DRAFT

ENVIRONMENTAL ASSESSMENT OF INSTALLATION DEVELOPMENT AND MODERNIZATION PROJECTS

APPENDICES A-E

UNIQUE IDENTIFICATION NUMBER (EAXX-007-57-UAF-1736259122)

KEESLER AIR FORCE BASE
BILOXI, MISSISSIPPI

PREPARED FOR:

Department of the Air Force

June 2025

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APPENDIX A: EARLY NOTICE/ AGENCY IICEP COMMUNICATIONS/ CONSULTATIONS

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Appendix A – Publication of Early Notice, September 2024

The following advance public notice was published in the Biloxi Sun Herald on September 18, 2024. The notice informed the public that the Department of the Air Force (DAF) is preparing an environmental assessment for the Proposed Action of implementing 15 installation development and modernization projects at Keesler Air Force Base, Biloxi, MS. In accordance with Executive Order (EO) 11988, *Floodplain Management*, the DAF published the advance notice to inform the public of the Proposed Action's potential effects on 100-year floodplains and to invite public comment on the proposal and any practicable alternatives that might reduce the effects on floodplains or other resources.

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McClatchy

The Beaufort Gazette
The Belleville News-Democrat
Bellingham Herald
Centre Daily Times
Sun Herald
Idaho Statesman
Bradenton Herald
The Charlotte Observer
The State
Ledger-Enquirer

Durham | The Herald-Sun
Fort Worth Star-Telegram
The Fresno Bee
The Island Packet
The Kansas City Star
Lexington Herald-Leader
The Telegraph - Macon
Merced Sun-Star
Miami Herald
El Nuevo Herald

The Modesto Bee
The Sun News - Myrtle Beach
Raleigh News & Observer
Rock Hill | The Herald
The Sacramento Bee
San Luis Obispo Tribune
Tacoma | The News Tribune
Tri-City Herald
The Wichita Eagle
The Olympian

AFFIDAVIT OF PUBLICATION

Account #	Order Number	Identification	Order PO	Amount	Cols	Depth
125117	593509	Print Legal Ad-IPL01938960 - IPL0193896		$77.65	2	38 L

Attention: Suni Shrestha

Tetra Tech
63 South Royal Street Suite 1106
Suite 1106
Mobile, AL 36602
suni.shrestha@tetratech.com

Environmental Assessment of Installation Development and Modernization Projects, Keesler Air Force Base, Mississippi

The Department of the Air Force (DAF) is preparing an environmental assessment (EA) to evaluate potential environmental effects associated with implementing 15 installation development and modernization projects at Keesler Air Force Base (AFB) in Biloxi, MS. The Proposed Action would provide the facilities and infrastructure necessary for mission activities. The DAF would demolish approximately 430,000 square feet (SF) of existing buildings and structures and construct and operate 15 facilities comprising approximately 1 million SF of new buildings. The new buildings would include an air traffic control tower, dormitories, fitness resiliency center, education center, headquarters center, training facilities, transportation complex, engineering installation facility, visiting quarters, and a swimming pool and pool house. Supporting infrastructure would include all necessary utility connections, pavement (roads, equipment pads, parking areas, and building aprons), communications support, exterior lighting, security and fire protection systems, recreational areas, and other elements required to provide complete and usable facilities. It also would include staging areas for construction equipment and materials.

The Proposed Action is subject to the requirements and objectives of Executive Order 11988, Floodplain Management, because five of the proposed construction projects are located, partially or entirely, on 100-year floodplains. The DAF will consult with the U.S. Army Corps of Engineers and Mississippi Department of Environmental Quality on potential impacts on the floodplains. In addition, the Proposed Action would require tree removal, which could impact habitat for the tricolored bat (Perimyotis subflavus), which is proposed for federal listing as an endangered species. The DAF invites the public to provide comments on the proposal and any practicable alternatives that might reduce impacts on floodplains or other resources. The DAF will analyze the Proposed Action in the EA, and the public will have the opportunity to comment on it.

The advance public comment period is September 18 to October 18, 2024. Comments or requests for more information can be provided via email (preferred) to 81trw.pamain@us.af.mil or via U.S. Mail to Agata A. Jastrzebska, 2nd Lt, 81TRW/PA, 709 H Street, Bldg. 902, Keesler AFB, MS 39534.
IPL0193896
Sep 18 2024

STATE OF MISSISSIPPI
COUNTY OF HARRISON

Before me, the undersigned Notary of Dallas County, Texas personally appeared Mary Castro, who, being by me first duly sworn, did depose and say that she is a clerk of The Sun Herald, a daily newspaper published in the city of Gulfport, in Harrison County, Mississippi and the publication of the notice, a copy of which is hereto attached, has been made in said paper in the issue(s) of:

1 insertion(s) published on:
09/18/24

Affidavit further states on oath that said newspaper has been established and published continuously in said county for a period of more than twelve months next prior to the first publication of said notice.

Mary Castro

Sworn to and subscribed before me this 18th day of September in the year of 2024

Stephanie Hatcher

Notary Public
* The Sun Herald has been deemed eligible for publishing legal notices in Jackson County to meet the requirements of Miss. Code 1972 Section 13-3-31 and 13-3-32.

STEPHANIE HATCHER
My Notary ID # 133534406
Expires January 14, 2026

Extra charge for lost or duplicate affidavits.
Legal document please do not destroy!

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Appendix A – Agency Coordination

The following is an example of the letter sent to the federal, state, and local agencies listed below. Responses received follow the letter sent.

Agency	Name / Title	Response Received
US Army Corps of Engineers, Regulatory Division, Biloxi Satellite Office	Dylan C. Hendrix, Field Supervisor	X
US Fish and Wildlife Service, Mississippi Field Office – Ecological Services	Paul Necaise, Section 7 Biologist / Coastal Biologist	
USEPA Region 4, NEPA Program Office	Ntale Kajumba, NEPA Program Office Manager	
Veterans Administration, Office of Public Affairs	Shaun Shenk, MPA	
MS Dept. of Marine Resources, Wetlands Permitting	Willa Brantley, Bureau Director	X
MS Dept. of Environmental Quality, Env. Enforcement and Compliance Division	Michelle Clark	
MS Dept. of Wildlife, Fisheries, & Parks	Dennis Riecke, Fisheries Coordinator	
Department of Wildlife, Fisheries & Parks, Mississippi Natural Heritage Program, Mississippi Museum of Natural Science	Lynn Posey, Executive Director	X
City of Biloxi, Community Development	Jerry Creel, Director of Community Development	
Harrison County, Utility Authority	David Perkins, O&M Manager	
Harrison County, Engineer	Jaclyn Turner, Engineer	
Gulf Regional Planning Commission	Kenneth Yarrow, Executive Director	
Southern Mississippi Planning and Development District	Leonard Bentz, II, Executive Director	
CSX Railroad	Scott Willis	

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Department of the Air Force Letters

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 81ST TRAINING WING (AETC)

16 September 2024

Robert T. Moseley III
Deputy Base Civil Engineer
81st Civil Engineer Squadron
500 Fisher Street, Bldg 701
Keesler AFB MS 39534

Mr. Dylan C. Hendrix
Field Supervisor
U.S. Army Corps of Engineers - Regulatory Division
Biloxi Satellite Office
1141 Bayview Ave, Suite 104
Biloxi MS 39530
[redacted]

Dear Mr. Hendrix

The Department of the Air Force (DAF) is preparing an environmental assessment (EA) to evaluate potential environmental effects associated with implementing 15 installation development and modernization projects at Keesler Air Force Base (AFB) in Biloxi, MS. The Proposed Action would provide the facilities and infrastructure necessary for mission activities. A copy of the Draft EA will be made available for your review and comment when complete. The unique identification number (UIN) for the EA is 00148.

The DAF would implement the proposed 15 projects as summarized in the attached project list (Attachment 1). Areas of proposed demolition, construction, and renovation are shown on the map in Attachment 2. Twelve of the projects have two or three alternative locations for the Proposed Action (Action Alternatives 1, 2, and 3) (Attachments 1 and 2). Five of the projects would be located on a 100-year floodplain (Attachment 3).

The DAF is interested in information or agency-specific preliminary comments that would alleviate or highlight areas of concern preceding this EA. Areas of concern may include potential effects on physical, ecological, social, cultural, and archaeological resources. The DAF also requests any information your agency might have regarding other proposed, ongoing, or recently completed projects that could create or exacerbate impacts from the Proposed Action.

Please respond to us within 30 days of receipt of this letter. Your responses may be provided via email (preferred) to [redacted]; or by regular mail to Janet Lanier, HDR EMS Coordinator Support, 508 L Street, Bldg 4705, Keesler AFB, MS 39534 or via phone at [redacted].

Sincerely

MOSELEY.ROBERT.T.III.1230764782

Digitally signed by MOSELEY.ROBERT.T.III.1230764782
Date: 2024.09.16 08:16:42 -05'00'

ROBERT T. MOSELEY III
Deputy Base Civil Engineer

3 Attachments:
1. Proposed Project List, September 5, 2024
2. Proposed Project Locations, September 11, 2024
3. Proposed Project Locations and Floodplains, September 11, 2024

Attachment 1 - Proposed Project List

Attachment 1: Keesler AFB Proposed Installation Development and Modernization Projects[a]

EA Project Number, MAHG Project Number	Project Description	Alternatives	Estimated Execution Year
Project #1, MAHG233000	**Air Traffic Control Tower (ACTC)**: Build a facility up to 10 stories to support ACTC operations that will comply with the Miami-Dade County hurricane code and would include the following: • Approximately 48,000 square feet (SF) of construction • Demolition of Buildings 4209 (existing ACTC; 3,583 SF), 4215 (storage shed; 240 SF), and 4230 (Flying Training Classroom; 786 SF), totaling approximately 4,440 SF • ATCT equipment infrastructure, aircraft warning lights, emergency generator, fuel storage, horn/strobe combination, visual alarm, permanently installed cabinets, security infrastructure, an uninterruptable power system, and passenger elevator	• Alternative 1 (1A–Preferred): Locate in the flightline. • Alternative 2 (1B): Locate in the area of the existing ACTC. • No Action Alternative: Continue with the existing ACTC.	2025+
Project #2, MAHG193000 Project #3, MAHG143000 Project #4, MAHG103000	**Permanent Party (PP) Dormitories**: Build three 3-story dormitories to provide housing conducive to the proper rest, relaxation, and personal well-being of unaccompanied enlisted personnel. Each dormitory would include the following: • Approximately 60,000 SF of construction with private bedrooms and bathrooms with communal space • A commons facility to support leisure and recreational activities, outdoor basketball and volleyball courts, and a picnic pavilion • 150 parking spots	• Alternative 1 (2A, 3A, and 4A–Preferred): Locate alongside Building 6223 east of the base exchange and south of the tennis and volleyball courts. • Alternative 2 (2B, 3B, and 4B): Locate west of the base exchange and south of the gas station. • No Action Alternative: Continue using existing dormitories.	2026+
Project #5, MAHG043002	**New Student/ Fitness and Resiliency Center**: Build a 2-story fitness and resiliency center to consolidate fitness center requirements for the base as well as community and counseling space that will involve the following: • Approximately 75,000 SF of construction to include indoor pool and recreation center • Demolition of Buildings 7503 (Vandenberg; 38,373 SF) and 7504 (Triangle Fitness Center; 12,935 SF), totaling approximately 52,000 SF	• Alternative 1 (5A–Preferred): Build at the location of Buildings 7503 and 7504, which would be demolished. • Alternative 2 (5B): Build at the location of Building 1201 (Blake Gym; 29,723 SF), which would be demolished. • Alternative 3 (5C): Build at the location of Building 4106 (Dragon Gym; 15,308 SF), which would be demolished. • No Action Alternative: Continue with current facilities.	2026+
Project #6, MAHG213000	**Professional Military Education (PME) Center**: Build a 2-story training facility to consolidate all PME functions. The facility would be built at the current location of Buildings 2901 and 2902 and would involve the following: • Construction of approximately 50,000 SF, including an auditorium, a library, and administrative support space • Demolition of Buildings 2901 (Mathies Hall; 20,820 SF) and 2902 (NCO Professional Military Education Center; 20,755 SF), totaling approximately 42,000 SF	• Alternative 1 (6A–Preferred): Build at the location of Buildings 2901 and 2902, which would be demolished. • Alternative 2 (6B): Build at the vacant location of former Building 3101. **Note**: Same location as Project #7C, below. • No Action Alternative: Continue with current facilities.	2026+
Project #7, MAHG223000	**Headquarters (HQ) Center**: Build a new 2-story facility to house the Second Air Force and 81 TRW command and support staff. The facility would be built at the location of Buildings 2804 and 2816 and would involve the following: • Approximately 35,000 SF of construction • Demolition of Buildings 2804 (existing Second Air Force HQ; 21,017 SF) and 2816 (existing 81 TRW HQ; 16,604 SF), totaling approximately 38,000 SF	• Alternative 1 (7A–Preferred): Build at the location of Buildings 2804 and 2816, which would be demolished. • Alternative 2 (7B): Build at the empty lot north of Building 826 (Aeromedical Squadron Staging Facility) and south of Child Development Center. • Alternative 3 (7C): Build at the vacant location of former Building 3101. **Note**: Same location as Project #6B, above. • No Action Alternative: Continue with current facilities.	2026+
Project #8, MAHG083001	**Training Facility-Hewes Hall Replacement**: Build a 2-story, 135,000-SF facility to provide space for classrooms, administrative offices, a learning center, educational counseling, and testing facilities. The new building would replace the previous facility providing these function that already has been demolished.	• Action Alternative: None. • No Action Alternative: Continue without a facility to replace the previous building.	2026+
Project #9, MAHG273001	**Training Facility-Wolfe Hall Replacement**: Build a 2-story, 135,000-SF training facility with modern infrastructure. The new facility would replace Wolfe Hall and would house classrooms, administrative offices, a learning center, educational counseling, and testing facilities.	• Action Alternative: None. • No Action Alternative: Continue with the current facility.	2026+

Attachment 1: Keesler AFB Proposed Installation Development and Modernization Projects[a]

EA Project Number, MAHG Project Number	Project Description	Alternatives	Estimated Execution Year
Project #11, MAHG053002	**Training Facility-Allee Hall Replacement**: Build a 2-story, 135,000-SF facility for classrooms, administrative offices, a learning center, educational counseling, and testing facilities.	• Action Alternative: None. • No Action Alternative: Continue with the current facility.	2026+
Project #13, MAHG113001	**Transportation Complex**: Build a 42,000-SF vehicle maintenance shop for lubrication, inspection, general repair, and replacement of major parts and painting. Buildings 4430 (Pump Station Sanitary Sewage; 27,528 SF), 4431 (Vehicle Operations Administration; 5,000 SF), 4432 (Vehicle Maintenance Shop; 1,800 SF), 4434 (Vehicle Operations Heated Parking; 2990 SF), and 4440 (Five-Stall Carport; 1,227 SF), totaling approximately 39,000 SF, would be demolished.	• Alternative 1 (13A–Preferred): Build at the location of Buildings 4430, 4431, 4432, 4434, and 4440, which would be demolished. • Alternative 2 (13B): Build in the vacant area north of Building 4002 (Taylor Logistics), at the southwest corner of Chappie James Avenue and X Street. **Note**: Same location as Project #14A, below. • No Action Alternative: Continue with the current facility.	2026+
Project #14, MAHG123002	**Relocate 85th Engineering Installation Squadron (85 EIS) Facility:** Build a 75,000-SF facility to consolidate 85 EIS functions. Buildings 7701 (Maltby Hall; 61,158 SF) and 7704 (Maltby Annex; 15,300 SF), totaling approximately 76,000 SF, would be demolished.	• Alternative 1 (14A–Preferred): Build in the area north of Building 4002 (Taylor Logistics), at the southwest corner of Chappie James Avenue and X Street. **Note**: Same location as Project #13B, above. • Alternative 2 (14B): Build at the southeast corner of the installation bounded by the railroad track to the south and west of Larcher Avenue. • No Action Alternative: Continue with the current facility.	2026+
Project #15, MAHG093002 Project #16, MAHG103001	**Visiting Quarters Lodging Facility:** Build two facilities to provide transient housing for visiting enlisted unaccompanied members of the DAF. Buildings 3821 (Shaw House; 50,856 SF) and 3823 (Simmons Manor; 46,048 SF), totaling approximately 97,000 SF, would be demolished. Each facility would include the following: • Be a 5-story, approximately 45,000-SF building with private bedrooms and bathrooms with communal space • Have a commons facility to support leisure and recreational activities, and outdoor basketball and volleyball courts	• Alternative 1 (15A and 16A–Preferred): Build at the current location of Buildings 3821 and 3823, which would be demolished. • Alternative 2 (15B and 16B): Locate west of the base exchange and south of the gas station and south Projects #2, #3, and #4 Alternative 2 location. • No Action Alternative: Continue with the current facilities.	2026+
Project #17, MAHG201031	**Resiliency Pool and Pool (Bath) House:** Build a 75,000-SF pool and pool house next to the student/ fitness and resiliency center (Project #5). Buildings 7505 (Consolidated Swimming Pool; 21,000 and 7506 (Swimmers Bath House; 2,100 SF), totaling approximately 23,000 SF, would be demolished.	• Alternative 1 (17A–Preferred): Build at the location of Buildings 7505 and 7506, which would be demolished. • Alternative 2 (17B): Renovate Buildings 7505 and 7506. • No Action Alternative: Continue with the current facilities.	2026+

Notes: [a] EA projects #10 and #12 were deleted through the DAF planning process; however, the subsequent EA project numbers were not changed to maintain consistency with contract documents.

Attachment 2 - Proposed Project Locations

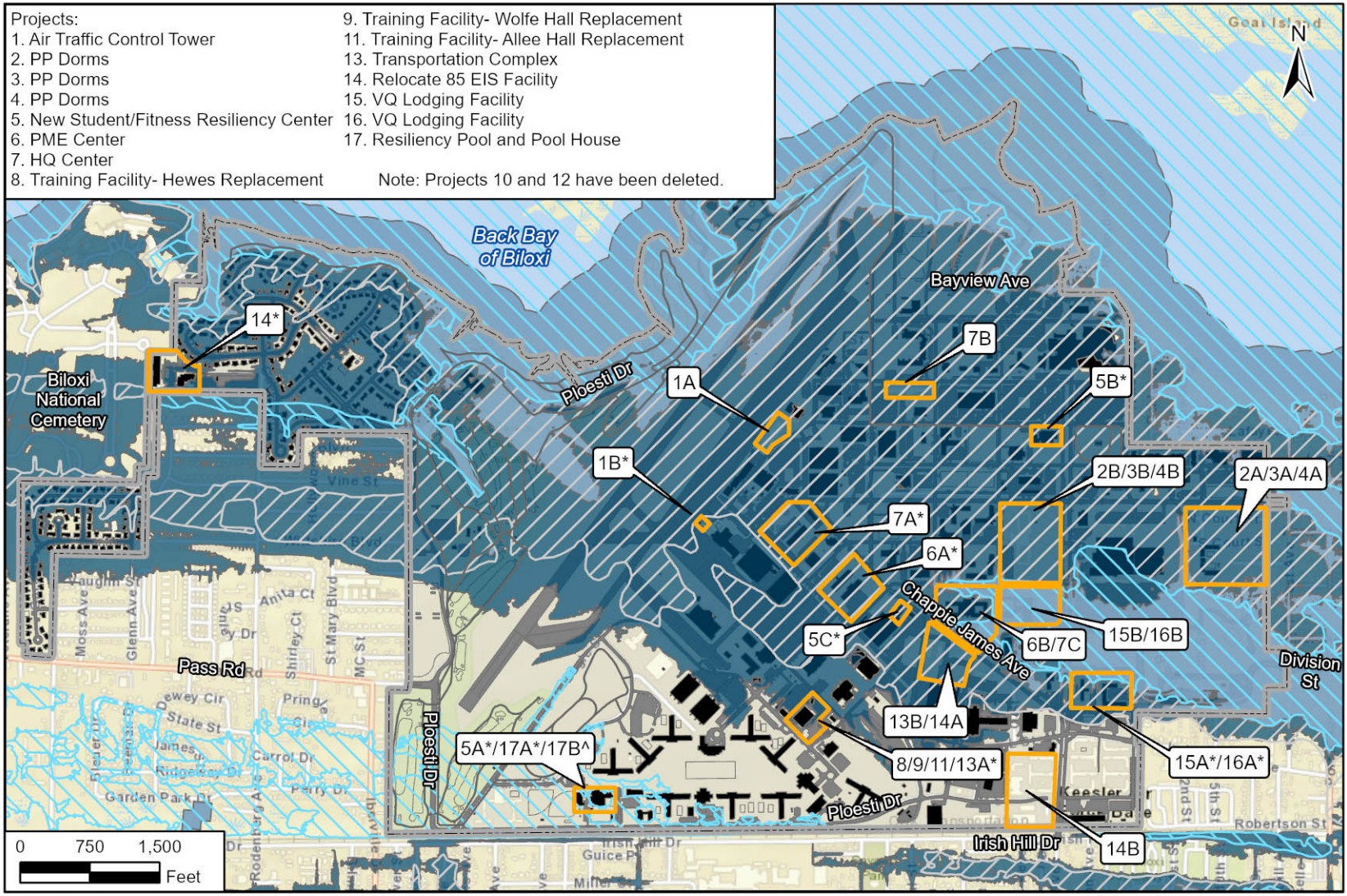
LEGEND

- Keesler AFB
- Project Area
- Building to be Demolished
- NRHP-Eligible
- NRHP-Eligible but Mitigated

Proposed Project Locations

Source: Keesler AFB 2024b. Notes: A/B/C = alternative locations, * = associated demolition, ^ = renovation of 7503 and 7504, NRHP = National Register of Historic Places.

Attachment 3 - Proposed Project Locations and Floodplains



Floodplains

Sources: Keesler AFB 2024b, CSU 2021, FEMA 2024. Notes: A/B/C = alternative locations, * = associated demolition, ^ = renovation of 7503 and 7504.

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DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 81ST TRAINING WING (AETC)

16 September 2024

Robert T. Moseley III
Deputy Base Civil Engineer
81st Civil Engineer Squadron
500 Fisher Street, Bldg 701
Keesler AFB MS 39534

U.S. Fish and Wildlife Service
Mississippi Field Office - Ecological Services
Attn: Mr. Paul Necaise
Section 7 Biologist / Coastal Biologist
6578 Dogwood View Parkway, Suite A
Jackson, MS 39213
[redacted]

Dear Mr. Necaise

The Department of the Air Force (DAF) is preparing an environmental assessment (EA) to evaluate potential environmental effects associated with implementing 15 installation development and modernization projects at Keesler Air Force Base (AFB) in Biloxi, MS. The Proposed Action would provide the facilities and infrastructure necessary for mission activities. A copy of the Draft EA will be made available for your review and comment when complete. The unique identification number (UIN) for the EA is 00148.

The DAF would implement the proposed 15 projects as summarized in the attached project list (Attachment 1). Areas of proposed demolition, construction, and renovation are shown on the map in Attachment 2. Twelve of the projects have two or three alternative locations for the Proposed Action (Alternatives 1, 2, and 3) (Attachments 1 and 2). Five of the projects would be located on a 100-year floodplain (Attachment 3).

U.S. Fish and Wildlife Service (USFWS) biological science technicians from Red River National Wildlife Refuge conducted monitoring in June–August 2023 and detected tricolored bats (*Perimyotis subflavus*) on the on Keesler AFB in various locations but not on the proposed project areas (Attachment 4). The bat is proposed for federal listing as an endangered species. As part of its continuing monitoring program, USFWS surveyed the base in August 2024. The DAF will include results of the 2024 survey in the EA.

The DAF is interested in information or agency-specific preliminary comments that would alleviate or highlight areas of concern preceding this EA. Areas of concern may include potential effects on physical, ecological, social, cultural, and archaeological resources. The DAF also requests any information your agency might have regarding other proposed, ongoing, or recently completed projects that could create or exacerbate impacts from the Proposed Action.

Please respond to us within 30 days of receipt of this letter. Your responses may be provided via email (preferred) to [redacted]; or by regular mail to Janet Lanier, HDR EMS Coordinator Support, 508 L Street, Bldg 4705, Keesler AFB, MS 39534 or via phone at [redacted].

Sincerely

MOSELEY.ROBERT.T.III.1230764782 Digitally signed by MOSELEY.ROBERT.T.III.1230764782 Date: 2024.09.16 08:14:00 -05'00'

ROBERT T. MOSELEY III
Deputy Base Civil Engineer

4 Attachments:
1. Proposed Project List, September 5, 2024
2. Proposed Project Locations, September 11, 2024
3. Proposed Project Locations and Floodplains, September 11, 2024
4. 2023 Bat Survey Monitoring Locations, September 11, 2024

Attachment 4 - 2023 Bat Survey Monitoring Locations

LEGEND

- Keesler AFB
- Project Area
- Bat Survey Locations (2023 FWS)

Bat Survey Locations

Notes: A/B/C = alternative locations, * = associated demolition, ^ = renovation of 7503 and 7504.

Agency Responses

STATE OF MISSISSIPPI
Tate Reeves
Governor

MISSISSIPPI DEPARTMENT OF MARINE RESOURCES
Joe Spraggins, Executive Director

October 22, 2024

Department of the Air Force
Attn: Janet Lanier
81st Civil Engineer Squadron
508 L Street, Bldg 4705
Keesler AFB, MS 39534

RE: DMR24-000476; Environmental Assessment of Installation Development and Modernization Projects, Keesler AFB, MS (NEPA Unique Identification Number 00148)

The Department of Marine Resources in cooperation with other state agencies is responsible under the Mississippi Coastal Program (MCP) for managing the coastal resources of Mississippi. Proposed activities in the coastal area are reviewed to ensure that the activities are in compliance with the MCP.

The Department has reviewed the above-referenced proposed project and has the following comments:

The proposed projects do not include activities that are regulated under the Coastal Wetlands Protection Act or activities subject to review under Mississippi's approved Coastal Program. If the scope of the project changes, or if any of the proposed projects will require a license or permit from another federal agency, please contact our office for a revised determination.

For more information or questions concerning this correspondence, contact:

Willa J. Brantley
MDMR Bureau of Wetlands Permitting
[redacted]
[redacted]

Sincerely,

Willa J. Brantley
Director, Bureau of Wetlands Permitting
MS Department of Marine Resources

Mississippi
Department of Wildlife, Fisheries, and Parks

Lynn Posey
Executive Director

October 11, 2024

Tetra Tech, Inc.
107 St. Francis Street
Suite 2370
Mobile, AL 36602

Re: Environmental Assessment of Installation Development and Modernization Projects, Keesler AFB, MS
Harrison County, MS

Project #
Internal Id 24163

To SUNI SHRESTHA:

In response to your request for information dated **September 18, 2024**, we have searched our database for occurrences of state or federally listed species and species of special concern that occur within 2 miles of the site of the proposed project. Please find our concerns and recommendations below.

The following species of concern may occur within 2 miles of the proposed project area:

Scientific Name	Common Name	Federal Status	State Status	State Rank
Accipiter striatus	Sharp-shinned Hawk	PS		S1?B,S3N
Agalinis maritima var. grandiflora	Saltmarsh False Foxglove			S3S4
Ammodramus maritimus	Seaside Sparrow	PS		S2
Ammodramus nelsoni	Nelson's Sharp-tailed Sparrow			S2N
Andropogon perangustatus	Elliott's Bluestem (Var.2)			S1S2
Anthoceros punctatus	a hornwort			S2
Asclepias humistrata	Pinewoods Milkweed			S3S4
Bulbostylis ciliatifolia var. ciliatifolia	Capillary Hairsedge			S1
Caretta caretta	Loggerhead Sea Turtle	LT	LE	S1B
Charadrius melodus	Piping Plover	LT	LE	S2N
Charadrius nivosus	Snowy Plover	PS:LT	LE	S2
Chasmanthium ornithorhynchum	Bird-bill Spikegrass			S3
Cleistesiopsis oricamporum	Small Coastal Plain Spreading Pogonia			S3
Crocanthemum arenicola	Coastal-sand Frostweed			S1S2
Crocanthemum georgianum	Georgia Frostweed			S3S4
Cyperus lecontei	Le Conte's Flatsedge			S1
Cyperus ovatus	Ovateleaf Flatsedge			S2S3
Dalea mountjoyae	White-tassels			S2S3

Scientific Name	Common Name	Federal Status	State Status	State Rank
Dalea pinnata var. trifoliata	Tansy Prairie-clover			S3S4
Drepanolejeunea mosenii	a liverwort			S1
Eleocharis albida	White Spikerush			S1
Eleocharis brittonii	Britton's Spikerush			S3
Elionurus tripsacoides	Pan American Balsamscale			SH
Enallagma concisum	Cherry Bluet			S2
Erythrodiplax umbrata	Band-winged Dragonlet			S1
Falco sparverius	American Kestrel			S3B,S4S5N
Fimbristylis castanea	Marsh Fimbry			S3
Fimbristylis puberula var. puberula	Hairy Fimbry			S3S4
Fuirena scirpoidea	Southern Umbrella-sedge			S2S3
Fundulus jenkinsi	Saltmarsh Topminnow	SC		S3
Haematopus palliatus	American Oystercatcher			S2
Juniperus silicicola	Southern Red Cedar			S2
Lepidochelys kempii	Kemp's Ridley Sea Turtle	LE	LE	S1N,S1B
Limosa fedoa	Marbled Godwit			S2N
Malaclemys terrapin pileata	Mississippi Diamondback Terrapin			S2
Nerodia clarkii clarkii	Gulf Salt Marsh Snake			S2
Ophisaurus attenuatus	Slender Glass Lizard			S2
Paronychia erecta var. corymbosa	Beach Sand-squares			S1S2
Pelecanus occidentalis	Brown Pelican		LE	S3
Physalis angustifolia	Coast Ground-cherry			S3
Polygala hookeri	Hooker's Milkwort			S2
Rhynchospora harveyi	Harvey's Beakrush			S2
Rhynchospora plumosa	Plume Beakrush			S3S4
Rhynchospora rariflora	Few-flowered Beakrush			S3S4
Ruellia noctiflora	Night-flowering Wild-petunia			S2
Rynchops niger	Black Skimmer			S2B,S3N
Schlotheimia rugifolia	Rugged-leaf Schlotheimia Moss			S3S4
Scleria ciliata var. elliottii	Broad-leaved Hairy Nutrush			S2
Scleria muehlenbergii	Muehlenberg's Nutrush			S3S4
Scleria nitida	Shining Nutrush			S1
Setophaga cerulea	Cerulean Warbler			S2B
Sternula antillarum	Least Tern	PS:LE		S3B
Thalasseus maximus	Royal Tern			S1B,S4N
Trifolium carolinianum	Carolina Clover			S1

State Rank

S1 - Critically imperiled in Mississippi because of extreme rarity (5 or fewer occurrences or vey few remaining individuals or acres) or because of some factor(s) making it vulnerable to extirpation.

S2 - Imperiled in Mississippi because of rarity (6 to 20 occurrences or few remaining individuals or acres) or because of some factor(s) making it vulnerable to extirpation.

S3 - Rare or uncommon in Mississippi (on the order of 21 to 100 occurrences).

State and Federal Status
LE Endangered - A species which is in danger of extinction throughout all or a significant portion of its range.
LT Threatened - A species likely to become endangered in foreseeable future throughout all or a significant portion of its range.

Based on the information provided, we conclude that if best management practices are properly implemented, monitored, and maintained (particularly measures to prevent, or at least, minimize negative impacts to water quality), the proposed project likely poses no threat to listed species or their habitats.

Recommendations:
As listed above, there are 54 species of concern in our database within a 2-mile radius of the 15 installation, development, and modernization projects set to take place at the Keesler Airforce Base in Biloxi, MS (30.4067, -88.9093). Of the species listed above, the Kemp's Ridley Sea Turtle is listed as both federally endangered and state endangered, the Loggerhead Sea Turtle, Piping Plover, and Snowy Plover are listed as federally threatened and state endangered, and the Brown Pelican is listed as state endangered. Additionally, the Saltmarsh Topminnow is a federal species of concern. The Sharp-shinned Hawk, Seaside Sparrow, and Least Tern each possess a federal partial status that does not apply to the portion of their respective ranges that occur in Mississippi. It has been noted that this proposed project is set to occur within 2-miles of Deer Island, a conservation site, as well as within 2-miles of federally designated critical habitat for the Piping Plover and the Gulf Sturgeon. Many of the listed species are on the decline because of degradation or destruction of essential habitat needed to support them. Due to the nature of this project, our primary concerns are that stormwater and dust are properly managed at the demolition / construction / renovation site(s) to reduce environmental impacts and comply with environmental regulations. Other concerns are the possibility of asbestos, lead (if old building materials and cement asbestos / lead pipelines are being replaced or disturbed), sediment deposition, turbidity, exhaust runoff from roads, increased herbicide and pesticide load, and the introduction of other pollutants to nearby streams and bodies of water. These factors may negatively impact habitat conditions by detrimentally affecting respiration, feeding, and reproduction of amphibians, bats, birds, crayfishes, fishes, insects, turtles, and vegetation. Furthermore, the maintenance of natural floodplain vegetation and hydrology are important factors contributing to the survival of these species. Sea turtles spend most of their life cycle in marine environments, coming ashore only to lay eggs. Depending on the species, nesting can occur April through November. Development on nesting beaches is detrimental. Human activity and artificial lighting on developed beaches may deter nesting females and disorient hatchlings. In Mississippi, Southeastern Snowy Plover is not listed federally, but it is listed as state endangered. They nest on the barrier islands and occasionally on mainland beaches in Harrison County from April to July. Southeastern Snowy Plovers can be found year-round in Mississippi in expanses of flat, dry sand along seacoast beaches. We recommend that important habitats such as tidal flats and adjacent sandy sand beaches should be protected from development. If destruction is unavoidable, appropriate mitigation should be implemented. Piping Plover is listed as federally threatened and state endangered in Mississippi. They can be found in Mississippi much of the year on coastal beaches and barrier islands. We recommend that important habitats, such as tidal flats and adjacent sandy beaches, should be protected from development. If destruction is unavoidable, appropriate mitigation should be implemented. Brown Pelicans are listed as state endangered and have been documented within two miles of your project site. Coastal development and loss and disturbance of roost can negatively impact this species. Saltmarsh topminnows occur sporadically in estuaries, coastal salt marshes and back water sloughs including shallow tidal meanders of Spartina marshes. They are endemic to brackish water areas from Galveston Bay, Texas to Escambia Bay in the western panhandle of Florida. Habitat alteration, dredging, marsh erosion, and pollution are the most serious threats to the saltmarsh topminnow. The Seaside Sparrow has a federal partial status that applies to a portion of its range that is outside of the state of Mississippi, but it is worth noting that this species is facing increasing threats due to habitat loss and degradation, primarily from coastal development. The Gulf Sturgeon has declined throughout its range from the results of overfishing in the early 1900s and the loss of spawning habitat. Gulf Sturgeon forage and overwinter in marine waters and migrate back to their freshwater natal streams to spawn. Juveniles will remain in the river for the first 2-3 years of life, before heading to marine waters. Dam construction, dredging, and channelization have prevented sturgeons from gaining access to spawning grounds and/or destroyed the substrates on which the eggs are deposited on. Widespread industrial and domestic pollution has also reduced both feeding and spawning habitat for sturgeons. It has been recently documented that the Gulf Sturgeon still come as far north as the Ross Barnett Spillway. Should this project be approved, we recommend that best management practices such as streamside management zones (SMZs) and other BMPs be properly implemented, monitored, and maintained for compliance, specifically measures that will prevent suspended demolition dust, silt, and contaminants from leaving the site in storm water run-off, as this may negatively affect water quality and habitat conditions within nearby streams and waterbodies (https://www.mfc.ms.gov/forest-health/water-quality-and-forestry-best-management-practices/). Please check MS Department of Environmental Quality for other BMP. (https://www.mdeq.ms.gov/water/surface-water/nonpoint-source-pollution-program/stormwater-runoff-management-manual/) In addition, should any impacts to the health of the surrounding coastal habitat occur as a result of the proposed project, we ask that serious consideration be given to the cumulative impacts of coastal disturbance and elimination, and that appropriate, in-kind mitigation be provided.

Please feel free to contact us if we can provide any additional infromation, resources, or assistance that will help minimize negative impacts to the species and/or ecological communities identified in this review. We are happy to work with you to ensure that our state's precious natural heritage is conserved and preserved for future Mississippians.

Completed by sarah buffington

DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS, MOBILE DISTRICT
P.O. BOX 2288
MOBILE, AL 36628-0001

September 26, 2024

South Mississippi Branch
Regulatory Division

SUBJECT: Department of the Army, No Permit Required, File Number SAM-2024-00864-DCH, Keesler AFB, Development and Modernization Projects, Harrison County, AL

HDR EMS Coordinator Support
Attention: Janet Lanier
Email Address: [redacted]
508 L Street, Bldg 4705
Keesler AFB, MS 39534

Dear Ms. Lanier:

Reference is made to your request for a Department of the Army (DA) review of 15 installation development and modernization projects at Keesler Air Force Base in Biloxi, MS. This project has been assigned File Number **SAM-2024-00864-DCH**, which should be referred to in all future correspondence with this office concerning this project.

A review of the information you submitted indicates a DA Permit pursuant to Section 404 of the Clean Water Act or Section 10 of the Rivers and Harbors Act of 1899 **will not be required** for the proposed demolition and construction activities at Keesler AFB, as all proposed activities would occur within uplands and/or previously developed areas. This determination is based on the nature of the proposed activities, as shown in the attached project plans dated September 16, 2024. Any proposed modifications to the project location(s) or scope of work, or anticipated ground disturbance or discharge of fill material in streams and/or wetland areas, should be coordinated with our office prior to commencing the activity.

The statements contained herein do not convey any property rights or any exclusive privileges, and do not authorize any injury to property nor shall it be construed as excusing you from compliance with other Federal, State, or local statutes, ordinances, or regulations that may affect proposed work.

Electronic copies of this letter are being provided to Suni Shrestha, at [redacted] Robert Moseley at [redacted] and Neal Traweek, at n[redacted];

If you have any questions, please contact me at [redacted], or [redacted]. For additional information about our Regulatory Program, visit our web site at www.sam.usace.army.mil/Missions/Regulatory.aspx. Also, please take a moment to complete our customer satisfaction survey located near

the bottom of the webpage. Your responses are appreciated and will help us improve our services.

Sincerely,

Dylan C. Hendrix, Chief
South Mississippi Branch
Regulatory Division

Attachments

LEGEND

- Keesler AFB
- Project Area
- Building to be Demolished
- NRHP-Eligible
- NRHP-Eligible but Mitigated

Proposed Project Locations

Source: Keesler AFB 2024b. Notes: A/B/C = alternative locations, * = associated demolition, ^ = renovation of 7503 and 7504, NRHP = National Register of Historic Places.

Appendix A – State Historic Preservation Office Coordination

The following letter was sent to the Mississippi Department of Archives and History, Historic Preservation Division. Responses received follow the letter sent.

Agency	Name / Title	Response Received
Mississippi Department of Archives and History, State Historic Preservation Division	Jennifer Baughn, Chief Architectural Historian	X

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Department of the Air Force Letters to MDAH

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 81ST TRAINING WING (AETC)

16 September 2024

Robert T. Moseley III
Deputy Base Civil Engineer
81st Civil Engineer Squadron
500 Fisher Street, Bldg 701
Keesler AFB MS 39534

Jennifer Baughn
Historic Preservation Division
Chief Architectural Historian
Mississippi Department of Archives and History
100 S. State Street
P.O. Box 571
Jackson MS 39201

Dear Ms. Baughn

The Department of the Air Force (DAF) is preparing an environmental assessment (EA) to evaluate potential environmental effects associated with implementing 15 installation development and modernization projects at Keesler Air Force Base (AFB) in Biloxi, MS. The unique identification number (UIN) for the EA is 00148. The Proposed Action would provide the facilities and infrastructure necessary for mission activities. A copy of the Draft EA will be made available for your review and comment when complete. The purpose of this letter is to initiate consultation with your office at the Mississippi Department of Archives and History (MDAH) under Section 106 of the National Historic Preservation Act for the proposed project. Please note that currently the DAF is not officially requesting concurrence on the proposed undertaking. A determination of effect regarding the proposed undertaking will be recommended by the DAF in follow-on consultation.

The DAF would implement the proposed 15 projects as summarized in the attached project list in Attachment 1. Areas of proposed demolition, construction, and renovation are shown on the map in Attachment 2. Twelve of the projects have two or three alternative locations for the Proposed Action (Action Alternatives 1, 2, and 3) (Attachments 1 and 2). The DAF has reviewed the undertaking and defined the area of potential effects (APE) to encompass all potential effects from the execution of the proposed projects and alternatives. Additionally, five of the projects would be located on a 100-year floodplain (Attachment 3).

The proposed projects include demolition of 22 buildings and structures (Table 1).

Table 1. Construction Years of Buildings Proposed for Demolition

EA Project #, MAHG Project #	Building Number	Building Name	Construction Date	NRHP Status
Project #1, MAHG233000	4209	Air Traffic Control Tower	1980	Not eligible
	4215	Storage Shed	1993	N/A
	4230	Flying Training Classroom	2004	Not eligible
Project #5A, MAHG043002	7503	Vandenberg Recreation Center	1953	Mitigated
	7504	Triangle Fitness	1963	Mitigated
Project #5B, MAHG043002	1201	Blake Gym	1974	Survey in progress
Project #5C, MAHG043002	4106	Dragon Gym	1941	Survey in progress
Project #6A, MAHG213000	2901	Mathies Hall	1941	Not eligible
	2902	Professional Military Education Center	1941	Not eligible
Project #7A, MAHG223000	2804	Second Air Force Headquarters	1941	Not eligible
	2816	Wing Headquarters	1977	Not eligible
Project #13A, MAHG113001	4430	Pump Station Sanitary Sewage	1981	Not eligible
	4431	Vehicles Operations Admin	1981	Not eligible
	4432	Vehicle Maintenance Shop	1981	Not eligible
	4434	Vehicle Operations Heated Parking	1981	Not eligible
	4440	Carport (5 stalls)	2001	Not eligible
Project #14A/B, MAHG123002	7701	Maltby Hall	1959	Survey in progress
	7704	Maltby Annex	1988	Not eligible
Project #15A, MAHG093002	3821	Shaw House	1966	Survey in progress
Project #16A, MAHG103001	3823	Simmons Manor	1970	Survey in progress
Project #17A, MAHG201031	7505	Consolidated Swimming Pool	1963	Mitigated
	7506	Bath House	1965	Mitigated

Notes: N/A = not applicable.

The DAF has completed Section 106 consultation with your office at MDAH for demolition of buildings 2804, 2816, 2902, 2901, 4209, 4230, 4430, 4431, 4440, 7503, 7504, 7505, and 7506. The DAF received MDAH concurrence for the demolition of those facilities in the following letters:

- August 6, 2006: *Proposed Environmental Assessment for Hurricane Katrina Recovery MDAH Project Log #07-174-06. Harrison County.* In the letter, it was determined that no buildings approved for demolition in the Hurricane Katrina EA, including 2804, 2816, 2902, 2901, 4209, 4230, 4430, 4431, and 4440, were listed in or eligible for listing in the National Register for Historic Places (NRHP) and, therefore, MDAH had no reservations about the proposed project.

- September 21, 2017: *Proposed Demolition of the Air Traffic Control Tower at Buildings 4209 and 4230 and Replacement of the Tower at the Same Site at Keesler Air Force Base, Biloxi, (AF) MDAH Project Log #09-010-17. Harrison County*. In the letter, it was determined that no cultural resources are likely to be affected and stated no objection to the proposed undertaking.
- November 12, 2021: *Additional Photos for the Proposed Demolition and Replacement of Vandenberg Hall, Triangle Fitness Center, and Triangle Outdoor Pool at 107 Galaxy Street, Keesler Air Force Base, (USAF), MDAH Project Log #10-080-21 (08-167-21). Harrison County*. In the letter, it was that DAF's photo documentation was acceptable mitigation for the demolition of 7503, 7504, 7505, and 7506.

Additionally, the DAF has determined that the 2003 Cold War-Era Report concluded Building 7704 was not eligible for NRHP listing.

To determine NRHP eligibility of the additional buildings proposed for demolition as part of the proposed undertaking, the DAF has contracted New South Associates to survey buildings 1201, 3821, 3823, 4106, and 7701.

Similarly, the DAF is conducting a Phase I archaeological survey at seven locations that MDAH identified as requiring survey in its November 2022 correspondence, *Additional Information for the Proposed Keesler Modernization Environmental Assessment Planning, Keesler Air Force Base, Biloxi, (USAF) MDAH Project Log #11-088-22 (11-049-22), Harrison County*. In a November 1, 2023, letter, *Revised Work Plan for the Phase I Archaeological Survey at Keesler Air Force Base, Biloxi, (USFS)* [sic] *MDAH Project Log #10-031-23 (11-088-22) (11-049-22) (07-133-23), Harrison County*, MDAH approved the work plan for the seven locations. While those locations for archaeological survey remain the same, the DAF has revised the project locations as proposed in the 2023 work plan and, therefore, the locations have been renumbered since MDAH approved the work plan (Attachment 4).

The 2018 Cultural Resource Management Plan (CRMP), which underwent annual review in 2022, identifies five buildings as warranting consultation under Section 106: Buildings 4116, 4330, 4331, 6901, and potentially 1002. The proposed undertaking involves none of those buildings.

Additionally, per 2018 CRMP, no prehistoric or historic Native American Indian sites and/or Traditional Cultural Properties have been identified on the installation. The Native American Tribes that affiliate with Keesler AFB—Jena Band of Choctaw Indians, Choctaw Nation of Oklahoma, Mississippi Band of Choctaw Indians, and Tunica-Biloxi Tribe of LA, however, will be notified in the event of any unanticipated discoveries. Those Tribes are being included in the Section 106 consultation effort for the Proposed Action.

The DAF will use the results of the surveys to continue consulting with your office on potential effects resulting from the proposed undertaking.

A search of MDAH online records determined there are architectural and archaeological resources on- and off-base near the proposed project areas. There are 32 identified sites within a 1-mile radius of the project areas of which four are eligible sites: Joe Moran, Dantzler House, Biloxi Light Keeper's House, and Lighthouse Bluff. In addition, HR 509, HR 554, HR 1013, HR 1126, HR 1448, and HR 1449 and the Old Biloxi Cemetery are within the immediate vicinity of the proposed undertaking.

If you have questions, please contact via email (preferred) [redacted]; by regular mail Janet Lanier, HDR EMS Coordinator Support, 508 L Street, Bldg 4705, Keesler AFB, MS 39534; or by phone [redacted]. Thank you in advance for your assistance in this effort.

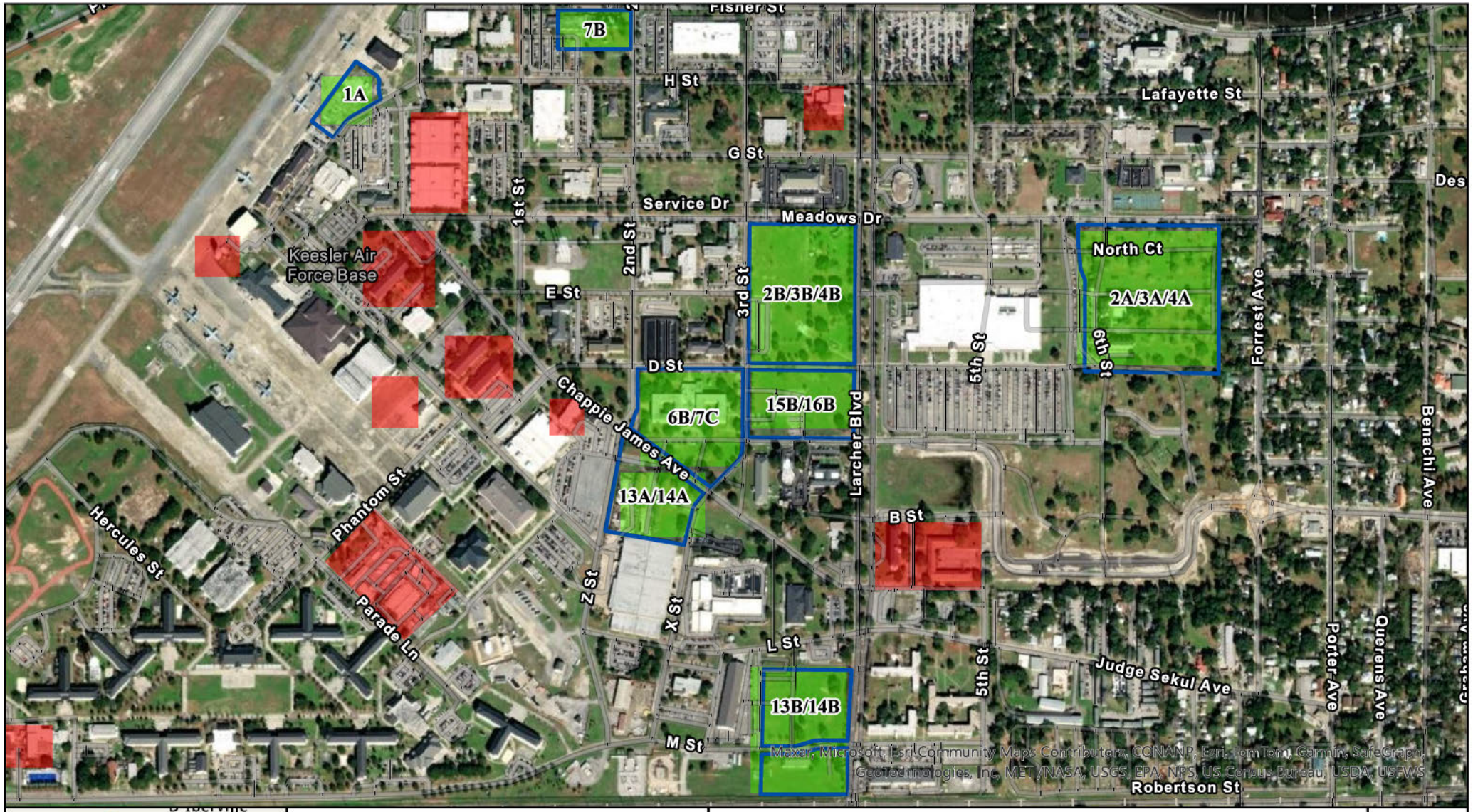
Sincerely

MOSELEY.ROBERT.T.III.1230764782 Digitally signed by MOSELEY.ROBERT.T.III.1230764782 Date: 2024.09.16 08:14:42 -05'00'

ROBERT T. MOSELEY III
Deputy Base Civil Engineer

4 Attachments:
1. Proposed Project List, September 5, 2024
2. Proposed Project Locations, September 11, 2024
3. Proposed Project Locations and Floodplains, September 11, 2024
4. Locations of Phase I Archaeological Survey, August 4, 2024

Attachment 4 - Locations of Phase I Archaeological Survey



Keesler AFB Modification

August 4, 2024

Legend

Current Survey Areas
- Survey Area

Survey Required by MDAH (2022 Consultation)
- No
- Yes

N

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 81ST TRAINING WING (AETC)

January 22, 2025

Robert T. Moseley III
Deputy Base Civil Engineer
81st Civil Engineer Squadron
500 Fisher Street, Bldg 701
Keesler Air Force Base MS 39534

Katherine Blount
State Historic Preservation Officer
Mississippi Department of Archives and History
100 South State Street
P.O. Box 571
Jackson MS 39201
Via MDAH Portal: https://www.mdah.ms.gov/historic-preservation/section-106-review

RE: Section 106 and 110 Consultation for Installation and Modernization of 15 Buildings, Keesler Air Force Base (AFB), MDAH Project Log #09-106-24 (10-031-23) (11-088-22) (11-049-22) (07-133-23), Harrison County, Mississippi

Dear Ms. Blount

In accordance with Section 106 of the National Historic Preservation Act of 1966, as amended (NHPA) (Title 54 of the United States Code § 306108), and its implementing regulation, 36 CFR Part 800, the U.S. Department of the Air Force (DAF) initiated consultation with your office in a letter dated September 16, 2024, regarding an undertaking to implement 15 installation development and modernization projects at Keesler AFB in Biloxi, MS.

In accordance with Sections 106 and 110 of the NHPA, the DAF seeks your review and concurrence on (1) the attached cultural resources report detailing the archaeological and architectural surveys (Attachment 1) and (2) the proposed determinations of effects for the undertaking.

The DAF conducted a Phase I archaeological survey of 62.9 acres across eight survey areas within the area of potential effects (APE) of the undertaking. This survey identified nine new archaeological sites and one isolated find. All nine sites and the isolated find were determined to lack historic significance and integrity; therefore, they are recommended as not eligible for listing in the National Register of Historic Places (NRHP) under any of the four criteria. No further work is recommended for these 10 archaeological resources.

The DAF also conducted an architectural survey of five buildings, each 50 years old or older, within the APE. All five buildings were determined to lack historic significance and integrity; therefore, they also are recommended as not eligible for inclusion in the NRHP under any of the four criteria. We request your concurrence with these determinations of eligibility.

As discussed in the September 16, 2024, correspondence initiating consultation (Attachment 2), 14 buildings within the APE of the proposed project either previously received concurrence from MDAH for demolition or were determined not to be eligible for the NRHP. Additionally, there are no known sites within the APE of interest to affiliated Native American Tribes.

NRHP-eligible and -listed resources off-base within 1 mile of the APE include five NRHP-eligible archaeological resources, one NRHP-listed archaeological site, four NRHP-listed historic districts, and five NRHP-listed historic structures. This letter updates the off-base information provided in the September 16, 2024, correspondence. None of these resources are within the direct APE of the proposed undertaking. One off-base resource, the NRHP-listed Biloxi Veterans Administration Medical Center, falls within the viewshed of the APE. No long-term effects on the viewshed of NRHP-eligible or -listed resources are anticipated because the proposed new buildings and accompanying infrastructure would be in keeping with the nature of the existing areas in construction style, layout, and materials.

Consequently, the DAF proposes a finding of no historic properties affected and requests your concurrence on the proposed undertaking in accordance with Title 36 of the Code of Federal Regulations § 800.4(d)(1). If we do not receive your comments and/or concurrence within the required 30 days, we will assume concurrence and proceed with the undertaking as described.

If you have questions, please contact by email (preferred) David Randolph at [redacted]; by regular mail at David Randolph, Environmental Branch Manager, 508 L Street, Bldg 4705, Keesler AFB, MS 39534; or by phone at [redacted]. Thank you in advance for your assistance in this effort.

Sincerely

MOSELEY.ROBERT.T.III.1230764782
Digitally signed by MOSELEY.ROBERT.T.III.1230764782
Date: 2025.01.24 14:32:38 -06'00'

ROBERT T. MOSELEY III
Deputy Base Civil Engineer

2 Attachments:
1. Draft Cultural Resources Survey for Installation Development and Modernization Projects at Keesler Air Force Base, January 21, 2025
2. Section 106 Correspondence, September 16, 2024

MDAH Responses

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MDAH
MISSISSIPPI DEPARTMENT OF
ARCHIVES & HISTORY

P.O. Box 571
Jackson, MS 39205-0571
601-576-6850
mdah.ms.gov

October 18, 2024

Ms. Janet Lanier
Keesler Air Force Base
508 L Street
Bldg 4705
Biloxi, Mississippi 39534

RE: Proposed Installation and Modernization of 15 Buildings, Keesler AFB, (USAF)
MDAH Project Log #09-106-24, Harrison County

Dear Ms. Lanier:

We have reviewed the request for cultural resources assessment, received on September 18, 2024, for the above referenced project, in accordance with our responsibilities under Section 106 of the National Historic Preservation Act and 36 CFR Part 800.

After review, SHPO concurs with the determination of eligibility for Buildings 2804, 2816, 2901, 2902, 4209, 4215, 4230, 4430, 4431, 4432, 4434, 4440, and 7704, which are not eligible for listing in the National Register, as previously determined in a 2006 project (MDAH Project Log #07-174-06) and the 2003 report titled "Cold War-Era Buildings and Structures Inventory and Assessment." Furthermore, we concur that Buildings 7503-7506 have been mitigated via the additional documentation project submitted to our office (MDAH Project Log #10-080-21). We look forward to seeing the completed building survey for Buildings 1201, 3821, 3823, 4106, and 7701.

However, we cannot concur with determination of effects for archaeological resources until the cultural resource survey report is provided to our agency. Any projects outside the survey as requested in 2022 should also be subjected to Phase I archaeology survey, and our office should be afforded opportunity to comment prior to commencing work.

We look forward to continuing consultation on this undertaking. If you have any questions, please do not hesitate to contact us at (601) 576-6940.

Sincerely,

Hayley E. Smith
Chief of Preservation Planning

FOR: Katie Blount
State Historic Preservation Officer

From: [redacted]
To: [redacted]
Subject: FW: MDAH Project Log #09-106-24
Date: Tuesday, March 18, 2025 1:19:38 PM

FYI
Janet Lanier
HDR EMS Coordinator Support
Keesler AFB, MS 39534
[redacted]

From: Thomas Dabney [redacted]
Sent: Tuesday, March 18, 2025 1:17 PM
To: LANIER, JANET L CTR USAF AFMC AFCEC/CZOM [redacted]; Hayley Smith [redacted]
Subject: [Non-DoD Source] Re: MDAH Project Log #09-106-24

Dear Ms. Lanier:

SHPO concurs with the determination of eligibility that Building #7701 is ineligible for listing in the National Register of Historic Places.

Best,

Thomas Dabney
National Register Assistant Coordinator
Mississippi Department of Archives and History
P.O. Box 571, Jackson, MS 39205-0571
Office phone: 601-576-6701

From: LANIER, JANET L CTR USAF AFMC AFCEC/CZOM [redacted]
Sent: Tuesday, March 18, 2025 12:43 PM
To: Thomas Dabney [redacted]; Hayley Smith [redacted]
Subject: FW: MDAH Project Log #09-106-24

Thomas, Haley:
Wanted to cc you in the event you could assist me on talking about Building 7701 on the below referenced project. We are trying to make sure we address everything needed in the next submittal.
Can you please give me a call.
Thanks for your help.

Janet Lanier
HDR EMS Coordinator Support
Keesler AFB, MS 39534
[redacted]

From: LANIER, JANET L CTR USAF AFMC AFCEC/CZOM
Sent: Tuesday, March 18, 2025 10:47 AM
To: MDAH Section106 [redacted]
Cc: Amy Myers [redacted]; Amy Morgan [redacted]; Cindy Carter-Davis [redacted]
Subject: RE: MDAH Project Log #09-106-24

Amy:
Can someone please give me a quick call? I did not see anything about Building 7701 in the letter and want to make sure it was ok as the draft report stated. The base is meeting to discuss Building 1201 but the initial action is to remove the building from the EA and Section 106 consultation. It was only considered a second alternative action and not one to be taken.
Thanks so much for your help on this.

Janet Lanier
HDR EMS Coordinator Support
Keesler AFB, MS 39534
[redacted]

From: MDAH Section106 <section106@mdah.ms.gov>
Sent: Friday, March 14, 2025 9:13 AM

To: LANIER, JANET L CTR USAF AFMC AFCEC/CZOM [redacted]
Subject: [Non-DoD Source] MDAH Project Log #09-106-24

Ms. Lanier,

Please find attached MDAH's March 14, 2025 response for the referenced project. An email via the Section 106 Portal has also been sent with instructions on how to submit the revised report.

Also, continue to submit projects on our Section 106 portal at https://www.mdah.ms.gov/historic-preservation/section-106-review.

Sincerely,
Amy D. Morgan
Review and Compliance Officer
CLG Grants Administrator
Mississippi Department of Archives and History
Phone: [redacted]
[redacted]

MDAH
MISSISSIPPI DEPARTMENT OF
ARCHIVES & HISTORY

P.O. Box 571
Jackson, MS 39205-0571
601-576-6850
mdah.ms.gov

May 9, 2025

Ms. Janet Lanier
Keesler Air Force Base
508 L Street
Bldg 4705
Biloxi, Mississippi 39534

RE: Proposed Installation and Modernization of 15 Buildings, Keesler AFB, (USAF)
MDAH Project Log #09-106-24, Report #25-0213, Harrison County

Dear Ms. Lanier:

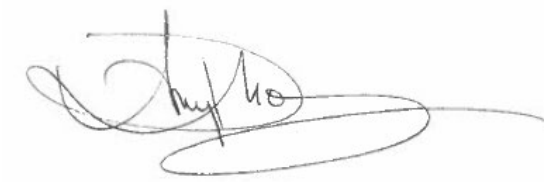
We have reviewed the April 9, 2025, cultural resources survey, by Danny Gregory, Principal Investigator, with New South Associates, Inc., received on April 10, 2025, for the above referenced project, in accordance with our responsibilities under Section 106 of the National Historic Preservation Act and 36 CFR Part 800.

After review, MDAH Archaeology concurs that sites 22Hr1466, Hr1467, Hr1468, Hr1469, Hr1470, Hr1471, Hr1472, Hr1473, Hr1474, and Hr1481 are ineligible for listing on the NRHP, and no further work is needed.

Furthermore, SHPO concurs that Building #3821 and #3823 are not eligible, but does not concur that Building #1201 is not eligible. Furthermore, SHPO determines Building #1201 to be eligible for listing in the National Register of Historic Places under Criterion C: Architecture as a good example of New Formalist design, featuring an exposed concrete frame, classical symmetry and massing, and a prominent cornice. Regarding Building #4106, however, SHPO believes that the 1986 MOA, concerning temporary WWII buildings on active military installations, places buildings in this category outside the authority of SHPO to review for National Register eligibility regardless of historical significance.

Please provide a copy of this letter to Mr. Gregory. If you have any questions, please do not hesitate to contact us at (601) 576-6940.

Sincerely,



Amy D. Morgan
Review and Compliance Officer

FOR: Katie Blount
State Historic Preservation Officer

Appendix A – Tribal Coordination

The following letters were sent to the federally recognized American Indian Tribes listed below. Responses received follow the letter sent.

Tribe	Name / Title	Response Received
Jena Band of Choctaw Indians	Johnna Flynn, THPO	
Choctaw Nation of Oklahoma	Dr. Ian Thompson, THPO	X
Mississippi Band of Choctaw Indians	Melanie Carson, THPO	
Tunica-Biloxi Tribe of Louisiana	Earl J. Barbry, Jr., THPO	

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Department of the Air Force Letters to the Tribes

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 81ST TRAINING WING (AETC)

16 September 2024

Robert T. Moseley III
Deputy Base Civil Engineer
Tribal Liaison Officer
81st Civil Engineer Squadron
500 Fisher Street, Bldg 701
Keesler AFB MS 39534

THPO Johnna Flynn
Jena Band of Choctaw Indians
PO Box 14
Jena LA 71342
[redacted]

Dear THPO Flynn

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DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 81ST TRAINING WING (AETC)

16 September 2024

Robert T. Moseley III
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Tribal Liaison Officer
81st Civil Engineer Squadron
500 Fisher Street, Bldg 701
Keesler AFB MS 39534

THPO Dr. Ian Thompson
Choctaw Nation of Oklahoma
PO Box 1210
Durant OK 74702-1210
[redacted]
Attn: [redacted]

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81st Civil Engineer Squadron
500 Fisher Street, Bldg 701
Keesler AFB MS 39534

THPO Melanie Carson
Mississippi Band of Choctaw Indians
101 Industrial Road
Choctaw MS 39350
[redacted]

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81st Civil Engineer Squadron
500 Fisher Street, Bldg 701
Keesler AFB MS 39534

THPO Earl J. Barbry, Jr.
Tunica-Biloxi Tribe of LA
150 Melacon Drive
Marksville LA 71351
[redacted]

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A search of MDAH online records determined there are architectural and archaeological resources on- and off-base near the proposed project areas. There are 32 identified sites within a 1-mile radius of the project areas of which four are eligible sites: Joe Moran, Dantzler House, Biloxi Light Keeper's House, and Lighthouse Bluff. In addition, HR 509, HR 554, HR 1013, HR 1126, HR 1448, and HR 1449 and the Old Biloxi Cemetery are within the immediate vicinity of

the proposed undertaking.

If you have questions, please contact via email (preferred) [redacted]; by regular mail Janet Lanier, HDR EMS Coordinator Support, 508 L Street, Bldg 4705, Keesler AFB, MS 39534; or by phone ([redacted]. Thank you in advance for your assistance in this effort.

Sincerely

MOSELEY.ROBERT.T.III.1230764782

Digitally signed by MOSELEY.ROBERT.T.III.1230764782
Date: 2024.09.16 08:15:56 -05'00'

ROBERT T. MOSELEY III
Deputy Base Civil Engineer
Tribal Liaison Officer

4 Attachments:
1. Proposed Project List, September 5, 2024
2. Proposed Project Locations, September 11, 2024
3. Proposed Project Locations and Floodplains, September 11, 2024
4. Locations of Phase I Archaeological Survey, August 4, 2024

Response from the Tribes

Previto, Amanda

From: LANIER, JANET L CTR USAF AFMC AFCEC/CZOM [redacted]
Sent: Friday, November 15, 2024 8:59 AM
To: Shrestha, Suni; TRAWEEK, NEAL J CIV USAF AETC 81 CES/CEI
Subject: FW: [Non-DoD Source] RE: Environmental Assessment of Installation Development and Modernization Projects, Keesler AFB, MS (NEPA Unique Identification Number 00148)

FYI
Janet Lanier
HDR EMS Coordinator Support
Keesler AFB, MS 39534
Cell (334)430-1130
[redacted]

From: Lindsey Bilyeu <lbilyeu@choctawnation.com>
Sent: Thursday, November 14, 2024 11:10 AM
To: LANIER, JANET L CTR USAF AFMC AFCEC/CZOM [redacted]
Subject: [Non-DoD Source] RE: Environmental Assessment of Installation Development and Modernization Projects, Keesler AFB, MS (NEPA Unique Identification Number 00148)

Ms. Lanier,

The Choctaw Nation of Oklahoma thanks Keesler Air Force Base for the correspondence regarding the above referenced project. This project lies in our area of historic interest.

While the Choctaw Nation does not have affiliation with the historic buildings located at Keesler AFB, we do have concerns about the ground disturbance and the potential effects it has on archaeological resources.

Our office requests that the survey reports for the areas that were requested by MDAH be forwarded to our office for review.

If you have any questions, please contact me.

Yakoke (Thank you),

Lindsey D. Bilyeu, MS
Program Coordinator
NHPA Compliance Review
Historic Preservation
Choctaw Nation of Oklahoma
[redacted]
Office: 580-642-8377
Cell: 580-740-9624

From: [redacted]
To: [redacted]
Subject: FW: [Non-DoD Source] RE: Cultural Resources Report for Installation Development and Modernization Projects, Keesler AFB, MS (NEPA Unique Identification Number 00148)
Date: Friday, April 11, 2025 10:12:31 AM

FYSA

From: Lindsey Bilyeu [redacted]
Sent: Friday, April 11, 2025 9:41 AM
To: RANDOLPH, DAVID J CTR USAF AETC BOS/CEV [redacted]
Subject: [Non-DoD Source] RE: Cultural Resources Report for Installation Development and Modernization Projects, Keesler AFB, MS (NEPA Unique Identification Number 00148)

Mr. Randolph,

The Choctaw Nation of Oklahoma thanks Keesler Air Force Base for providing the cultural resources survey report for the above referenced project.

The Choctaw Nation does not possess affiliation with the archaeological sites that were discovered during the survey. Therefore, our office respectfully defers the eligibility findings to MDAH and other consulting parties.

However, we ask that work be stopped, and our office contacted immediately, in the event that Native American artifacts or human remains are encountered.

If you have any questions, please contact me.

Yakoke (Thank you),
Lindsey D. Bilyeu
Program Lead NHPA
Historic Preservation
[redacted]
[redacted]

Choctaw Nation of Oklahoma
FAITH ◆ FAMILY ◆ CULTURE

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APPENDIX B: NOTICE OF AVAILABILITY AND PUBLIC/AGENCY REVIEW RESPONSES

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Notice of Availability

Draft Environmental Assessment for Installation Development and Modernization Projects at Keesler Air Force Base, Biloxi, Mississippi

Keesler Air Force Base (AFB) has prepared a draft environmental assessment (EA) as well as a draft finding of no significant impact (FONSI) and a draft finding of no practicable alternative (FONPA) for its installation development and modernization projects. The EA, in line with the National Environmental Policy Act, assesses the potential environmental and social effects of implementing 15 installation development and modernization projects at Keesler AFB. It considers the proposed action, Action Alternative and site options, and the No Action Alternative.

The draft EA, draft FONSI, and draft FONPA are available for a 30-day review period on the Keesler AFB website at https://www.keesler.af.mil/about-us/resources/environmental-information/. Physical copies can be reviewed at the Biloxi Public Library at 580 Howard Avenue, Biloxi, MS 39530.

Comments can be sent by email to 81trw.pamain@us.af.mil or by U.S. Mail to Agata A. Jastrzebska, 2nd Lt, 81TRW/PA 709 H Street, Bldg. 902, Keesler AFB, MS 39534.

Comments must be submitted within 30 days from the publication of this notice.

Privacy Advisory: Comments on this draft EA are requested. Public comments may be published in the final EA. Information provided will be used to improve the analysis of issues in the draft EA. Comments will be addressed in the final EA and made available to the public. However, only the names of individuals and specific comments will be disclosed.

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APPENDIX C: AIR CONFORMITY ANALYSIS AND GREENHOUSE GAS EMISSIONS

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

1. General Information: The Air Force's Air Conformity Applicability Model (ACAM) was used to perform a net change in emissions analysis to assess the potential air quality impact/s associated with the action. The analysis was performed in accordance with the Air Force Manual 32-7002, *Environmental Compliance and Pollution Prevention*; the *Environmental Impact Analysis Process* (EIAP, 32 CFR 989); the *General Conformity Rule* (GCR, 40 CFR 93 Subpart B); and the *USAF Air Quality Environmental Impact Analysis Process (EIAP) Guide*. This report provides a summary of the ACAM analysis.

Report generated with ACAM version: 5.0.24a

a. Action Location:

Base: KEESLER AFB
State: Mississippi
County(s): Harrison
Regulatory Area(s): NOT IN A REGULATORY AREA

b. Action Title: Implementation of 15 installation development and modernization projects at Keesler AFB in Biloxi, MS.

c. Project Number/s (if applicable):

d. Projected Action Start Date: 1 / 2026

e. Action Description:

The Department of the Air Force (DAF) has prepared this environmental assessment (EA) to evaluate potential environmental effects associated with implementing 15 installation development and modernization projects at Keesler Air Force Base (AFB) in Biloxi, MS. The Proposed Action would provide the facilities and infrastructure necessary for mission activities.

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

____ applicable
__X__ not applicable

Total reasonably foreseeable 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" (cCba.e., no net gain/loss in emission stabilized and the action is fully implemented) emissions. The ACAM analysis uses 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 the proposed Action's potential impacts to local air quality. The insignificance indicators are trivial (de minimis) rate thresholds that have been demonstrated to have little to no impact to air quality. These insignificance indicators are the 250 ton/yr Prevention of Significant Deterioration (PSD) major source threshold and 25 ton/yr for lead for actions occurring in areas that are "Attainment" (cCba.e., not exceeding any National Ambient Air Quality Standard (NAAQS)). These indicators do not define a significant impact; however, they do provide a threshold to identify actions that are insignificant. Any action with net emissions below the insignificance indicators for all criteria pollutants is considered so insignificant that the action will not cause or contribute to an exceedance on one or more NAAQS. For further detail on insignificance indicators, refer to *Level II, Air Quality Quantitative Assessment, Insignificance Indicators*.

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

The action's net emissions for every year through achieving steady state were compared against the Insignificance Indicators and are summarized below.

Analysis Summary:

2026

Pollutant	Action Emissions (ton/yr)	INSIGNIFICANCE INDICATOR	
		Indicator (ton/yr)	Exceedance (Yes or No)
NOT IN A REGULATORY AREA			
VOC	7.007	250	No
NOx	10.468	250	No
CO	12.396	250	No
SOx	0.022	250	No
PM 10	155.122	250	No
PM 2.5	0.382	250	No
Pb	0.000	25	No
NH3	0.024	250	No

2027

Pollutant	Action Emissions (ton/yr)	INSIGNIFICANCE INDICATOR	
		Indicator (ton/yr)	Exceedance (Yes or No)
NOT IN A REGULATORY AREA			
VOC	0.502	250	No
NOx	3.396	250	No
CO	1.602	250	No
SOx	0.356	250	No
PM 10	0.431	250	No
PM 2.5	0.431	250	No
Pb	0.000	25	No
NH3	0.000	250	No

2028 - (Steady State)

Pollutant	Action Emissions (ton/yr)	INSIGNIFICANCE INDICATOR	
		Indicator (ton/yr)	Exceedance (Yes or No)
NOT IN A REGULATORY AREA			
VOC	0.502	250	No
NOx	3.396	250	No
CO	1.602	250	No
SOx	0.356	250	No
PM 10	0.431	250	No
PM 2.5	0.431	250	No
Pb	0.000	25	No
NH3	0.000	250	No

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

Table C-1: ACAM Report ROAA Summary–Construction Emissions

EA PROJECT NUMBER, MAHD PROJECT NUMBER	PROJECT NAME	ACTION EMISSIONS (TPY)								
		VOC	NH_3	SO_x	NO_x	CO	PM_{10}	$PM_{2.5}$	Pb	Exceedance
PROJECT 1A, MAHG233000	Air Traffic Control Tower	1.109	0.013	0.009	4.564	5.991	2.933	0.170	0.00	No
PROJECT 1B, MAHG233000		1.109	0.013	0.009	4.564	5.991	2.933	0.170	0.00	No
PROJECT 2A, MAHG193000	Permanent Party Dormitories	2.534	0.013	0.007	3.697	4.904	15.966	0.137	0.00	No
PROJECT 2B, MAHG193000		2.534	0.013	0.007	3.697	4.904	15.966	0.137	0.00	No
PROJECT 3A, MAHG143000		2.534	0.013	0.007	3.697	4.904	15.966	0.137	0.00	No
PROJECT 3B, MAHG143000		2.534	0.013	0.007	3.697	4.904	15.966	0.137	0.00	No
PROJECT 4A, MAHG103000		2.534	0.013	0.007	3.697	4.904	15.966	0.137	0.00	No
PROJECT 4B, MAHG103000		2.534	0.013	0.007	3.697	4.904	15.966	0.137	0.00	No
PROJECT 5A, MAHG043002	New Student/ Fitness and Resiliency Center	1.416	0.011	0.010	4.526	6.619	21.012	0.148	0.00	No
PROJECT 5B, MAHG043002		1.416	0.011	0.010	4.526	6.619	20.900	0.148	0.00	No
PROJECT 5C, MAHG043002		1.416	0.011	0.010	4.526	6.619	20.800	0.145	0.00	No
PROJECT 6A, MAHG213000	Professional Military Education Center	1.017	0.001	0.031	3.593	5.073	7.060	0.123	0.00	No
PROJECT 6B, MAHG213000		0.970	0.010	0.012	3.071	4.236	6.834	0.110	0.00	No
PROJECT 7A, MAHG223000	Headquarters Center	0.923	0.010	0.009	4.228	5.823	5.266	0.152	0.00	No
PROJECT 7B, MAHG223000		0.923	0.010	0.009	4.228	5.823	5.266	0.152	0.00	No
PROJECT 8, MAHG083001	Training Facility-Hewes Hall Replacement	2.104	0.011	0.015	4.374	6.582	19.090	0.142	0.00	No
PROJECT 9, MAHG273001	Training Facility-Wolfe Hall Replacement	2.104	0.011	0.015	4.374	6.582	19.090	0.142	0.00	No
PROJECT 11, MAHG053002	Training Facility-Allee Hall Replacement	2.104	0.011	0.015	4.374	6.582	19.090	0.142	0.00	No
PROJECT 13A, MAHG113001	Transportation Complex*	0.949	0.012	0.009	3.806	5.840	10.797	0.114	0.00	No
PROJECT 14A, MAHG123002	Relocate 85 EIS Facility*	1.479	0.012	0.009	4.735	6.366	6.226	0.180	0.00	No
PROJECT 15A, MAHG093002	Visiting Quarters	1.004	0.013	0.014	3.976	6.139	11.694	0.122	0.00	No
PROJECT 15B, MAHG093002	Lodging Facilities	0.700	0.013	5.230	3.480	5.237	11.192	0.111	0.00	No
PROJECT 16A, MAHG103001		1.004	0.013	0.014	3.976	6.139	11.694	0.122	0.00	No
PROJECT 16B, MAHG103001		0.700	0.013	5.230	3.480	5.237	11.192	0.111	0.00	No
PROJECT 17A, MAHG201031	Resiliency Pool and Pool House*	1.458	0.013	0.009	4.576	5.999	3.011	0.172	0.00	No

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

None of the estimated annual net emissions associated with this action are above the insignificance indicators; therefore, the action will not cause or contribute to an exceedance of one or more NAAQSs and will have an insignificant impact on air quality. No further air assessment is needed.

AIR CONFORMITY APPLICABILITY MODEL REPORT
GREENHOUSE GAS (GHG) EMISSIONS

1. General Information: The Air Force's Air Conformity Applicability Model (ACAM) was used to perform a net change in emissions analysis to estimate GHG emissions associated with the action. The analysis was performed 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 *USAF Air Quality Environmental Impact Analysis Process (EIAP) Guide*. This report provides a summary of the GHG emissions analysis.

Report generated with ACAM version: 5.0.24a

a. Action Location:

Base: KEESLER AFB
State: Mississippi
County(s): Harrison
Regulatory Area(s): NOT IN A REGULATORY AREA

b. Action Title: Implementation of 15 installation development and modernization projects at Keesler AFB in Biloxi, MS.

c. Project Number/s (if applicable):

d. Projected Action Start Date: 1 / 2026

e. Action Description:

The Department of the Air Force (DAF) has prepared this environmental assessment (EA) to evaluate potential environmental effects associated with implementing 15 installation development and modernization projects at Keesler Air Force Base (AFB) in Biloxi, MS. The Proposed Action would provide the facilities and infrastructure necessary for mission activities.

2. Analysis: Total combined direct and indirect GHG emissions associated with the action were estimated through ACAM on a calendar-year basis from the action's start through the action's "steady state" (SS, net gain/loss in emission stabilized and the action is fully implemented) of emissions.

GHG Emissions Analysis Summary:

GHGs produced by fossil-fuel combustion are primarily carbon dioxide (CO2), methane (CH4), and nitrous oxide (N2O). These three GHGs represent more than 97 percent of all U.S. GHG emissions. Emissions of GHGs are typically quantified and regulated in units of CO2 equivalents (CO2e). The CO2e takes into account the global warming potential (GWP) of each GHG. The GWP is the measure of a particular GHG's ability to absorb solar radiation as well as its residence time within the atmosphere. The GWP allows comparison of global warming impacts between different gases; the higher the GWP, the more that gas contributes to climate change in comparison to CO2. All GHG emissions estimates were derived from various emission sources using the methods, algorithms, emission factors, and GWPs from the most current Air Emissions Guide for Air Force Stationary Sources, Air Emissions Guide for Air Force Mobile Sources, and/or Air Emissions Guide for Air Force Transitory Sources.

The Air Force has adopted the Prevention of Significant Deterioration (PSD) threshold for GHG of 75,000 ton per year (ton/yr) of CO2e (or 68,039 metric ton per year, mton/yr) as an indicator or "threshold of insignificance" for NEPA air quality impacts in all areas. This indicator does not define a significant impact; however, it provides a threshold to identify actions that are insignificant (de minimis, too trivial or minor to merit consideration). Actions with a net change in GHG (CO2e) emissions below the insignificance indicator (threshold) are considered too insignificant on a global scale to warrant any further analysis. Note that actions with a net change in GHG (CO2e) emissions above the insignificance indicator (threshold) are only considered potentially significant and require

further assessment to determine if the action poses a significant impact. For further detail on insignificance indicators see Level II, Air Quality Quantitative Assessment, Insignificance Indicators (April 2023).

The following table summarizes the action-related GHG emissions on a calendar-year basis through the projected steady state of the action.

Action-Related Annual GHG Emissions (mton/yr)						
YEAR	CO2	CH4	N2O	CO2e	Threshold	Exceedance
2026	2,316	0.0894988	0.04148424	2,331	68,039	No
2027	225	0.00903839	0.0018076	260	68,039	No
2028 [SS Year]	225	0.00903839	0.0018076	260	68,039	No

The following U.S. and State's GHG emissions estimates (next two tables) are based on a five-year average (2016 through 2020) of individual state-reported GHG emissions (Reference: State Climate Summaries 2022, NOAA National Centers for Environmental Information, National Oceanic and Atmospheric Administration. https://statesummaries.ncics.org/downloads/).

State's Annual GHG Emissions (mton/yr)				
YEAR	CO2	CH4	N2O	CO2e
2026	62,732,812	257,158	22,262	75,832,577
2027	62,732,812	257,158	22,262	75,832,577
2028 [SS Year]	62,732,812	257,158	22,262	75,832,577

U.S. Annual GHG Emissions (mton/yr)				
YEAR	CO2	CH4	N2O	CO2e
2026	5,136,454,179	25,626,912	1,500,708	6,251,695,230
2027	5,136,454,179	25,626,912	1,500,708	6,251,695,230
2028 [SS Year]	5,136,454,179	25,626,912	1,500,708	6,251,695,230

GHG Relative Significance Assessment:

A Relative Significance Assessment uses the rule of reason and the concept of proportionality along with the consideration of the affected area (Rtba.e., global, national, and regional) and the degree (intensity) of the proposed action's effects. The Relative Significance Assessment provides real-world context and allows for a reasoned choice against alternatives through a relative comparison analysis. The analysis weighs each alternative's annual net change in GHG emissions proportionally against (or relative to) global, national, and regional emissions.

The action's surroundings, circumstances, environment, and background (context associated with an action) provide the setting for evaluating the GHG intensity (impact significance). From an air quality perspective, context of an action is the local area's ambient air quality relative to meeting the NAAQSs, expressed as attainment, nonattainment, or maintenance areas (this designation is considered the attainment status). GHGs are non-hazardous to health at normal ambient concentrations and, at a cumulative global scale, action-related GHG emissions can only potentially cause warming of the climatic system. Therefore, the action-related GHGs generally have an insignificant impact to local air quality.

However, the affected area (context) of GHG/climate change is global. Therefore, the intensity or degree of the proposed action's GHG/climate change effects are gauged through the quantity of GHG associated with the action as compared to a baseline of the state, U.S., and global GHG inventories. Each action (or alternative) has significance, based on their annual net change in GHG emissions, in relation to or proportionally to the global, national, and regional annual GHG emissions.

To provide real-world context to the GHG and climate change effects on a global scale, an action's net change in GHG emissions is compared relative to the state (where the action will occur) and U.S. annual emissions. The

AIR CONFORMITY APPLICABILITY MODEL REPORT
GREENHOUSE GAS (GHG) EMISSIONS

following table provides a relative comparison of an action's net change in GHG emissions vs. state and U.S. projected GHG emissions for the same time period.

Total GHG Relative Significance (mton)					
		CO2	**CH4**	**N2O**	**CO2e**
2026-2028	State Total	188,198,435	771,475	66,785	227,497,732
2026-2028	U.S. Total	15,409,362,537	76,880,735	4,502,123	18,755,085,689
2026-2028	Action	2,765	0.107576	0.045099	2,850
Percent of State Totals		0.00146926%	0.00001394%	0.00006753%	0.00125276%
Percent of U.S. Totals		0.00001794%	0.00000014%	0.00000100%	0.00001520%

From a global context, the action's total GHG percentage of total global GHG for the same time period is: 0.00000204%.*

* Global value based on the U.S. emitting 13.4% of all global GHG annual emissions (2018 Emissions Data, Center for Climate and Energy Solutions, accessed 7-6-2023, https://www.c2es.org/content/international-emissions).

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

1. General Information

- Action Location
Base: KEESLER AFB
State: Mississippi
County(s): Harrison
Regulatory Area(s): NOT IN A REGULATORY AREA

- Action Title: Implementation of 15 installation development and modernization projects at Keesler AFB in Biloxi, MS.

- Project Number/s (if applicable):

- Projected Action Start Date: 1 / 2026

- Action Purpose and Need:
The purpose of the Proposed Action is to maintain Keesler AFB's mission capabilities through for development and modernization of its facilities.

- Action Description:
The Department of the Air Force (DAF) has prepared this environmental assessment (EA) to evaluate potential environmental effects associated with implementing 15 installation development and modernization projects at Keesler Air Force Base (AFB) in Biloxi, MS. The Proposed Action would provide the facilities and infrastructure necessary for mission activities.

Report generated with ACAM version: 5.0.24a

- Activity List:

Activity Type		Activity Title
2.	Construction / Demolition	Construction, demolition and remediation; land disturbance; and operations
3.	Emergency Generator	135 HP Emergency Generator
4.	Emergency Generator	800 HP Emergency Generator ATC
5.	Tanks	1,000 Gallon AST

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

2. Construction / Demolition

2.1 General Information & Timeline Assumptions

- Activity Location
County: Harrison
Regulatory Area(s): NOT IN A REGULATORY AREA

- Activity Title: Construction, demolition and remediation; land disturbance; and operations

- Activity Description:
The Department of the Air Force (DAF) has prepared this environmental assessment (EA) to evaluate potential environmental effects associated with implementing 15 installation development and modernization projects at Keesler Air Force Base (AFB) in Biloxi, MS. The Proposed Action would provide the facilities and infrastructure necessary for mission activities.

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

- Activity Start Date
Start Month: 1
Start Month: 2026

- Activity End Date
Indefinite: False
End Month: 12
End Month: 2026

- Activity Emissions:

Pollutant	Total Emissions (TONs)
VOC	7.007022
SO_x	0.022373
NO_x	10.467616
CO	12.395834

Pollutant	Total Emissions (TONs)
PM 10	155.122211
PM 2.5	0.381719
Pb	0.000000
NH_3	0.023632

- Global Scale Activity Emissions of Greenhouse Gasses:

Pollutant	Total Emissions (TONs)
CH_4	0.098656
N_2O	0.045729

Pollutant	Total Emissions (TONs)
CO_2	2553.067381
CO_2e	2569.157738

2.1 Demolition Phase

2.1.1 Demolition Phase Timeline Assumptions

- Phase Start Date
Start Month: 1
Start Quarter: 1
Start Year: 2026

- Phase Duration
Number of Month: 12
Number of Days: 0

2.1.2 Demolition Phase Assumptions

- General Demolition Information
Area of Building to be demolished (ft^2): 532471
Height of Building to be demolished (ft): 24

- Default Settings Used: Yes

- Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Concrete/Industrial Saws Composite	1	8
Excavators Composite	3	8
Rubber Tired Dozers Composite	2	8
Tractors/Loaders/Backhoes Composite	2	6

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

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

- Vehicle Exhaust Vehicle Mixture (%)

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

- Worker Trips

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

- Worker Trips Vehicle Mixture (%)

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

2.1.3 Demolition Phase Emission Factor(s)

- Construction Exhaust Criteria Pollutant Emission Factors (g/hp-hour) (default)

Concrete/Industrial Saws Composite [HP: 33] [LF: 0.73]						
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**
Emission Factors	0.41257	0.00743	3.52633	4.31513	0.08509	0.07828
Excavators Composite [HP: 36] [LF: 0.38]						
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**
Emission Factors	0.39317	0.00542	3.40690	4.22083	0.09860	0.09071
Rubber Tired Dozers Composite [HP: 367] [LF: 0.4]						
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**
Emission Factors	0.35280	0.00491	3.22260	2.72624	0.14205	0.13069
Tractors/Loaders/Backhoes Composite [HP: 84] [LF: 0.37]						
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**
Emission Factors	0.18406	0.00489	1.88476	3.48102	0.06347	0.05839

- Construction Exhaust Greenhouse Gasses Pollutant Emission Factors (g/hp-hour) (default)

Concrete/Industrial Saws Composite [HP: 33] [LF: 0.73]				
	CH_4	**N_2O**	**CO_2**	**CO_2e**
Emission Factors	0.02330	0.00466	574.35707	576.32812
Excavators Composite [HP: 36] [LF: 0.38]				
	CH_4	**N_2O**	**CO_2**	**CO_2e**
Emission Factors	0.02381	0.00476	587.02896	589.04350
Rubber Tired Dozers Composite [HP: 367] [LF: 0.4]				
	CH_4	**N_2O**	**CO_2**	**CO_2e**
Emission Factors	0.02160	0.00432	532.54993	534.37751
Tractors/Loaders/Backhoes Composite [HP: 84] [LF: 0.37]				
	CH_4	**N_2O**	**CO_2**	**CO_2e**
Emission Factors	0.02149	0.00430	529.70686	531.52468

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

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	NH_3
LDGV	0.30530	0.00266	0.12387	4.16339	0.02080	0.00693	0.04882
LDGT	0.23715	0.00335	0.17749	3.81649	0.02086	0.00748	0.04132
HDGV	0.74727	0.00722	0.60016	9.70456	0.04542	0.02230	0.08561
LDDV	0.12023	0.00125	0.17323	6.03983	0.02158	0.00744	0.01600
LDDT	0.17301	0.00127	0.30719	4.13199	0.02095	0.00826	0.01587
HDDV	0.10890	0.00428	2.42841	1.51561	0.14931	0.07391	0.06647
MC	2.53871	0.00333	0.62646	11.75519	0.03025	0.02107	0.05553

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

	CH_4	N_2O	CO_2	CO_2e
LDGV	0.01535	0.00511	317.33860	319.12207
LDGT	0.01557	0.00676	400.03678	402.26448
HDGV	0.04471	0.02305	861.33469	868.69468
LDDV	0.05092	0.00065	369.60346	371.20265
LDDT	0.02693	0.00093	376.15115	377.15110
HDDV	0.02244	0.16388	1274.98864	1319.04655
MC	0.09626	0.00264	393.10521	396.50058

2.1.4 Demolition Phase Formula(s)

- Fugitive Dust Emissions per Phase
$PM10_{FD} = (0.00042 * BA * BH) / 2000$

$PM10_{FD}$: Fugitive Dust PM 10 Emissions (TONs)
0.00042: Emission Factor (lb/ft^3)
BA: Area of Building to be demolished (ft^2)
BH: Height of Building to be demolished (ft)
2000: Conversion Factor pounds to tons

- Construction Exhaust Emissions per Phase
$CEE_{POL} = (NE * WD * H * HP * LF * EF_{POL} * 0.002205) / 2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
HP: Equipment Horsepower
LF: Equipment Load Factor
EF_{POL}: Emission Factor for Pollutant (g/hp-hour)
0.002205: Conversion Factor grams to pounds
2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase
$VMT_{VE} = BA * BH * (1 / 27) * 0.25 * (1 / HC) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
BA: Area of Building being demolish (ft^2)
BH: Height of Building being demolish (ft)
(1 / 27): Conversion Factor cubic feet to cubic yards ($1\ yd^3 / 27\ ft^3$)
0.25: Volume reduction factor (material reduced by 75% to account for air space)
HC: Average Hauling Truck Capacity (yd^3)
(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

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

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

- Worker Trips Emissions per Phase

VMT_{WT} = WD * WT * 1.25 * NE

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

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

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

2.2 Site Grading Phase

2.2.1 Site Grading Phase Timeline Assumptions

- Phase Start Date
Start Month: 1
Start Quarter: 1
Start Year: 2026

- Phase Duration
Number of Month: 12
Number of Days: 0

2.2.2 Site Grading Phase Assumptions

- General Site Grading Information
Area of Site to be Graded (ft^2): 1233490
Amount of Material to be Hauled On-Site (yd^3): 3000
Amount of Material to be Hauled Off-Site (yd^3): 1500

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

- Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Excavators Composite	1	8
Graders Composite	1	8
Other Construction Equipment Composite	1	8
Rubber Tired Dozers Composite	1	8
Scrapers Composite	3	8
Tractors/Loaders/Backhoes Composite	3	8

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

- Vehicle Exhaust Vehicle Mixture (%)

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

- Worker Trips

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

- Worker Trips Vehicle Mixture (%)

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

2.2.3 Site Grading Phase Emission Factor(s)

- Construction Exhaust Criteria Pollutant Emission Factors (g/hp-hour) (default)

Excavators Composite [HP: 36] [LF: 0.38]						
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**
Emission Factors	0.39317	0.00542	3.40690	4.22083	0.09860	0.09071
Graders Composite [HP: 148] [LF: 0.41]						
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**
Emission Factors	0.31292	0.00490	2.52757	3.39734	0.14041	0.12918
Other Construction Equipment Composite [HP: 82] [LF: 0.42]						
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**
Emission Factors	0.28160	0.00487	2.73375	3.50416	0.15811	0.14546
Rubber Tired Dozers Composite [HP: 367] [LF: 0.4]						
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**
Emission Factors	0.35280	0.00491	3.22260	2.72624	0.14205	0.13069
Scrapers Composite [HP: 423] [LF: 0.48]						
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**
Emission Factors	0.19606	0.00488	1.74061	1.53912	0.06788	0.06245
Tractors/Loaders/Backhoes Composite [HP: 84] [LF: 0.37]						
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**
Emission Factors	0.18406	0.00489	1.88476	3.48102	0.06347	0.05839

- Construction Exhaust Greenhouse Gasses Pollutant Emission Factors (g/hp-hour) (default)

Excavators Composite [HP: 36] [LF: 0.38]				
	CH_4	**N_2O**	**CO_2**	**CO_2e**
Emission Factors	0.02381	0.00476	587.02896	589.04350
Graders Composite [HP: 148] [LF: 0.41]				
	CH_4	**N_2O**	**CO_2**	**CO_2e**
Emission Factors	0.02153	0.00431	530.81500	532.63663
Other Construction Equipment Composite [HP: 82] [LF: 0.42]				
	CH_4	**N_2O**	**CO_2**	**CO_2e**
Emission Factors	0.02140	0.00428	527.54121	529.35159
Rubber Tired Dozers Composite [HP: 367] [LF: 0.4]				
	CH_4	**N_2O**	**CO_2**	**CO_2e**
Emission Factors	0.02160	0.00432	532.54993	534.37751
Scrapers Composite [HP: 423] [LF: 0.48]				
	CH_4	**N_2O**	**CO_2**	**CO_2e**
Emission Factors	0.02145	0.00429	528.85412	530.66901
Tractors/Loaders/Backhoes Composite [HP: 84] [LF: 0.37]				
	CH_4	**N_2O**	**CO_2**	**CO_2e**
Emission Factors	0.02149	0.00430	529.70686	531.52468

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

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	NH_3
LDGV	0.30530	0.00266	0.12387	4.16339	0.02080	0.00693	0.04882
LDGT	0.23715	0.00335	0.17749	3.81649	0.02086	0.00748	0.04132
HDGV	0.74727	0.00722	0.60016	9.70456	0.04542	0.02230	0.08561
LDDV	0.12023	0.00125	0.17323	6.03983	0.02158	0.00744	0.01600
LDDT	0.17301	0.00127	0.30719	4.13199	0.02095	0.00826	0.01587
HDDV	0.10890	0.00428	2.42841	1.51561	0.14931	0.07391	0.06647
MC	2.53871	0.00333	0.62646	11.75519	0.03025	0.02107	0.05553

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

	CH_4	N_2O	CO_2	CO_2e
LDGV	0.01535	0.00511	317.33860	319.12207
LDGT	0.01557	0.00676	400.03678	402.26448
HDGV	0.04471	0.02305	861.33469	868.69468
LDDV	0.05092	0.00065	369.60346	371.20265
LDDT	0.02693	0.00093	376.15115	377.15110
HDDV	0.02244	0.16388	1274.98864	1319.04655
MC	0.09626	0.00264	393.10521	396.50058

2.2.4 Site Grading Phase Formula(s)

- Fugitive Dust Emissions per Phase

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

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

- Construction Exhaust Emissions per Phase

$CEE_{POL} = (NE * WD * H * HP * LF * EF_{POL} * 0.002205) / 2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
HP: Equipment Horsepower
LF: Equipment Load Factor
EF_{POL}: Emission Factor for Pollutant (g/hp-hour)
0.002205: Conversion Factor grams to pounds
2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

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

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

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

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

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

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

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

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

2.3 Trenching/Excavating Phase

2.3.1 Trenching / Excavating Phase Timeline Assumptions

- Phase Start Date
Start Month: 1
Start Quarter: 1
Start Year: 2026

- Phase Duration
Number of Month: 12
Number of Days: 0

2.3.2 Trenching / Excavating Phase Assumptions

- General Trenching/Excavating Information
Area of Site to be Trenched/Excavated (ft^2): 40000
Amount of Material to be Hauled On-Site (yd^3): 0
Amount of Material to be Hauled Off-Site (yd^3): 0

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

- Construction Exhaust (default)

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

- Vehicle Exhaust

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

- Vehicle Exhaust Vehicle Mixture (%)

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

- Worker Trips

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

- Worker Trips Vehicle Mixture (%)

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

2.3.3 Trenching / Excavating Phase Emission Factor(s)

- Construction Exhaust Criteria Pollutant Emission Factors (g/hp-hour) (default)

Excavators Composite [HP: 36] [LF: 0.38]						
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**
Emission Factors	0.39317	0.00542	3.40690	4.22083	0.09860	0.09071
Other General Industrial Equipmen Composite [HP: 35] [LF: 0.34]						
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**
Emission Factors	0.45335	0.00542	3.58824	4.59368	0.11309	0.10404
Tractors/Loaders/Backhoes Composite [HP: 84] [LF: 0.37]						
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**
Emission Factors	0.18406	0.00489	1.88476	3.48102	0.06347	0.05839

- Construction Exhaust Greenhouse Gasses Pollutant Emission Factors (g/hp-hour) (default)

Excavators Composite [HP: 36] [LF: 0.38]				
	CH_4	**N_2O**	**CO_2**	**CO_2e**
Emission Factors	0.02381	0.00476	587.02896	589.04350
Other General Industrial Equipmen Composite [HP: 35] [LF: 0.34]				
	CH_4	**N_2O**	**CO_2**	**CO_2e**
Emission Factors	0.02385	0.00477	587.87714	589.89459
Tractors/Loaders/Backhoes Composite [HP: 84] [LF: 0.37]				
	CH_4	**N_2O**	**CO_2**	**CO_2e**
Emission Factors	0.02149	0.00430	529.70686	531.52468

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

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	NH_3
LDGV	0.30530	0.00266	0.12387	4.16339	0.02080	0.00693	0.04882
LDGT	0.23715	0.00335	0.17749	3.81649	0.02086	0.00748	0.04132
HDGV	0.74727	0.00722	0.60016	9.70456	0.04542	0.02230	0.08561
LDDV	0.12023	0.00125	0.17323	6.03983	0.02158	0.00744	0.01600
LDDT	0.17301	0.00127	0.30719	4.13199	0.02095	0.00826	0.01587
HDDV	0.10890	0.00428	2.42841	1.51561	0.14931	0.07391	0.06647
MC	2.53871	0.00333	0.62646	11.75519	0.03025	0.02107	0.05553

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

	CH_4	N_2O	CO_2	CO_2e
LDGV	0.01535	0.00511	317.33860	319.12207
LDGT	0.01557	0.00676	400.03678	402.26448

HDGV	0.04471	0.02305	861.33469	868.69468
LDDV	0.05092	0.00065	369.60346	371.20265
LDDT	0.02693	0.00093	376.15115	377.15110
HDDV	0.02244	0.16388	1274.98864	1319.04655
MC	0.09626	0.00264	393.10521	396.50058

2.3.4 Trenching / Excavating Phase Formula(s)

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

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

- Construction Exhaust Emissions per Phase
$CEE_{POL} = (NE * WD * H * HP * LF * EF_{POL} * 0.002205) / 2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
HP: Equipment Horsepower
LF: Equipment Load Factor
EF_{POL}: Emission Factor for Pollutant (g/hp-hour)
0.002205: Conversion Factor grams to pounds
2000: Conversion Factor pounds to tons

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

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

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

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

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

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)

1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

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

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

2.4 Building Construction Phase

2.4.1 Building Construction Phase Timeline Assumptions

- Phase Start Date
Start Month: 1
Start Quarter: 1
Start Year: 2026

- Phase Duration
Number of Month: 12
Number of Days: 0

2.4.2 Building Construction Phase Assumptions

- General Building Construction Information
Building Category: Commercial or Retail
Area of Building (ft^2): 1200000
Height of Building (ft): 2
Number of Units: N/A

- Building Construction Default Settings
Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Cranes Composite	1	7
Forklifts Composite	3	8
Generator Sets Composite	1	8
Tractors/Loaders/Backhoes Composite	3	7
Welders Composite	1	8

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

- Vehicle Exhaust Vehicle Mixture (%)

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

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

- Worker Trips Vehicle Mixture (%)

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

- Vendor Trips

Average Vendor Round Trip Commute (mile): 40 (default)

- Vendor Trips Vehicle Mixture (%)

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

2.4.3 Building Construction Phase Emission Factor(s)

- Construction Exhaust Criteria Pollutant Emission Factors (g/hp-hour) (default)

Cranes Composite [HP: 367] [LF: 0.29]						
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**
Emission Factors	0.19758	0.00487	1.83652	1.63713	0.07527	0.06925
Forklifts Composite [HP: 82] [LF: 0.2]						
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**
Emission Factors	0.24594	0.00487	2.34179	3.57902	0.11182	0.10287
Generator Sets Composite [HP: 14] [LF: 0.74]						
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**
Emission Factors	0.53947	0.00793	4.32399	2.85973	0.17412	0.16019
Tractors/Loaders/Backhoes Composite [HP: 84] [LF: 0.37]						
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**
Emission Factors	0.18406	0.00489	1.88476	3.48102	0.06347	0.05839
Welders Composite [HP: 46] [LF: 0.45]						
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**
Emission Factors	0.46472	0.00735	3.57020	4.49314	0.09550	0.08786

- Construction Exhaust Greenhouse Gasses Pollutant Emission Factors (g/hp-hour) (default)

Cranes Composite [HP: 367] [LF: 0.29]				
	CH_4	**N_2O**	**CO_2**	**CO_2e**
Emission Factors	0.02140	0.00428	527.46069	529.27080
Forklifts Composite [HP: 82] [LF: 0.2]				
	CH_4	**N_2O**	**CO_2**	**CO_2e**
Emission Factors	0.02138	0.00428	527.09717	528.90603
Generator Sets Composite [HP: 14] [LF: 0.74]				
	CH_4	**N_2O**	**CO_2**	**CO_2e**
Emission Factors	0.02305	0.00461	568.32694	570.27730
Tractors/Loaders/Backhoes Composite [HP: 84] [LF: 0.37]				
	CH_4	**N_2O**	**CO_2**	**CO_2e**
Emission Factors	0.02149	0.00430	529.70686	531.52468
Welders Composite [HP: 46] [LF: 0.45]				
	CH_4	**N_2O**	**CO_2**	**CO_2e**
Emission Factors	0.02305	0.00461	568.29068	570.24091

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

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	NH_3
LDGV	0.30530	0.00266	0.12387	4.16339	0.02080	0.00693	0.04882
LDGT	0.23715	0.00335	0.17749	3.81649	0.02086	0.00748	0.04132
HDGV	0.74727	0.00722	0.60016	9.70456	0.04542	0.02230	0.08561
LDDV	0.12023	0.00125	0.17323	6.03983	0.02158	0.00744	0.01600

LDDT	0.17301	0.00127	0.30719	4.13199	0.02095	0.00826	0.01587
HDDV	0.10890	0.00428	2.42841	1.51561	0.14931	0.07391	0.06647
MC	2.53871	0.00333	0.62646	11.75519	0.03025	0.02107	0.05553

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

	CH_4	N_2O	CO_2	CO_2e
LDGV	0.01535	0.00511	317.33860	319.12207
LDGT	0.01557	0.00676	400.03678	402.26448
HDGV	0.04471	0.02305	861.33469	868.69468
LDDV	0.05092	0.00065	369.60346	371.20265
LDDT	0.02693	0.00093	376.15115	377.15110
HDDV	0.02244	0.16388	1274.98864	1319.04655
MC	0.09626	0.00264	393.10521	396.50058

2.4.4 Building Construction Phase Formula(s)

- Construction Exhaust Emissions per Phase

$CEE_{POL} = (NE * WD * H * HP * LF * EF_{POL} * 0.002205) / 2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
HP: Equipment Horsepower
LF: Equipment Load Factor
EF_{POL}: Emission Factor for Pollutant (g/hp-hour)
0.002205: Conversion Factor grams to pounds
2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

$VMT_{VE} = BA * BH * (0.32 / 1000) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
BA: Area of Building (ft^2)
BH: Height of Building (ft)
(0.32 / 1000): Conversion Factor ft^3 to trips (0.32 trip / 1000 ft^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

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

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

- Worker Trips Emissions per Phase

$VMT_{WT} = WD * WT * 1.25 * NE$

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

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

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

- Vender Trips Emissions per Phase
$VMT_{VT} = BA * BH * (0.05 / 1000) * HT$

VMT_{VT}: Vender Trips Vehicle Miles Travel (miles)
BA: Area of Building (ft^2)
BH: Height of Building (ft)
(0.05 / 1000): Conversion Factor ft^3 to trips (0.05 trip / 1000 ft^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

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

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

2.5 Architectural Coatings Phase

2.5.1 Architectural Coatings Phase Timeline Assumptions

- Phase Start Date
Start Month: 1
Start Quarter: 1
Start Year: 2026

- Phase Duration
Number of Month: 12
Number of Days: 0

2.5.2 Architectural Coatings Phase Assumptions

- General Architectural Coatings Information
Building Category: Non-Residential
Total Square Footage (ft^2): 500000
Number of Units: N/A

- Architectural Coatings Default Settings
Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

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

- Worker Trips Vehicle Mixture (%)

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

2.5.3 Architectural Coatings Phase Emission Factor(s)

- Worker Trips Criteria Pollutant Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	NH_3
LDGV	0.30530	0.00266	0.12387	4.16339	0.02080	0.00693	0.04882
LDGT	0.23715	0.00335	0.17749	3.81649	0.02086	0.00748	0.04132
HDGV	0.74727	0.00722	0.60016	9.70456	0.04542	0.02230	0.08561
LDDV	0.12023	0.00125	0.17323	6.03983	0.02158	0.00744	0.01600
LDDT	0.17301	0.00127	0.30719	4.13199	0.02095	0.00826	0.01587
HDDV	0.10890	0.00428	2.42841	1.51561	0.14931	0.07391	0.06647
MC	2.53871	0.00333	0.62646	11.75519	0.03025	0.02107	0.05553

- Worker Trips Greenhouse Gasses Emission Factors (grams/mile)

	CH_4	N_2O	CO_2	CO_2e
LDGV	0.01535	0.00511	317.33860	319.12207
LDGT	0.01557	0.00676	400.03678	402.26448
HDGV	0.04471	0.02305	861.33469	868.69468
LDDV	0.05092	0.00065	369.60346	371.20265
LDDT	0.02693	0.00093	376.15115	377.15110
HDDV	0.02244	0.16388	1274.98864	1319.04655
MC	0.09626	0.00264	393.10521	396.50058

2.5.4 Architectural Coatings Phase Formula(s)

- Worker Trips Emissions per Phase

$VMT_{WT} = (1 * WT * PA) / 800$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
1: Conversion Factor man days to trips (1 trip / 1 man * day)
WT: Average Worker Round Trip Commute (mile)
PA: Paint Area (ft^2)
800: Conversion Factor square feet to man days (1 ft^2 / 1 man * day)

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

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

- Off-Gassing Emissions per Phase

$VOC_{AC} = (AB * 2.0 * 0.0116) / 2000.0$

VOC_{AC}: Architectural Coating VOC Emissions (TONs)
BA: Area of Building (ft^2)
2.0: Conversion Factor total area to coated area (2.0 ft^2 coated area / total area)
0.0116: Emission Factor (lb/ft^2)
2000: Conversion Factor pounds to tons

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2.6 Paving Phase

2.6.1 Paving Phase Timeline Assumptions

- Phase Start Date
Start Month: 1
Start Quarter: 1
Start Year: 2026

- Phase Duration
Number of Month: 12
Number of Days: 0

2.6.2 Paving Phase Assumptions

- General Paving Information
Paving Area (ft^2): 241500

- Paving Default Settings
Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Cement and Mortar Mixers Composite	4	6
Pavers Composite	1	8
Paving Equipment Composite	2	6
Rollers Composite	2	6
Tractors/Loaders/Backhoes Composite	1	7

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

- Vehicle Exhaust Vehicle Mixture (%)

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

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

- Worker Trips Vehicle Mixture (%)

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

2.6.3 Paving Phase Emission Factor(s)

- Construction Exhaust Criteria Pollutant Emission Factors (g/hp-hour) (default)

Cement and Mortar Mixers Composite [HP: 10] [LF: 0.56]						
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5
Emission Factors	0.55280	0.00854	4.19778	3.25481	0.16332	0.15025
Pavers Composite [HP: 81] [LF: 0.42]						
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5
Emission Factors	0.23717	0.00486	2.53335	3.43109	0.12904	0.11872

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Paving Equipment Composite [HP: 89] [LF: 0.36]						
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**
Emission Factors	0.18995	0.00487	2.06537	3.40278	0.08031	0.07388
Rollers Composite [HP: 36] [LF: 0.38]						
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**
Emission Factors	0.54202	0.00541	3.61396	4.09268	0.15387	0.14156
Tractors/Loaders/Backhoes Composite [HP: 84] [LF: 0.37]						
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**
Emission Factors	0.18406	0.00489	1.88476	3.48102	0.06347	0.05839

- Construction Exhaust Greenhouse Gasses Pollutant Emission Factors (g/hp-hour) (default)

Cement and Mortar Mixers Composite [HP: 10] [LF: 0.56]				
	CH_4	**N_2O**	**CO_2**	**CO_2e**
Emission Factors	0.02313	0.00463	570.16326	572.11992
Pavers Composite [HP: 81] [LF: 0.42]				
	CH_4	**N_2O**	**CO_2**	**CO_2e**
Emission Factors	0.02133	0.00427	525.80405	527.60847
Paving Equipment Composite [HP: 89] [LF: 0.36]				
	CH_4	**N_2O**	**CO_2**	**CO_2e**
Emission Factors	0.02141	0.00428	527.70636	529.51732
Rollers Composite [HP: 36] [LF: 0.38]				
	CH_4	**N_2O**	**CO_2**	**CO_2e**
Emission Factors	0.02381	0.00476	586.91372	588.92786
Tractors/Loaders/Backhoes Composite [HP: 84] [LF: 0.37]				
	CH_4	**N_2O**	**CO_2**	**CO_2e**
Emission Factors	0.02149	0.00430	529.70686	531.52468

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

	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**NH_3**
LDGV	0.30530	0.00266	0.12387	4.16339	0.02080	0.00693	0.04882
LDGT	0.23715	0.00335	0.17749	3.81649	0.02086	0.00748	0.04132
HDGV	0.74727	0.00722	0.60016	9.70456	0.04542	0.02230	0.08561
LDDV	0.12023	0.00125	0.17323	6.03983	0.02158	0.00744	0.01600
LDDT	0.17301	0.00127	0.30719	4.13199	0.02095	0.00826	0.01587
HDDV	0.10890	0.00428	2.42841	1.51561	0.14931	0.07391	0.06647
MC	2.53871	0.00333	0.62646	11.75519	0.03025	0.02107	0.05553

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

	CH_4	**N_2O**	**CO_2**	**CO_2e**
LDGV	0.01535	0.00511	317.33860	319.12207
LDGT	0.01557	0.00676	400.03678	402.26448
HDGV	0.04471	0.02305	861.33469	868.69468
LDDV	0.05092	0.00065	369.60346	371.20265
LDDT	0.02693	0.00093	376.15115	377.15110
HDDV	0.02244	0.16388	1274.98864	1319.04655
MC	0.09626	0.00264	393.10521	396.50058

2.6.4 Paving Phase Formula(s)

- Construction Exhaust Emissions per Phase

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

- Construction Exhaust Emissions per Phase

$CEE_{POL} = (NE * WD * H * HP * LF * EF_{POL} * 0.002205) / 2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
HP: Equipment Horsepower
LF: Equipment Load Factor
EF_{POL}: Emission Factor for Pollutant (g/hp-hour)
0.002205: Conversion Factor grams to pounds
2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

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

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
PA: Paving Area (ft^2)
0.25: Thickness of Paving Area (ft)
(1 / 27): Conversion Factor cubic feet to cubic yards (1 yd^3 / 27 ft^3)
HC: Average Hauling Truck Capacity (yd^3)
(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

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

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

- Worker Trips Emissions per Phase

$VMT_{WT} = WD * WT * 1.25 * NE$

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

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

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

- Off-Gassing Emissions per Phase

$VOC_P = (2.62 * PA) / 43560 / 2000$

VOC_P: Paving VOC Emissions (TONs)
2.62: Emission Factor (lb/acre)
PA: Paving Area (ft^2)

43560: Conversion Factor square feet to acre (43560 ft2 / acre)^2 / acre)
2000: Conversion Factor square pounds to TONs (2000 lb / TON)

3. Emergency Generator

3.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add

- Activity Location
County: Harrison
Regulatory Area(s): NOT IN A REGULATORY AREA

- Activity Title: 135 HP Emergency Generator

- Activity Description:
135 HP Emergency Generator

- Activity Start Date
Start Month: 1
Start Year: 2027

- Activity End Date
Indefinite: Yes
End Month: N/A
End Year: N/A

- Activity Emissions of Criteria Pollutants:

Pollutant	Emissions Per Year (TONs)
VOC	0.421848
SO_x	0.355320
NO_x	1.738800
CO	1.161216

Pollutant	Emissions Per Year (TONs)
PM 10	0.379512
PM 2.5	0.379512
Pb	0.000000
NH_3	0.000000

- Global Scale Activity Emissions of Greenhouse Gasses:

Pollutant	Emissions Per Year (TONs)
CH_4	0.007000
N_2O	0.001400

Pollutant	Emissions Per Year (TONs)
CO_2	173.880000
CO_2e	201.096000

3.2 Emergency Generator Assumptions

- Emergency Generator
Type of Fuel used in Emergency Generator: Diesel
Number of Emergency Generators: 14

- Default Settings Used: No

- Emergency Generators Consumption
Emergency Generator's Horsepower: 135
Average Operating Hours Per Year (hours): 160

3.3 Emergency Generator Emission Factor(s)

- Emergency Generators Criteria Pollutant Emission Factor (lb/hp-hr)

VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3
0.00279	0.00235	0.0115	0.00768	0.00251	0.00251		

- Emergency Generators Greenhouse Gasses Pollutant Emission Factor (lb/hp-hr)

CH_4	N_2O	CO_2	CO_2e
0.000046297	0.000009259	1.15	1.33

3.4 Emergency Generator Formula(s)

- Emergency Generator Emissions per Year

$AE_{POL} = (NGEN * HP * OT * EF_{POL}) / 2000$

AE_{POL}: Activity Emissions (TONs per Year)
NGEN: Number of Emergency Generators
HP: Emergency Generator's Horsepower (hp)
OT: Average Operating Hours Per Year (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hp-hr)

4. Emergency Generator

4.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add

- Activity Location
County: Harrison
Regulatory Area(s): NOT IN A REGULATORY AREA

- Activity Title: 800 HP Emergency Generator ATC

- Activity Description:
800 HP Emergency Generator ATC

- Activity Start Date
Start Month: 1
Start Year: 2027

- Activity End Date
Indefinite: Yes
End Month: N/A
End Year: N/A

- Activity Emissions of Criteria Pollutants:

Pollutant	Emissions Per Year (TONs)
VOC	0.045824
SO_x	0.000800
NO_x	1.657600
CO	0.440320

Pollutant	Emissions Per Year (TONs)
PM 10	0.051776
PM 2.5	0.051776
Pb	0.000000
NH_3	0.000000

- Global Scale Activity Emissions of Greenhouse Gasses:

Pollutant	Emissions Per Year (TONs)
CH_4	0.002963

Pollutant	Emissions Per Year (TONs)
CO_2	73.600000

N_2O	0.000593		CO_2e	85.120000

4.2 Emergency Generator Assumptions

- Emergency Generator
Type of Fuel used in Emergency Generator: Diesel
Number of Emergency Generators: 1

- Default Settings Used: No

- Emergency Generators Consumption
Emergency Generator's Horsepower: 800
Average Operating Hours Per Year (hours): 160

4.3 Emergency Generator Emission Factor(s)

- Emergency Generators Criteria Pollutant Emission Factor (lb/hp-hr)

VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3
0.000716	0.0000125	0.0259	0.00688	0.000809	0.000809		

- Emergency Generators Greenhouse Gasses Pollutant Emission Factor (lb/hp-hr)

CH_4	N_2O	CO_2	CO_2e
0.000046297	0.000009259	1.15	1.33

4.4 Emergency Generator Formula(s)

- Emergency Generator Emissions per Year
$AE_{POL} = (NGEN * HP * OT * EF_{POL}) / 2000$

AE_{POL}: Activity Emissions (TONs per Year)
NGEN: Number of Emergency Generators
HP: Emergency Generator's Horsepower (hp)
OT: Average Operating Hours Per Year (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hp-hr)

5. Tanks

5.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add

- Activity Location
County: Harrison
Regulatory Area(s): NOT IN A REGULATORY AREA

- Activity Title: 1,000 Gallon AST

- Activity Description:
1,000 Gallon AST

- Activity Start Date
Start Month: 1
Start Year: 2027

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- Activity End Date

Indefinite: Yes
End Month: N/A
End Year: N/A

- Activity Emissions of Criteria Pollutants:

Pollutant	Emissions Per Year (TONs)
VOC	0.034275
SO_x	0.000000
NO_x	0.000000
CO	0.000000

Pollutant	Emissions Per Year (TONs)
PM 10	0.000000
PM 2.5	0.000000
Pb	0.000000
NH_3	0.000000

- Global Scale Activity Emissions of Greenhouse Gasses:

Pollutant	Emissions Per Year (TONs)
CH_4	0.000000
N_2O	0.000000

Pollutant	Emissions Per Year (TONs)
CO_2	0.000000
CO_2e	0.000000

5.2 Tanks Assumptions

- Chemical

Chemical Name: Jet kerosene (JP-5, JP-8 or Jet-A)
Chemical Category: Petroleum Distillates
Chemical Density: 7
Vapor Molecular Weight (lb/lb-mole): 130
Stock Vapor Density (lb/ft^3): 0.000170775135930213
Vapor Pressure: 0.00725
Vapor Space Expansion Factor (dimensionless): 0.068

- Tank

Type of Tank: Horizontal Tank
Tank Length (ft): 20
Tank Diameter (ft): 40
Annual Net Throughput (gallon/year): 10000

5.3 Tank Formula(s)

- Vapor Space Volume

VSV = (PI / 4) * D^2 * L / 2

VSV: Vapor Space Volume (ft^3)
PI: PI Math Constant
D^2: Tank Diameter (ft)
L: Tank Length (ft)
2: Convertion Factor (Vapor Space Volume is assumed to be one-half of the tank volume)

- Vented Vapor Saturation Factor

VVSF = 1 / (1 + (0.053 * VP * L / 2))

VVSF: Vented Vapor Saturation Factor (dimensionless)
0.053: Constant
VP: Vapor Pressure (psia)
L: Tank Length (ft)

- Standing Storage Loss per Year

SSL_{VOC} = 365 * VSV * SVD * VSEF * VVSF / 2000

SSL_{VOC}: Standing Storage Loss Emissions (TONs)
365: Number of Daily Events in a Year (Constant)
VSV: Vapor Space Volume (ft^3)
SVD: Stock Vapor Density (lb/ft^3)
VSEF: Vapor Space Expansion Factor (dimensionless)
VVSF: Vented Vapor Saturation Factor (dimensionless)
2000: Conversion Factor pounds to tons

- Number of Turnovers per Year

NT = (7.48 * ANT) / ((PI / 4.0) * D * L)

NT: Number of Turnovers per Year
7.48: Constant
ANT: Annual Net Throughput
PI: PI Math Constant
D^2: Tank Diameter (ft)
L: Tank Length (ft)

- Working Loss Turnover (Saturation) Factor per Year

WLSF = (18 + NT) / (6 * NT)

WLSF: Working Loss Turnover (Saturation) Factor per Year
18: Constant
NT: Number of Turnovers per Year
6: Constant

- Working Loss per Year

WL_{VOC} = 0.0010 * VMW * VP * ANT * WLSF / 2000

0.0010: Constant
VMW: Vapor Molecular Weight (lb/lb-mole)
VP: Vapor Pressure (psia)
ANT: Annual Net Throughput
WLSF: Working Loss Turnover (Saturation) Factor
2000: Conversion Factor pounds to tons

APPENDIX D: USFWS INFORMATION FOR PLANNING AND CONSULTATION

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IPaC resource list

This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

Location

Harrison County, Mississippi

Local office

Mississippi Ecological Services Field Office

(601) 965-4900

6578 Dogwood View Parkway, Suite A
Jackson, MS 39213-7856

Endangered species

This resource list is for informational purposes only and does not constitute an analysis of project level impacts.

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can **only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Draw the project location and click CONTINUE.
2. Click DEFINE PROJECT.
3. Log in (if directed to do so).
4. Provide a name and description for your project.
5. Click REQUEST SPECIES LIST.

Listed species[1] and their critical habitats are managed by the Ecological Services Program of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries[2]).

Species and critical habitats under the sole responsibility of NOAA Fisheries are **not** shown on this list. Please contact NOAA Fisheries for species under their jurisdiction.

1. Species listed under the Endangered Species Act are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the listing status page for more information. IPaC only shows species that are regulated by USFWS (see FAQ).
2. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

The following species are potentially affected by activities in this location:

Mammals

NAME	STATUS
West Indian Manatee Trichechus manatus Wherever found There is **final** critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/4469	Threatened Marine mammal

Birds

NAME	STATUS
Eastern Black Rail Laterallus jamaicensis ssp. jamaicensis Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/10477	Threatened
Piping Plover Charadrius melodus There is **final** critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/6039	Threatened

Rufa Red Knot Calidris canutus rufa — Threatened

Wherever found

There is **proposed** critical habitat for this species. Your location does not overlap the critical habitat.

https://ecos.fws.gov/ecp/species/1864

Reptiles

NAME	STATUS
Alabama Red-bellied Turtle Pseudemys alabamensis	Endangered
Alligator Snapping Turtle Macrochelys temminckii	Proposed Threatened
Gopher Tortoise Gopherus polyphemus	Threatened
Hawksbill Sea Turtle Eretmochelys imbricata	Endangered

Wherever found

No critical habitat has been designated for this species.

https://ecos.fws.gov/ecp/species/1494

Wherever found

No critical habitat has been designated for this species.

https://ecos.fws.gov/ecp/species/4658

No critical habitat has been designated for this species.

https://ecos.fws.gov/ecp/species/6994

Wherever found

There is **final** critical habitat for this species. Your location does not overlap the critical habitat.

https://ecos.fws.gov/ecp/species/3656

Kemp's Ridley Sea Turtle Lepidochelys kempii — Endangered
Wherever found
There is **proposed** critical habitat for this species.
https://ecos.fws.gov/ecp/species/5523

Leatherback Sea Turtle Dermochelys coriacea — Endangered
Wherever found
There is **final** critical habitat for this species. Your location does not overlap the critical habitat.
https://ecos.fws.gov/ecp/species/1493

Fishes

NAME	STATUS
Gulf Sturgeon Acipenser oxyrinchus (=oxyrhynchus) desotoi	Threatened

Wherever found
There is **final** critical habitat for this species. Your location does not overlap the critical habitat.
https://ecos.fws.gov/ecp/species/651

Insects

NAME	STATUS
Monarch Butterfly Danaus plexippus	Candidate

Wherever found
No critical habitat has been designated for this species.
https://ecos.fws.gov/ecp/species/9743

Ferns and Allies

NAME	STATUS

Louisiana Quillwort Isoetes louisianensis — Endangered

Wherever found

No critical habitat has been designated for this species.
https://ecos.fws.gov/ecp/species/7756

Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

There are no critical habitats at this location.

You are still required to determine if your project(s) may have effects on all above listed species.

Bald & Golden Eagles

There are no documented cases of eagles being present at this location. However, if you believe eagles may be using your site, please reach out to the local Fish and Wildlife Service office.

Additional information can be found using the following links:

- Eagle Management https://www.fws.gov/program/eagle-management
- Measures for avoiding and minimizing impacts to birds https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds
- Nationwide conservation measures for birds https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf
- Supplemental Information for Migratory Birds and Eagles in IPaC https://www.fws.gov/media/supplemental-information-migratory-birds-and-bald-and-golden-eagles-may-occur-project-action

Bald and Golden Eagle information is not available at this time

What does IPaC use to generate the potential presence of bald and golden eagles in my specified location?

The potential for eagle presence is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply). To see a list of all birds potentially present in your project area, please visit the Rapid Avian Information Locator (RAIL) Tool.

What does IPaC use to generate the probability of presence graphs of bald and golden eagles in my specified location?

The Migratory Bird Resource List is comprised of USFWS Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the Rapid Avian Information Locator (RAIL) Tool.

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the Eagle Act should such impacts occur. Please contact your local Fish and Wildlife Service Field Office if you have questions.

Migratory birds

Certain birds are protected under the Migratory Bird Treaty Act[1] and the Bald and Golden Eagle Protection Act[2].

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats should follow appropriate regulations and consider implementing appropriate conservation measures, as described below.

1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.

Additional information can be found using the following links:

- Eagle Management https://www.fws.gov/program/eagle-management
- Measures for avoiding and minimizing impacts to birds https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds
- Nationwide conservation measures for birds https://www.fws.gov/sites/default/files/ documents/nationwide-standard-conservation-measures.pdf
- Supplemental Information for Migratory Birds and Eagles in IPaC https://www.fws.gov/media/supplemental-information-migratory-birds-and-bald-and-golden-eagles-may-occur-project-action

Migratory bird information is not available at this time

Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.

Nationwide Conservation Measures describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. Additional measures or permits may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the list of migratory birds that potentially occur in my specified location?

The Migratory Bird Resource List is comprised of USFWS Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the Rapid Avian Information Locator (RAIL) Tool.

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?

The probability of presence graphs associated with your migratory bird list are based on data provided by the Avian Knowledge Network (AKN). This data is derived from a growing collection of survey, banding, and citizen science datasets.

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering or migrating in my area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may query your location using the RAIL Tool and look at the range maps provided for birds in your area at the bottom of the profiles provided for each bird in your results. If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are Birds of Conservation Concern (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the Eagle Act requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

Details about birds that are potentially affected by offshore projects

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the Northeast Ocean Data Portal. The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the Diving Bird Study and the nanotag studies or contact Caleb Spiegel or Pam Loring.

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the Eagle Act should such impacts occur.

Proper Interpretation and Use of Your Migratory Bird Report

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

Marine mammals

Marine mammals are protected under the Marine Mammal Protection Act. Some are also protected under the Endangered Species Act[1] and the Convention on International Trade in Endangered Species of Wild Fauna and Flora[2].

The responsibilities for the protection, conservation, and management of marine mammals are shared by the U.S. Fish and Wildlife Service [responsible for otters, walruses, polar bears, manatees, and dugongs] and NOAA Fisheries[3] [responsible for seals, sea lions, whales, dolphins, and porpoises]. Marine mammals under the responsibility of NOAA Fisheries are **not** shown on this list; for additional information on those species please visit the Marine Mammals page of the NOAA Fisheries website.

The Marine Mammal Protection Act prohibits the take of marine mammals and further coordination may be necessary for project evaluation. Please contact the U.S. Fish and Wildlife Service Field Office shown.

1. The Endangered Species Act (ESA) of 1973.
2. The Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) is a treaty to ensure that international trade in plants and animals does not threaten their survival in the wild.
3. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

The following marine mammals under the responsibility of the U.S. Fish and Wildlife Service are potentially affected by activities in this location:

NAME

West Indian Manatee *Trichechus manatus*
https://ecos.fws.gov/ecp/species/4469

Facilities

National Wildlife Refuge lands

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

There are no refuge lands at this location.

Fish hatcheries

There are no fish hatcheries at this location.

Wetlands in the National Wetlands Inventory (NWI)

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

Wetland information is not available at this time

This can happen when the National Wetlands Inventory (NWI) map service is unavailable, or for very large projects that intersect many wetland areas. Try again, or visit the NWI map to view wetlands at this location.

Data limitations

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

Data exclusions

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tuberficid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

Data precautions

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate Federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

APPENDIX E: LIST OF PREPARERS

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Table E-1 lists the individuals who contributed to the preparation of this EA.

Table E-1. List of Preparers

Name	Education	Resource Area	Years of Experience
Michelle Cannella	BS, Mineral Economics, Penn State University	Socioeconomics, protection of children	27
Jamie Childers	MS, Natural Resources Administration and Policy, University of Florida	Air quality, greenhouse gases QC	23
Heather Conn	MLA, Landscape Architecture, Louisiana State University BS, Agricultural Biotechnology, University of Kentucky	Biological resources, water resources	17
Dewey Cooper	BS, Chemistry	Air quality, greenhouse gases, hazardous materials/ wastes, safety and occupational health	26
Penelope Garver	BS, Journalism, University of Maryland	Technical editing, EA QA	31
Jennifer Jarvis	BS, Environmental Resource Management, Virginia Tech	Geographic information systems	26
Tim Lavallee, PE	M.S., Civil and Environmental Engineering	Noise QC	31
Samuel Pett	MS, Environmental Science, University of Massachusetts	DOPAA QC	31
Sean Rose	MPS, Real Estate Development, Georgetown University	Land use, aesthetics and visual resources, traffic and transportation	10
Joel Rudewicz	MA, History, The University of Nottingham	Historic and cultural resources QC	19
Suni Shrestha	BS, Environmental Analysis and Planning, Frostburg State University	Project management, DOPAA, airfield operations, cultural resources, noise, EA QC	26
Erica Smythe	MS, Digital Archaeology, University of York	Cultural resources	4
David Wertz	MS, Geophysics, Boston College	Earth resources, infrastructure and utilities	21

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