and are summarized below.

24 Analysis Summary:

25 26

2027			
Pollutant	Action Emissions	INSIGNIFICAN	ICE INDICATOR
	(ton/yr)	Indicator (ton/yr)	Exceedance (Yes or No)
NOT IN A REGULATORY	Y AREA		
VOC	0.033	250	No
NOx	0.192	250	No
CO	0.246	250	No
SOx	0.001	250	No
PM 10	0.383	250	No
PM 2.5	0.007	250	No
Pb	0.000	25	No
NH3	0.000	250	No
CO2e	60.6		

27 28

2028 - (Steady State) **Action Emissions INSIGNIFICANCE INDICATOR** Pollutant Indicator (ton/yr) Exceedance (Yes or (ton/yr) No) NOT IN A REGULATORY AREA VOC 0.000 250 No NOx 0.000 250 No CO 0.000 250 No SOx 0.000 250 No **PM 10** 0.000 250 No PM 2.5 0.000 250 No Pb 0.000 25 No NH3 0.000 250 No CO2e 0.0

- 1 None of estimated annual net emissions associated with this action are above the insignificance 2 indicators, indicating no significant impact to air guality. Therefore, the action will not cause or contribute
- to an exceedance on one or more NAAQSs. No further air assessment is needed.

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Jessie Moore, Env. Scientist

1/25/2022

DATE

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13 Main Gate

14 **1. General Information**

15

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 Manual 32-7002,
Environmental Compliance and Pollution Prevention; 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.

22 a. Action Location:

23	Base: HOLLOMAN AFB
24	State: New Mexico
25	County(s): Otero
26	Regulatory Area(s): NOT IN A REGULATORY AREA
27	

- 28 **b. Action Title:** Repositioning of Main Gate
- 2930 c. Project Number/s (if applicable):
- 31

 32
 d. Projected Action Start Date: 1 / 2027

e. Action Description:

Repositioning of the HAFB Main Gate and adding additional access control facilities.

f. Point of Contact:

39	Name:	Jessie Moore
40	Title:	Env. Scientist
41	Organization:	HazAir
42	Email:	jessie.moore@hazair.com
43	Phone Number:	5057025632
11		

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33 34

35

46	2. Air Impact Analysis: Based on the attainment status at the action location, the requirements of
47	the General Conformity Rule are:
48	

49	applicable
50	X not applicable
51	

Total net direct and indirect emissions associated with the action were estimated through ACAM on a calendar-year basis for the start of the action through achieving "steady state" (i.e., net gain/loss upon action fully implemented) emissions. The ACAM analysis used the latest and most accurate emission estimation techniques available; all algorithms, emission factors, and methodologies used are described in detail in the USAF Air Emissions Guide for Air Force Stationary Sources, the USAF Air Emissions Guide for Air Force Mobile Sources, and the USAF Air Emissions Guide for Air Force Transitory Sources.

8 "Insignificance Indicators" were used in the analysis to provide an indication of the significance of potential 9 impacts to air quality based on current ambient air quality relative to the National Ambient Air Quality Standards (NAAQSs). These insignificance indicators are the 250 ton/yr Prevention of Significant 10 Deterioration (PSD) major source threshold for actions occurring in areas that are "Clearly Attainment" (i.e., 11 not within 5% of any NAAQS) and the GCR de minimis values (25 ton/yr for lead and 100 ton/yr for all other 12 criteria pollutants) for actions occurring in areas that are "Near Nonattainment" (i.e., within 5% of any 13 NAAQS). These indicators do not define a significant impact: however, they do provide a threshold to 14 identify actions that are insignificant. Any action with net emissions below the insignificance indicators for 15 all criteria pollutant is considered so insignificant that the action will not cause or contribute to an 16 17 exceedance on one or more NAAQSs. For further detail on insignificance indicators see chapter 4 of the Air Force Air Quality Environmental Impact Analysis Process (EIAP) Guide, Volume II - Advanced 18 19 Assessments.

20

The action's net emissions for every year through achieving steady state were compared against the Insignificance Indicator and are summarized below.

24 Analysis Summary:

25 26

2027			
Pollutant	Action Emissions	INSIGNIFICANCE INDICATOR	
	(ton/yr)	Indicator (ton/yr)	Exceedance (Yes or No)
NOT IN A REGULATORY AREA			
VOC	0.315	250	No
NOx	1.030	250	No
CO	1.522	250	No
SOx	0.003	250	No
PM 10	7.767	250	No
PM 2.5	0.040	250	No
Pb	0.000	25	No
NH3	0.001	250	No
CO2e	341.1		

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2028 - (Steady State) **Action Emissions INSIGNIFICANCE INDICATOR** Pollutant Indicator (ton/yr) Exceedance (Yes or (ton/yr) No) NOT IN A REGULATORY AREA VOC 0.000 250 No NOx 0.000 250 No CO 0.000 250 No SOx 0.000 250 No **PM 10** 0.000 250 No PM 2.5 0.000 250 No Pb 0.000 25 No NH3 0.000 250 No CO2e 0.0

- None of estimated annual net emissions associated with this action are above the insignificance 1 indicators, indicating no significant impact to air quality. Therefore, the action will not cause or contribute to an exceedance on one or more NAAQSs. No further air assessment is needed. 2
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1/25/2022

DATE

Jessie Moore, Env. Scientist

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1 C.3 BIOLOGICAL RESOURCES

2 C.3.1 Definition of the Resource

Federal Regulations for Biological Resources include native, nonnative, and invasive plants and animals; sensitive and protected floral and faunal species; and the habitats, such as wetlands, forests, and grasslands, in which they exist. Habitat can be defined as the resources and conditions in an area that support a defined suite of organisms. The following is a description of the primary federal statutes that form the regulatory framework for the evaluation of biological resources.

Special status species include plant and animal species (1) listed as endangered, threatened, or proposed for listing by the U.S. Fish and Wildlife Service (USFWS) under the Endangered Species Act (ESA) and their designated critical habitats; (2) protected by the federal Migratory Bird Treaty Act (MBTA) of 1981; (3) protected under the Bald and Golden Eagle Protection Act (BGEPA) of 1940; or (4) listed under state ESAs

12 or similar conservation laws.

13 C.3.1.1 Endangered Species Act

14 The Endangered Species Act (ESA) of 1973 (16 United States Code [U.S.C.] § 1531 et seq.) established protection over and conservation of threatened and endangered species and their ecosystems. Sensitive 15 and protected biological resources include plant and animal species listed as threatened, endangered, or 16 special status by the USFWS and National Marine Fisheries Service (NMFS). Under the ESA (16 U.S.C. § 17 1536), an "endangered species" is defined as any species in danger of extinction throughout all, or a large 18 portion, of its range. A "threatened species" is defined as any species likely to become an endangered 19 species in the foreseeable future. The USFWS maintains a list of species considered to be candidates for 20 possible listing under the ESA. The ESA also allows the designation of geographic areas as critical habitat 21 for threatened or endangered species. Although candidate species receive no statutory protection under 22 the ESA, the USFWS has attempted to advise government agencies, industry, and the public that these 23 24 species are at risk and may warrant protection under the ESA.

Section 9 of the ESA prohibits the take of federally listed species. "Take" as defined under the ESA means 25 "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any 26 such conduct." Section 7 of the ESA prohibits any federal agency from engaging in any action that is likely 27 to "ieopardize" the continued existence of listed endangered or threatened species or that destroys or 28 adversely affects the critical habitat of such species. Any federal agency proposing an action that may 29 adversely impact an endangered or threatened species must consult with USFWS or NMFS (on an informal 30 31 or formal basis, as appropriate) before carrying out such action. Species proposed for listing under the ESA 32 (candidate species) are not protected by the law; however, these species could become federally listed in 33 the near future and therefore are considered in this analysis to avoid future conflicts. Under Section 10(j) 34 of the ESA, the USFWS can designate reintroduced populations established outside of the species' current 35 range, but within its historical range, as "experimental". The experimental population can be designated as "essential" or "non-essential" to the continued existence of the species. The regulatory restrictions are 36 considerably reduced for a species with a Nonessential Experimental Population designation. The USFWS 37 designates critical habitat through a formal process to provide protection for habitat areas believed to be 38 39 essential to a species' conservation.

40 C.3.1.2 Migratory Bird Treaty Act

The Migratory Bird Treaty Act (MBTA) of 1918 makes it unlawful for anyone to take migratory birds or their parts, nests, or eggs unless permitted to do so by regulations. Per the MBTA, "take" is defined as to "pursue, hunt, shoot, wound, kill, trap, capture, or collect" (50 Code of Federal Regulations § 10.12). Migratory birds include nearly all species in the United States, with the exception of some upland game birds and nonnative species.

Executive Order 13186, *Responsibilities of Federal Agencies to Protect Migratory Birds*, requires all federal agencies undertaking activities that may negatively impact migratory birds to follow a prescribed set of actions to implement the MBTA protections.

- The National Defense Authorization Act for Fiscal Year 2003 (Public Law 107-314, 116 Stat. 2458) provided the Secretary of the Interior the authority to prescribe regulations that exempt the armed forces from the incidental take of migratory birds during authorized military readiness activities. Congress defined military readiness activities as all training and operations of the US Armed Forces that relate to combat and the adequate and realistic testing of military equipment, vehicles, weapons, and sensors for proper operation and suitability for combat use.
- In December 2017, the US Department of the Interior issued M-Opinion 37050 (U.S. Department of Interior, 2017) which concluded that the take of migratory birds from an activity is not prohibited by the MBTA when the underlying purpose of that activity is not the take of a migratory bird. The USFWS interprets the M-Opinion to mean that the MBTA's prohibition on take does not apply when the take of birds, eggs, or nests occurs as a result of an activity, the purpose of which is not to take birds, eggs, or nests.

On 7 January 2021, the USFWS issued Final Rule (86 Federal Register 1134), effective 8 February 2021 determining that the MBTA's prohibitions on pursuing, hunting, taking, capturing, killing, or attempting to do the same, applies only to actions directed at migratory birds, their nests, or their eggs; however, the USFWS delayed the implementation of the final MBTA rule until 8 March 2021 in conformity with the Congressional Rule Act (86 Federal Register 8715).

17 C.3.1.3 Bald and Golden Eagle Protection Act

18 The Bald and Golden Eagle Protection Act of 1940 (16 U.S.C. § 668 to 668c) deems it illegal to "take, possess, sell, purchase, barter, offer to sell, purchase or barter, transport, export or import, at any time or 19 20 any manner, any bald eagle (Haliaeetus leucocephalus) or golden eagle (Aquila chrysaetos), alive or dead, or any part, nest, or egg thereof." "Take" is defined as "pursue, shoot, shoot at, poison, wound, kill, capture, 21 trap, collect, molest or disturb," and "disturb" is defined as "to agitate or bother a bald or golden eagle to a 22 23 degree that causes, or is likely to cause, based on the best scientific information available, injury to an eagle, a decrease in productivity by substantially interfering with the eagle's normal breeding, feeding or 24 sheltering behavior, or nest abandonment by substantially interfering with the eagle's normal breeding. 25 feeding or sheltering behavior." The Bald and Golden Eagle Protection Act also prohibits activities around 26 an active or inactive nest site that could result in an adverse impact on the eagle. 27

28 C.3.1.4 Invasive Species

As defined in Executive Order 13112, invasive species are "an alien species whose introduction does or is likely to cause economic or environmental harm to human health." Invasive species are highly adaptable and often displace native species. The characteristics that enable them to do so include high reproduction rates, resistance to disturbances, lack of natural predators, efficient dispersal mechanisms, and the ability to outcompete native species for food, habitat and resources.

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APPENDIX D LIST OF PREPARERS AND CONTRIBUTORS This page intentionally left blank

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