Final Environmental Assessment for Field Outfall Decommission and New Force Main and Sewer Pump Stations Construction

Prepared for: Department of the Air Force

November 2024



PRIVACY ADVISORY

This Environmental Assessment (EA) is made available for public comment in accordance with the National Environmental Policy Act (NEPA), the President's Council on Environmental Quality NEPA Regulations (40 Code of Federal Regulations [CFR] §§ 1500 to 1508), and 32 CFR § 989, Environmental Impact Analysis Process (EIAP).

The EIAP provides an opportunity for public input on decision-making by the Department of the Air Force, allowing the public to suggest alternative approaches for the Air Force's proposed actions and to comment on the Air Force's analysis of environmental effects.

Public commenting allows the Air Force to make better, informed decisions. Letters or other written or oral comments provided may be published in the EA. As required by law, comments provided will be addressed in the EA and made available to the public. Providing personal information is voluntary. Any personal information provided will be used only to identify your desire to make a statement during the public comment portion of any public meetings or hearings or to fulfill requests for copies of the EA or associated documents. Private addresses will be compiled to develop a mailing list for those requesting copies of the EA. However, only the names of the individuals making comments and specific comments will be disclosed. Personal home addresses and phone numbers will not be published in the Final EA.

Cover Sheet
Final Environmental Assessment of Field Outfall Decommission and New Force Main Sewer and Pump Stations Construction at Maxwell Air Force Base, Alabama

Proposed Action:	The Montgomery Water Works and Sanitary Sewer Board has proposed improvements to address aging and deteriorating wastewater infrastructure in their Towassa Basin, which serves Maxwell Air Force Base.
Designation:	Final Environmental Assessment
Responsible Agency:	Department of the Air Force
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Abstract:

This Environmental Assessment (EA) has been prepared in compliance with the National Environmental Policy Act of 1969 (NEPA) (42 *United States Code* 4331 et seq.), the regulations of the President's Council on Environmental Quality that implements NEPA procedures (40 *Code of Federal Regulations* [CFR] 1507.3), the Department of the Air Force Environmental Impact Assessment Process Regulations at 32 CFR 989, and Air Force Instruction (AFI) 32-1015, *Integrated Installation Planning*.

The purpose of the Proposed Action is to address the deteriorating wastewater infrastructure serving Maxwell Air Force Base (MAFB). This involves decommissioning the existing Maxwell Field Outfall and constructing a new wastewater conveyance system.

The Montgomery Water Works and Sanitary Sewer Board has identified the need to improve aging wastewater infrastructure serving MAFB. The existing MAFB field outfall, in service for more than 50 years, is partially suspended above sensitive aquatic habitats, such as wetlands and tributary streams along the Alabama River. Deterioration of aerial supports and tree growth near the gravity sewer pose risks to its integrity. The current conditions raise concerns of potential catastrophic failure, leading to the release of untreated sewer water into waters of the U.S., including the Alabama River.

This EA evaluates the existing conditions and environmental consequences of implementing Alternative 1 (Preferred Alternative) and the No-Action Alternative. The analysis of Alternative 1 concludes that there would be no significant adverse impacts on the analyzed resource areas. In addition, no significant cumulative effects are expected when considering the Preferred Alternative in conjunction with past, present, or reasonably foreseeable future actions.

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Contents

Acronyms and Abbreviations v

1. Purpose of and Need for Proposed Action **1-1**

1.1 Introduction 1-1

1.2 Purpose of Field Outfall Decommission and New Force Main Sewer and Pump Stations Construction 1-1

1.3 Need for Field Outfall Decommission and New Force Main Sewer and Pump Stations Construction 1-1

1.4 Interagency/Intergovernmental Coordination and Consultations 1-2

1.4.1 Interagency Coordination and Consultations 1-2

1.4.2 Government-to-Government Consultations 1-2

1.4.3 Other Agency Consultations 1-2

1.5 Public and Agency Review of Environmental Assessment 1-2

1.6 Decision to be Made 1-3

2. Description of the Proposed Action and Alternatives **2-1**

2.1 Proposed Action 2-1

2.2 Selection Standards for Project Alternatives 2-2

2.3 Alternatives Considered but Eliminated from Further Analysis 2-2

2.3.1 Alternative 2 (Rehabilitation of the Existing 18-, 24-, and 30-inch-diameter Sewer Outfall Pipe) 2-2

2.3.2 Alternative 3 (Replace Maxwell Field Outfall) 2-3

2.3.3 Alternative 4 (Relocate Maxwell Field Outfall) 2-3

2.3.4 Alternative 5 (Former Cypress Tree Golf Course Location) 2-3

2.4 Alternatives Carried Forward for Analysis 2-4

2.4.1 No-Action Alternative 2-4

2.4.2 Alternative 1 (Preferred Alternative) 2-4

3. Affected Environment and Environmental Consequences **3-1**

3.1 Resource Areas Eliminated from Further Analysis 3-1

3.2 Air Quality 3-3

3.2.1 Regulatory Setting 3-3

3.2.2 Affected Environment 3-4

3.2.3 Environmental Consequences 3-5

3.3 Water Resources 3-7

3.3.1 Regulatory Setting 3-7

3.3.2 Affected Environment 3-8

3.3.3 Environmental Consequences 3-29

3.4 Soils and Geologic Resources 3-30

3.4.1 Regulatory Setting 3-30

3.4.2 Affected Environment 3-30

3.4.3 Environmental Consequences 3-32

3.5 Cultural Resources 3-38

3.5.1 Regulatory Setting 3-38
3.5.2 Affected Environment 3-40
3.5.3 Environmental Consequences 3-41
3.6 Biological Resources 3-42
3.6.1 Regulatory Setting 3-42
3.6.2 Affected Environment 3-42
3.6.3 Environmental Consequences 3-44
3.7 Hazardous Materials and Wastes 3-46
3.7.1 Regulatory Setting 3-47
3.7.2 Affected Environment 3-47
3.7.3 Environmental Consequences 3-47
3.8 Utilities 3-48
3.8.1 Affected Environment 3-48
3.8.2 Environmental Consequences 3-49
4. Reasonably Foreseeable Actions and Cumulative Effects 4-1
4.1 Past, Present, and Reasonably Foreseeable Actions 4-1
4.1.1 Air Quality 4-1
4.1.2 Water Resources 4-1
4.1.3 Soil and Geologic Resources 4-2
4.1.4 Cultural Resources 4-2
4.1.5 Biological Resources 4-2
4.1.6 Hazardous Materials and Wastes 4-2
4.1.7 Utilities 4-2
5. Summary of Mitigation Measures 5-1
6. References 6-1
7. List of Preparers 7-1

Appendices

Appendix A. Interagency/Intergovernmental Coordination and Responses
Appendix B. Public Notices
Appendix C. Air Quality Emission Estimates and Record of Non-Applicability
Appendix D. Waters of the U.S. Delineation Technical Memorandum
Appendix E. USFWS IPaC Report

Tables

Table 3-1. Ambient Air Quality Standards 3-3
Table 3-2. Construction Emissions for Alternative 1 3-5
Table 3-3. Estimated Annual Air Emissions (in mtpy) of GHGs 3-6
Table 3-4. GHG Relative Significance Assessment 3-6
Table 3-5. Annual Social Cost of GHG per Year 3-7

Table 3-6. Estimated Project Disturbance Areas within Floodplains 3-30
Table 3-7. Alternative 1 Soil Types 3-31
Table 3-8. Protected Species Occurring or with Potential to Occur within Alternative 1 3-43
Table 3-9. Alternative 1 Habitat Impacts 3-45
Table 7-1. List of Preparers 7-1

Figures

1-1 Location of Maxwell Air Force Base 1-4
2-1 Alternative 1 – Construction of New Force Main and Pump Stations 2-7
2-1a Alternative 1 – Construction of New Force Main and Pump Stations 2-9
2-1b Alternative 1 – Construction of New Force Main and Pump Stations 2-10
2-1c Alternative 1 – Construction of New Force Main and Pump Stations 2-13
2-2 Alternative 1 – Decommissioning of the Maxwell Field Outfall 2-15
2-2a Alternative 1 – Decommissioning of the Maxwell Field Outfall 2-17
2-2b Alternative 1 – Decommissioning of the Maxwell Field Outfall 2-18
2-2c Alternative 1 – Decommissioning of the Maxwell Field Outfall 2-21
3-1 Surface Waters within New Force Main and Pump Stations Project Areas 3-9
3-1a Surface Waters within New Force Main and Pump Stations Project Areas 3-11
3-1b Surface Waters within New Force Main and Pump Stations Project Areas 3-13
3-1c Surface Waters within New Force Main and Pump Stations Project Areas 3-15
3-2 Surface Waters within Maxwell Field Outfall Decommission Project Area 3-17
3-2a Surface Waters within Maxwell Field Outfall Decommission Project Area 3-19
3-2b Surface Waters within Maxwell Field Outfall Decommission Project Area 3-21
3-2c Surface Waters within Maxwell Field Outfall Decommission Project Area 3-23
3-3 Floodplains 3-27
3-4 Soil Types within Proposed New Force Main and Pump Stations Project Area 3-33
3-5 Soil Types within the Decommissioning the Maxwell Field Outfall Project Area 3-35

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Acronyms and Abbreviations

°F	degree(s) Fahrenheit
µg/m^3	microgram(s) per cubic meter
ACAM	Air Conformity Applicability Model
ADEM	Alabama Department of Environmental Management
AFB	Air Force Base
AFI	Air Force Instruction
AIRFA	American Indian Religious Freedom Act
APE	Area of Potential Effects
BGEPA	Bald and Golden Eagle Protection Act of 1940
bgs	below ground surface
BMP	best management practice
CAA	Clean Air Act
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CEQ	Council on Environmental Quality
CFR	*Code of Federal Regulations*
CH_4	methane
CO	carbon monoxide
CO_2	carbon dioxide
CO_2e	carbon dioxide equivalent
CWA	Clean Water Act of 1972
DAF	Department of the Air Force
DoD	U.S. Department of Defense
EA	environmental assessment
EIAP	Environmental Impact Analysis Process
EIS	environmental impact statement
EO	Executive Order
EPA	U.S. Environmental Protection Agency
ERP	Environmental Restoration Program
ESA	Endangered Species Act
FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Maps

FONPA	finding of no practicable alternative
FONSI	finding of no significant impact
FY	fiscal year
GHG	greenhouse gas
HDD	horizontal directional drilling
INRMP	Integrated Natural Resources Management Plan
IPaC	Information for Planning and Consultation
MAFB	Maxwell Air Force Base
MBTA	Migratory Bird Treaty Act
mgd	million gallon(s) per day
mtpy	metric ton(s) per year
MWWSSB	Montgomery Water Works and Sanitary Sewer Board
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NFIP	National Flood Insurance Program
NHPA	National Historic Preservation Act
NO_2	nitrogen dioxide
N_2O	nitrous oxide
NOA	Notice of Availability
NOx	nitrogen oxides
NPDES	National Pollutant Discharge Elimination System
NRHP	National Register of Historic Places
NSR	New Source Review
OHWM	ordinary high-water mark
OSHA	Occupational Safety and Health Administration
PM_{10}	particulate matter less than or equal to 10 micrometers in diameter
$PM_{2.5}$	particulate matter less than or equal to 2.5 micrometers in diameter
ppm	part(s) per million
RCRA	Resource Conservation and Recovery Act
RHA	Rivers and Harbors Act of 1899
SHPO	State Historic Preservation Office
SO_2	sulfur dioxide
SWPPP	stormwater pollution prevention plan

tpy	ton(s) per year
USACE	U.S. Army Corps of Engineers
USAF	United States Air Force
USC	*United States Code*
USFWS	U.S. Fish and Wildlife Service
VOC	volatile organic compound
WPCP	Water Pollution Control Plant

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1. Purpose of and Need for the Proposed Action

1.1 Introduction

The Montgomery Water Works and Sanitary Sewer Board (MWWSSB) has proposed the decommissioning of the Maxwell Field Outfall (gravity sewer line) and the construction of a new force main with three sewer pump stations (Proposed Action) at the Maxwell Air Force Base (MAFB) in Montgomery, Alabama (Figure 1-1). The purpose of the Proposed Action is to address the aging and deteriorating wastewater infrastructure in the MWWSSB's Towassa Basin, which serves MAFB.

This Environmental Assessment (EA) has been prepared by the MWWSSB on behalf of the United States Air Force (USAF) to assess the potential environmental impacts associated with the Proposed Action. The assessment is conducted in accordance with the National Environmental Policy Act of 1969 (NEPA) (42 *United States Code* [USC] 4331 et seq.), the regulations of the President's Council on Environmental Quality (CEQ) that implement NEPA procedures (40 *Code of Federal Regulations* [CFR] 1507.3), the Department of the Air Force (DAF) Environmental Impact Analysis Process (EIAP) Regulations at 32 CFR 989, and Air Force Instruction (AFI) 32-1015, *Integrated Installation Planning*.

The information presented in this document will serve as the basis for determining whether the Proposed Action would result in a significant impact to the human environment, thereby requiring the preparation of an environmental impact statement (EIS), or whether no significant impacts would occur, leading to a finding of no significant impact (FONSI). In the event that any aspect of the Proposed Action involves "construction" in a wetland, as defined in Executive Order (EO) 11990, "Protection of Wetlands," or "action" in a floodplain under EO 11988, "Floodplain Management," a finding of no practicable alternative (FONPA) would be prepared in conjunction with the FONSI.

1.2 Purpose of Field Outfall Decommission and New Force Main Sewer and Pump Stations Construction

The purpose of the Proposed Action is to address the deteriorating wastewater infrastructure serving MAFB by decommissioning the existing Maxwell Field Outfall and constructing a new wastewater conveyance system. The goal is to provide a long-term solution that ensures reliable and efficient wastewater management for MAFB.

1.3 Need for Field Outfall Decommission and New Force Main Sewer and Pump Stations Construction

The MWWSSB has recognized the urgent need for improvement in the aging and deteriorating wastewater infrastructure that serves MAFB. The MAFB field outfall, which has been in service for more than 50 years, poses significant challenges. Approximately half of the outfall is suspended above sensitive aquatic habitats, including wetlands in sloughs along the Alabama River and tributary streams that flow into the sloughs. The deteriorating aerial supports for these crossings jeopardize the integrity of the gravity sewer system (CH2M 2017; Jacobs 2020).

Furthermore, over the years, trees have grown in close proximity to the gravity sewer, presenting additional threats. Tree fall and limb fall not only add to the risk of damage to the MAFB field outfall but also make it challenging to access and maintain the infrastructure (Jacobs 2020). These existing conditions raise concerns about the potential for catastrophic failure, which could lead to the release of untreated sewer water into waters of the U.S., including the Alabama River.

1.4 Interagency/Intergovernmental Coordination and Consultations

1.4.1 Interagency Coordination and Consultations

Scoping is an early and transparent process that aims to determine the range of issues to be addressed in the EA and identify significant concerns associated with the Proposed Action. In compliance with the Intergovernmental Cooperation Act of 1968 (42 USC § 4231(a)) and EO 12372, "Intergovernmental Review of Federal Programs," federal, state, and local agencies with jurisdiction that could be affected by the Proposed Action were duly informed during the development of this EA.

Appendix A contains the list of agencies consulted during this analysis.

1.4.2 Government-to-Government Consultations

EO 13175, "Consultation and Coordination with Indian Tribal Governments," mandates federal agencies to engage in coordination and consultation with Native American tribal governments when their interests may be directly and significantly impacted by activities on federally administered lands.

In compliance with EO 13175; Department of Defense (DoD) Instruction 4710.02, *Interactions with Federally Recognized Tribes* (DoD 2018); and AFI 90-2002, *Interactions with Federally Recognized Tribes* (Secretary of the Air Force 2020), federally recognized tribes that are historically affiliated with the geographic region of MAFB were invited to participate in consultations concerning proposed undertakings that may affect properties of cultural, historical, or religious significance to the tribes.

Appendix A provides a comprehensive list of Native American tribal governments with which the DAF has coordinated or consulted regarding these actions. Tribal consultation letters were mailed to federally recognized tribes in September 2023. The Poarch Band of Creek Indians requested a copy of the Cultural Resources Assessment Report prepared for the project, which was provided to them (Appendix A). Additional attempts to contact tribal representatives were made throughout the EA development.

1.4.3 Other Agency Consultations

In accordance with the requirements of Section 106 of the National Historic Preservation Act (NHPA) and implementing regulations (36 CFR 800), and Section 7 of the Endangered Species Act (ESA) and implementing regulations (including the Migratory Bird Treaty Act [MBTA] and others as appropriate), findings of effect and request for concurrence were transmitted to the Alabama State Historic Preservation Office (SHPO) and the U.S. Fish and Wildlife Service (USFWS).

The SHPO provided comments on the *Maxwell Air Force Base Pump Stations and Force Mains Project, Montgomery County, Alabama Cultural Resources Assessment Report* on 11 August 2023, requesting updates to the report. The updated *Maxwell Air Force Base Pump Stations and Force Mains Project, Montgomery County, Alabama Cultural Resources Assessment Report* was transmitted to the SHPO on 26 September 2023. Based on the updated report, the SHPO provided concurrence with the finding of No Effect to Historic Properties on 23 October 2023.

Following initiation of informal coordination under Section 7 of the ESA, USFWS provided concurrence with the USAF's "no effect" determination on federally listed threatened and endangered species on 24 May 2023.

Appendix A includes the relevant correspondence documenting the findings, concurrence, and resolution of any adverse effects.

1.5 Public and Agency Review of Environmental Assessment

Based on the overlap of the Proposed Action area with wetlands or floodplains, it is subject to the requirements and objectives of EO 11990, "Protection of Wetlands," and EO 11988, "Floodplain Management." Early notice was published in the *Montgomery Advertiser* newspaper on 26 July 2023, informing the public that the Proposed Action would take place in a floodplain or wetland. The notice also identified state and federal regulatory agencies with specialized expertise that were contacted and

solicited for input on the Proposed Action and any feasible alternatives. The comment period for public and agency input on these projects ended on 25 August 2023. Appendix B contains the early notice.

A Notice of Availability (NOA) of the Draft EA and FONSI/FONPA was published in the *Montgomery Advertiser* on 01 September 2024, announcing the availability of the Draft EA for review. The NOA invited the public to review and provide comments on the Draft EA. The public and agency review period concluded on 01 October 2024. Appendix B contains the NOA. No comments were received during the 30-day review period.

Copies of the Draft EA and FONSI/FONPA were made available for review online at https://www.maxwell.af.mil/About-Us/Community-Support/ and at the Juliette Hampton Morgan Memorial Library, 245 High Street, Montgomery, AL 36104.

1.6 Decision to be Made

The EA assessed whether the Proposed Action would have significant impacts on the human environment. If significant impacts are identified, MWWSSB would undertake mitigation measures to reduce the impacts below the level of significance, initiate the preparation of an EIS addressing the Proposed Action, or choose to abandon the Proposed Action.

The EA serves as a planning and decision-making tool, guiding MWWSSB and MAFB in implementing the Proposed Action in accordance with the environmental stewardship standards set by the USAF.

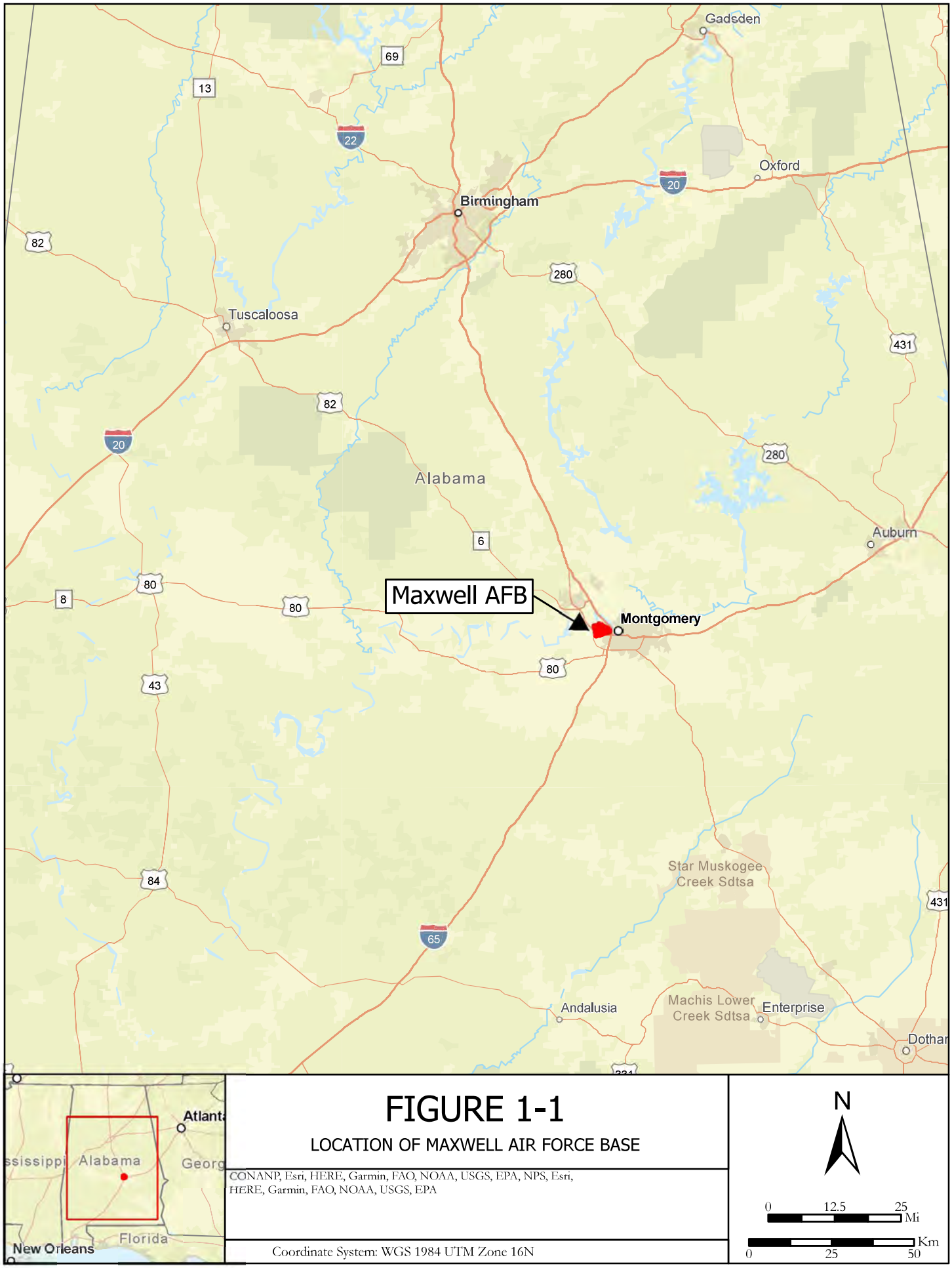


FIGURE 1-1

LOCATION OF MAXWELL AIR FORCE BASE

CONANP, Esri, HERE, Garmin, FAO, NOAA, USGS, EPA, NPS, Esri, HERE, Garmin, FAO, NOAA, USGS, EPA

Coordinate System: WGS 1984 UTM Zone 16N

2. Description of the Proposed Action and Alternatives

2.1 Proposed Action

The MWWSSB is proposing improvements to address the aging and deteriorating wastewater system in the Towassa Basin, which serves MAFB.

The Towassa Water Pollution Control Plant (WPCP) (location shown on Figure 2-1) was originally constructed in 1968 with a treatment capacity of 3 million gallons per day (mgd). Flow is conveyed to the Towassa WPCP headworks through two primary collection system pump stations, Pump Station 20 and Pump Station 22 (locations shown on Figure 2-1). Pump Station 20 receives flows from the Maxwell Field Outfall, which also was constructed in approximately 1968. Approximately 95 percent of the wastewater treated at the Towassa WPCP comes from MAFB (Jacobs 2020). All wastewater from MAFB is domestic sewage; there is no industrial activity on MAFB.

The Towassa WPCP wastewater treatment process is summarized as follows:

1. Flow enters the headworks through 18- and 20-inch-diameter force mains from Pump Station 20 and Pump Station 22, respectively.
2. The raw sewage is screened by a mechanical bar screen and then flows to a Pista-Grit vortex grit removal system.
3. Raw sewage flows from the grit chamber to the pre-aeration basin.
4. Flow then travels to the primary clarifiers, intermediate clarifier, and final clarifier.
5. Final clarifier effluent is sent to the chlorine contact basins.
6. Finally, the plant effluent is discharged to the Alabama River via a 36-inch-diameter pipe that is original to the plant.

The Alabama Department of Environmental Management (ADEM) issued MWWSSB a National Pollutant Discharge Elimination System (NPDES) Discharge Permit (AL0022241, expires 31 December 2024) for the Towassa WPCP. Wastewater discharges to MWWSSB are regulated by a pretreatment permit which MWWSSB issued to Maxwell AFB.

The Maxwell Field Outfall was installed in the late 1960s and includes approximately 340 structural bents on creosote-treated piles supporting the aerial crossing portions of the gravity sewer. The existing outfall includes approximately 8,000 feet of 18-inch, 24-inch, and 30-inch-diameter pipe. The outfall generally parallels the toe of a steep-wooded bluff carved by the Alabama River along the northern boundary of MAFB. Approximately half of the pipe footage is over standing water or in areas of seasonal water level fluctuation, and portions of the area are not accessible due to heavy accumulations of loose sediment and debris. Access to the Maxwell Field Outfall is through MAFB. Maxwell Field Outfall receives influent from the I-65 corridor and Pump Station 21 as well as MAFB. Most of the influent flow the Maxwell Field Outfall receives is from MAFB. The Maxwell Field Outfall discharges into Pump Station 20 and is currently pumped from Pump Station 20 to the Towassa WPCP.

The Maxwell Field Outfall supports are deteriorating and need repair or replacement. The pipe is over 50 years old, in an exposed environment, and difficult to access. These existing conditions create the concern of catastrophic failure and potential environmental impacts along the river. Because of these failure concerns, alternatives were evaluated in 2020 (Jacobs 2020) to determine a viable solution to improve the reliability of the outfall while maintaining continuous sewer service to MAFB and portions of MWWSSB's Towassa Basin east of MAFB. The results of the evaluation recommended the decommissioning of the existing Maxwell Field Outfall and installation of new replacement conveyance facilities. The conveyance facilities include three pump stations and force mains located on MAFB property for connection to the MAFB sewer collection system served by the outfall. These recommendations are based on cost, environmental conditions/considerations, accessibility, and reliability/resiliency.

The three proposed pump stations would discharge into a common force main to convey wastewater to MWWSSB's Pump Station 20. Pump Station 20 receives and conveys the wastewater from the Maxwell Field Outfall to the Towassa WPCP for treatment. The MWWSSB's existing Pump Station 21 and other portions of the Towassa Basin collection system east of MAFB will continue to operate as currently connected upstream of the existing Maxwell Field Outfall and will discharge to one of the proposed pump stations.

2.2 Selection Standards for Project Alternatives

NEPA and CEQ regulations mandate the consideration of reasonable alternatives for the Proposed Action. "Reasonable alternatives" are those that also could be used to meet the purpose of and need for the Proposed Action. Per the requirements of 32 CFR 989 and USAF EIAP regulations, selection standards are used to identify alternatives for meeting the purpose of and need for the Proposed Action.

Alternatives carried forward for analysis must meet the following selection standards:

- **Selection Standard 1:** The alternative must be technically feasible to implement.
- **Selection Standard 2:** The alternative would have minimal disruption to operations on MAFB.
- **Selection Standard 3:** The alternative must, to the greatest extent practicable, avoid or minimize external threats to pipeline integrity.
- **Selection Standard 4:** The alternative must, to the greatest extent practicable, avoid or minimize impacts to sensitive environmental and cultural resources in the area.
- **Selection Standard 5:** The alternative must not result in excessive costs to implement.

2.3 Alternatives Considered but Eliminated from Further Analysis

2.3.1 Alternative 2 (Rehabilitation of the Existing 18-, 24-, and 30-inch-diameter Sewer Outfall Pipe)

Alternative 2 would maintain the existing Maxwell Field Outfall and its discharge at Pump Station 20. Alternative 2 would include replacing 340 aerial supports for the Maxwell Field Outfall and lining the existing pipeline with a cured-in-place liner. Existing creosote-treated supports would be replaced with steel supports. This would require work along approximately 4,000 feet of wetlands (including open-water, emergent, and forested wetlands), with work either being from the landward side or from barges. Where access directly from land is not possible and a barge cannot reach the existing pipeline because of water levels, access roads within existing wetlands would be needed to implement replacement of the aerial supports. Pump Station 20 would continue to receive wastewater from the Maxwell Field Outfall and convey it to the Towassa WPCP for treatment. The existing pipeline would continue to experience infiltration and inflow during peak flows in wet weather events and loss of wastewater to the environment under non-wet weather conditions.

Under Alternative 2, approximately 4,000 feet of the Maxwell Field Outfall would remain aboveground and at risk of compromise from external events, such as tree fall. This alternative would result in temporary and permanent effects on approximately 4,000 feet of wetlands along the Maxwell Field Outfall. Bypass pumping would be necessary to provide service for the duration of construction.

Alternative 2 would not have a decommissioning component.

Alternative 2 was eliminated from further consideration because it fails to meet Selection Standards 3, 4, and 5. It does not alleviate the risk from external events and substantial temporary and permanent impacts to wetlands would occur during construction. This alternative also is not cost effective; it would cost approximately $32,900,000 if implemented.

2.3.2 Alternative 3 (Replace Maxwell Field Outfall)

Alternative 3 would include replacing 340 aerial supports for the Maxwell Field Outfall and replacing approximately 8,000 feet of ductile iron pipe gravity sewer. Existing connections would be maintained after construction. Existing creosote-treated supports would be replaced with steel supports. The old ductile iron pipe would be replaced with new steel or iron pipe. This would require work along approximately 4,000 feet of wetlands (including open-water, emergent, and forested wetlands), with work either being from the landward side or from barges. Where access directly from land is not possible and a barge cannot reach the existing pipeline because of water levels, access roads within existing wetlands would be needed to implement replacement of the aerial supports. Pump Station 20 would continue to receive wastewater from the Maxwell Field Outfall and convey it to the Towassa WPCP for treatment. The new pipe would reduce infiltration and inflow during wet weather events and reduce the loss of wastewater to the environment under non-wet weather conditions.

Under Alternative 3, approximately 4,000 feet of the Maxwell Field Outfall would remain aboveground and at risk of compromise from external events, such as tree fall. This alternative would result in temporary and permanent effects on approximately 4,000 feet of wetlands along the Maxwell Field Outfall. Bypass pumping would be necessary to provide service for the duration of construction.

Alternative 3 would not have a decommissioning component.

Alternative 3 was eliminated from further consideration because it fails to meet Selection Standards 3, 4, and 5. It does not alleviate the risk from external events, and temporary and substantial permanent impacts to wetlands would occur during construction. This alternative also is not cost effective; it would cost approximately $45,600,000 if implemented.

2.3.3 Alternative 4 (Relocate Maxwell Field Outfall)

Alternative 4 would include relocating the existing Maxwell Field Outfall with a comparable buried gravity sewer and installing the outfall pipe in a buried location through MAFB. The location and depth of the relocated line would be dictated by the location and depth of existing branch sewers to be served by the Maxwell Field Outfall pipe. Based on the depth of the existing infrastructure, construction would occur at depths ranging from approximately 20 to 40 feet below grade. Installation at these depths, with consideration of the top of the bank of the waterway along the northern MAFB boundary, would require dewatering and large disturbances throughout MAFB and substantial adverse effects to wetlands along the Alabama River. Construction at these depths would require specialized construction techniques. Pump Station 20 would continue to receive wastewater from the Maxwell Field Outfall and convey it to the Towassa WPCP for treatment. The new pipe would reduce infiltration and inflow during wet weather events and reduce the loss of wastewater to the environment under non-wet weather conditions.

Alternative 4 would have a decommissioning component.

Alternative 4 was eliminated from further consideration because it fails to meet Selection Standards 1 and 4. The installation would require dewatering, which would cause large disturbances throughout MAFB and would result in substantial adverse effects to wetlands. This alternative also would require specialized construction techniques. A cost estimate was not prepared for Alternative 4 because this alternative is not technically feasible without specialized construction techniques.

2.3.4 Alternative 5 (Former Cypress Tree Golf Course Location)

Alternative 5 would include the same components as Alternative 1, including installation of a new force main, construction of three pump stations, and decommissioning of the existing Maxwell Field Outfall. The route for the new force main for Alternative 5 would be located through the former Cypress Tree Golf Course, north of the Alternative 1 route.

Alternative 5 was eliminated from further consideration because it fails to meet Selection Standard 4. The new force main route would impact sensitive cultural resources.

2.4 Alternatives Carried Forward for Analysis

2.4.1 No-Action Alternative

Under the No-Action Alternative, there would be no construction of a new force main and three pump stations and the Maxwell Field Outfall would remain in service. Approximately 4,000 feet of the Maxwell Field Outfall would remain aboveground and at risk to be compromised from external events, such as tree fall. Recurring, extensive maintenance costs, sewer line failure, and a large sanitary sewer discharge would be likely. Although the No-Action Alternative would not satisfy the purpose of or need for the Proposed Action, this alternative was retained to provide a comparative baseline against which to analyze the effects of the Proposed Action, as required under the CEQ regulations (40 CFR 1502.14).

2.4.2 Alternative 1 (Preferred Alternative)

Alternative 1 consists of the following major components:

- Installation of a new force main (Figures 2-1, 2-1a, 2-1b, and 2-1c)
- Construction of three pump stations (Figures 2-1, 2-1a, 2-1b, and 2-1c)
- Decommissioning of the existing Maxwell Field Outfall (Figures 2-2, 2-2a, 2-2b, 2-2c)

Alternative 1 meets all selection standards. Implementation of Alternative 1 would only occur after USAF has issued a decision based on this EA. Construction on the new force main and three pump stations and the decommissioning of the Maxwell Field Outfall are proposed to occur from January 2025 to July 2026.

2.4.2.1 Installation of a New Force Main

A new, common, 12-inch-diameter force main that increases to 18-inch-diameter would be installed via open-cut trenching along most of the route (Figures 2-1a, 2-1b, and 2-1c). The length of the proposed force main would be approximately 9,300 linear feet, including 9,170 linear feet of underground pipe. Up to 2,000 feet of new gravity piping would be constructed to connect the three proposed pump stations to existing outfalls and the interceptor. The width of the construction corridor for installation of the new force main would be 100 feet. In six areas along the new force main route, the construction corridor has been expanded beyond 100 feet to accommodate for laydown areas where materials, equipment, and vehicles would be staged during construction activities. The total disturbance area for construction of the proposed new force main, including construction laydown areas, would be approximately 16.3 acres. The permanent right-of-way above the new force main would be 20 feet wide. Once construction is complete, all temporary work areas would be revegetated with native species or an annual grass.

All surface water features would be avoided during installation of the new force main. Horizontal directional drilling (HDD) construction methods would be used to install the force main under the Stream 1/Wetland WL1 crossing immediately east of Beech Street. At the crossing of Stream 2, the stream is culverted under Mimosa Road. The force main would be installed in the road berm above the culvert, which has been built up more than 10 feet. At the Stream 3 crossing, the force main would be hung from a pedestrian/golf cart bridge that passes over the stream northeast of Sequoia Drive.

2.4.2.2 Construction of Three Pump Stations

Pump stations are integral to the operation of the force main. Existing lateral gravity sewer conveyances were part of a gravity flow system, and the pump stations would be necessary to raise the sewer water to the elevation of the force main. Three duplex submersible pump stations designated Pump Station 1, Pump Station 2, and Pump Station 3 would be constructed to discharge into the new force main to convey wastewater to MWWSSB's existing Pump Station 20. Pump Station 20 would convey water from the proposed force main to the Towassa WPCP for treatment. The pump stations would each include a wet well, valve vault, generator, and electrical building. A 6-foot-high chain link fence would be constructed around the perimeter of each pump station.

MWWSSB's existing Pump Station 21 and other portions of the Towassa Basin collection system east of MAFB would continue to operate as currently connected and will discharge to one of the proposed new pump stations.

The proposed Pump Station 1 would be located within the former Cypress Tree Golf Course north of East Road (latitude 32.382796°, longitude -86.336803°), as shown on Figure 2-1c. An 18-foot-wide by 550-foot-long asphalt access driveway extending from East Drive would be constructed for Pump Station 1. Pump Station 1 would be approximately 1,519 square feet (0.04 acre), as shown on Figure 2-1. The proposed Pump Station 1 wet well would be approximately 16 feet wide by 16 feet long by 18 feet deep below the ground surface.

The proposed Pump Station 2 would be located at the edge of the former Cypress Tree Golf Course immediately northeast of the Maxwell Club and Event Center access road (latitude 32.383902°, longitude -86.339524°), as shown on Figure 2-1c. Pump Station 2 would be approximately 825 square feet (0.07 acre), as shown on Figure 2-1c. The proposed Pump Station 2 wet well would be 12 feet in diameter by 12 feet below the ground surface.

The proposed Pump Station 3 would be located immediately north of Mimosa Road (latitude 32.389421°, longitude -86.352326°), as shown on Figure 2-1b. Pump Station 3 would be approximately 1,150 square feet (0.03 acre), as shown on Figure 2-1b. The proposed Pump Station 3 wet well would be 14 feet wide by 14 feet long by 16 feet deep.

2.4.2.3 Decommissioning of the Maxwell Field Outfall

This component of the project would include the decommissioning of the existing gravity interceptor by removing the existing aerial portions of the pipeline. The existing pipe supports would remain in place. Portions of the pipeline that are buried would be abandoned in place and capped where the pipe enters and exits the ground surfaces. Figures 2-2a, 2-2b, and 2-2c show the project area for decommissioning of the Maxwell Field Outfall and removal strategy.

To access the pipeline, a 60-foot-wide area along the length of the pipe would be required. The location of the existing pipeline varies inside the 60-foot corridor, depending on whether the existing pipeline is over water or close to the water's edge. Clearing activities within the 60-foot corridor would be minimized and would only occur to the extent necessary to safely access the pipeline. For many areas, clearing activities would only require the removal of fallen trees and debris.

The majority of the pipeline would be removed from the water side using barges and boats. In areas where the pipe cannot be accessed by water, removal would be from land using the 60-foot corridor. Temporary timber mats would be installed for construction equipment and pipe transportation, as required. Approximately 85 percent of the gravity sewer would be removed.

Laydown areas would be used for temporary storage of equipment and materials, including segments of pipe. Clearing is not expected to occur in these areas. When pipeline removal operations are complete, the area would be returned to pre-existing conditions.

In some areas, temporary access roads may need to be constructed to access the 60-foot corridor. This may require minimal tree clearing and the installation of clay fill material. Along the steeper slopes, rock fill may be installed to stabilize the access road. After the existing pipe has been removed, all the fill material would be removed, and the disturbed area would be returned to pre-existing conditions.

To access the project work areas, the contractor would use the Kelly Street entrance of MAFB to Randolph Street and Maxwell Boulevard to enter the following areas:

- For beginning of project: Magnolia Drive to East Drive to River Road
- For center portion of project: Twining Street then Chennault Circle to West Hickory Street to Cottonwood Road
- For end of project: March Road to Mimosa Road to Beech Street to River Road

The contractor would be responsible for developing a detailed decommissioning/demolition plan for the proposed work.

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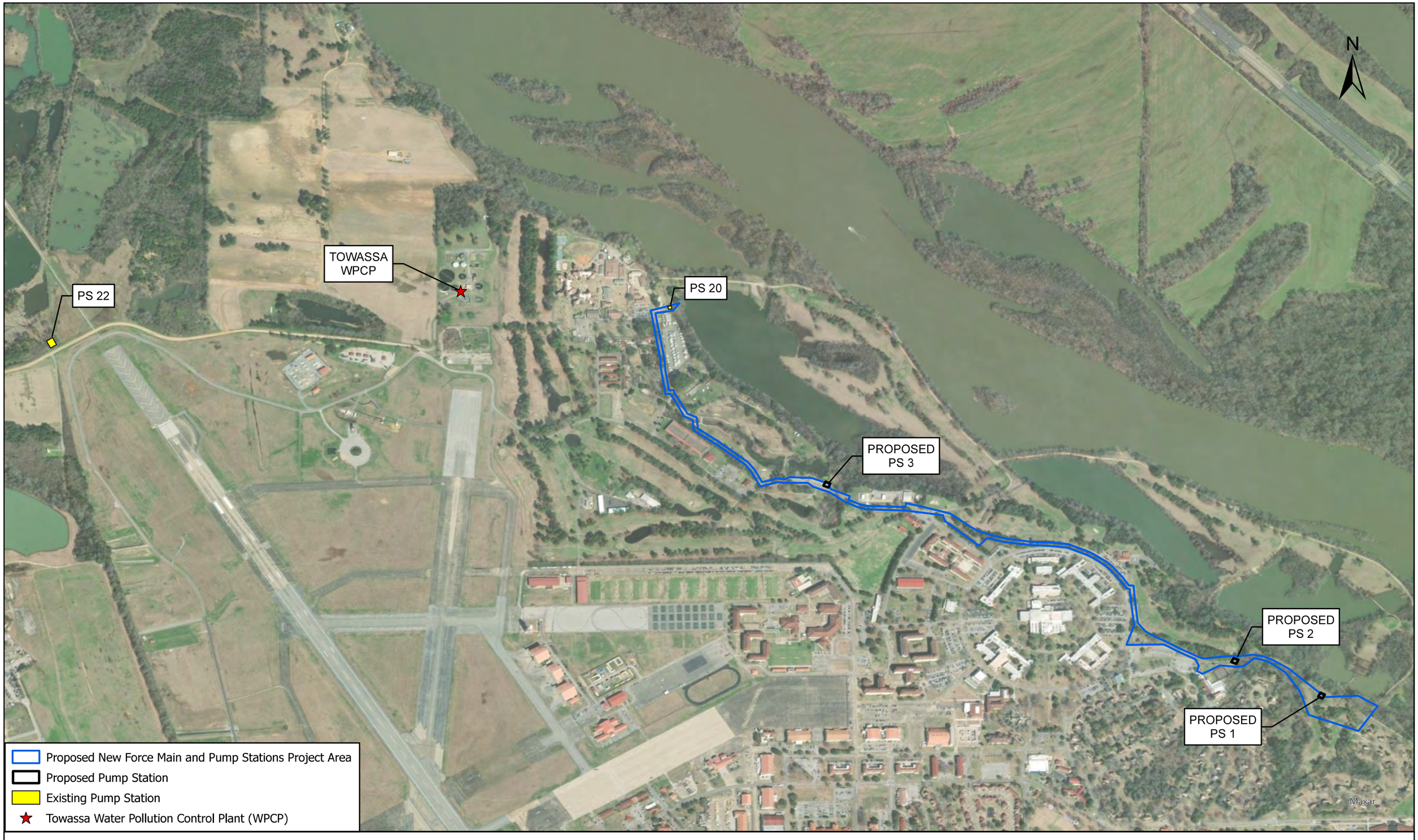


FIGURE 2-1. ALTERNATIVE 1- CONSTRUCTION OF NEW FORCE MAIN AND PUMP STATIONS

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FIGURE 2-1a. ALTERNATIVE 1- CONSTRUCTION OF NEW FORCE MAIN AND PUMP STATIONS

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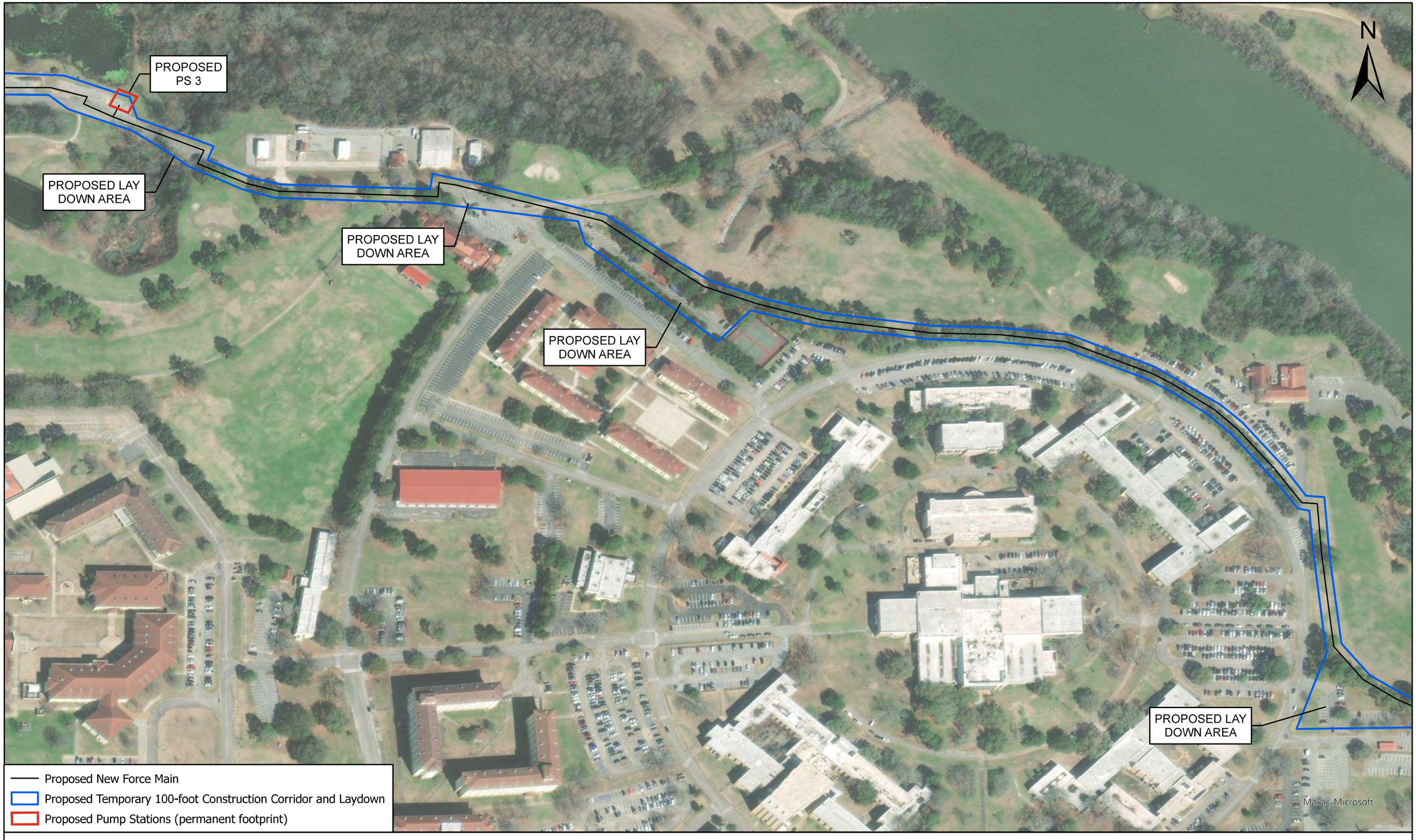


FIGURE 2-1b. ALTERNATIVE 1 - CONSTRUCTION OF NEW FORCE MAIN AND PUMP STATIONS

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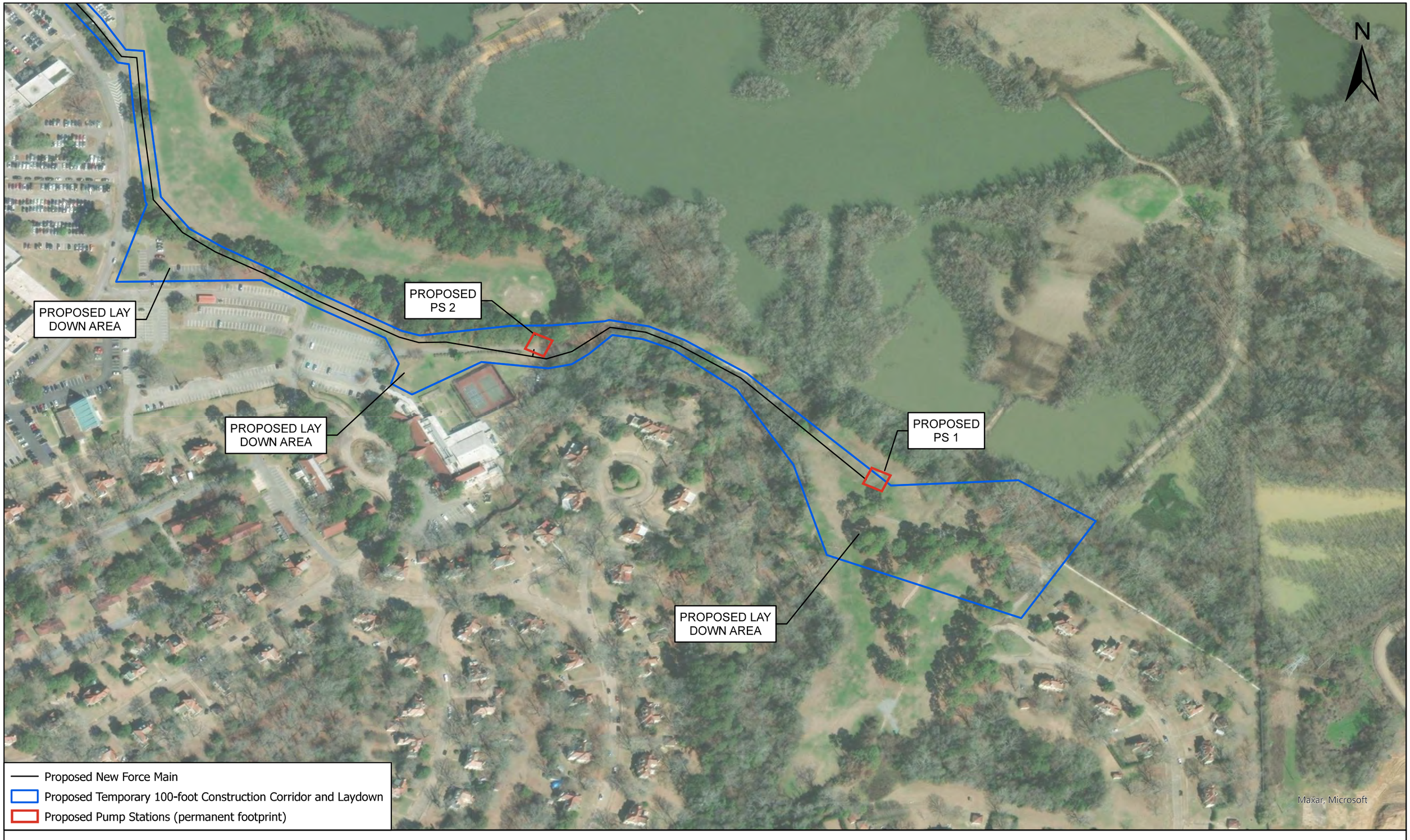


FIGURE 2-1c. ALTERNATIVE 1 - CONSTRUCTION OF NEW FORCE MAIN AND PUMP STATIONS

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FIGURE 2-2. ALTERNATIVE 1 - DECOMMISSIONING OF THE MAXWELL FIELD OUTFALL

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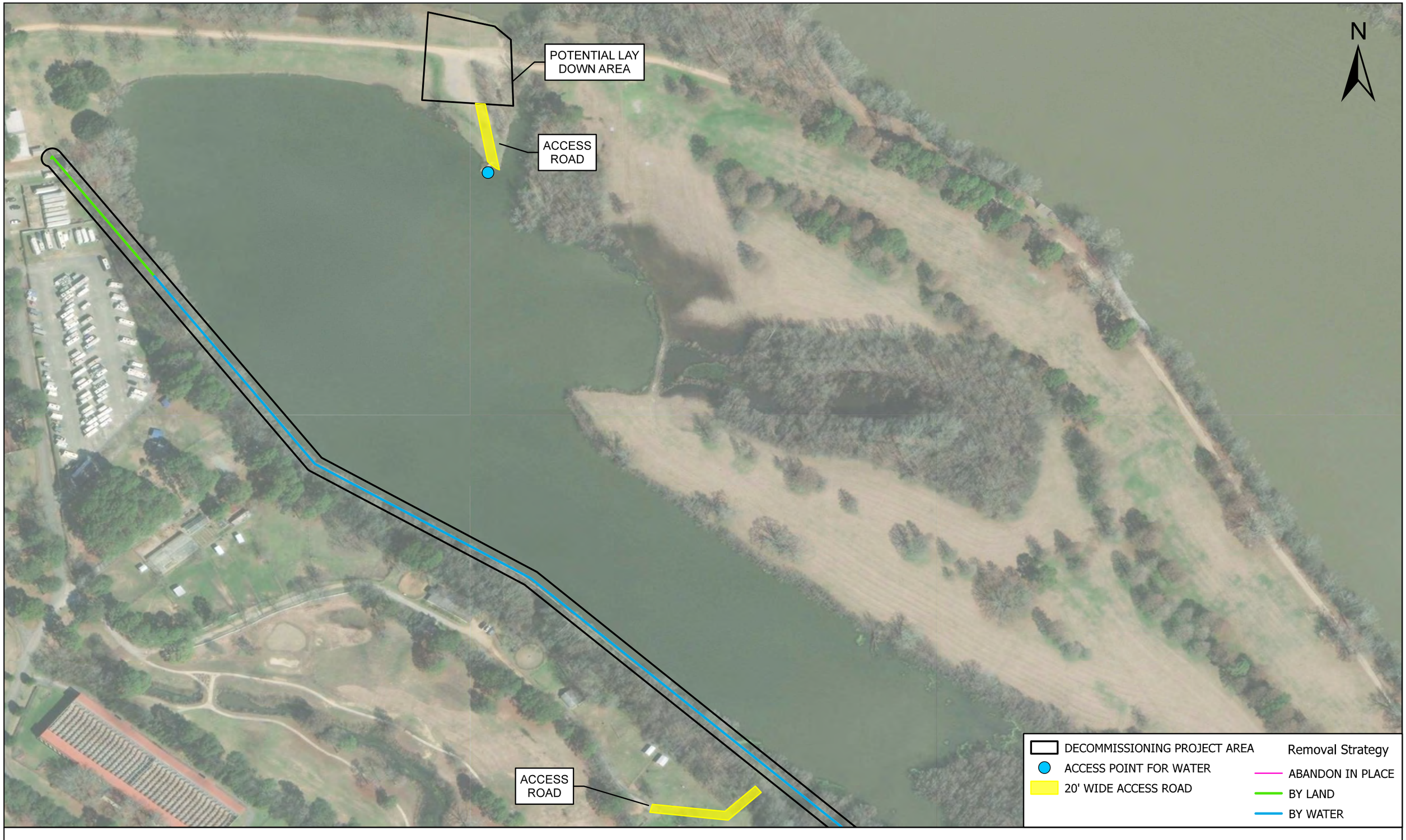


FIGURE 2-2a. ALTERNATIVE 1- DECOMMISSIONING OF THE MAXWELL FIELD OUTFALL

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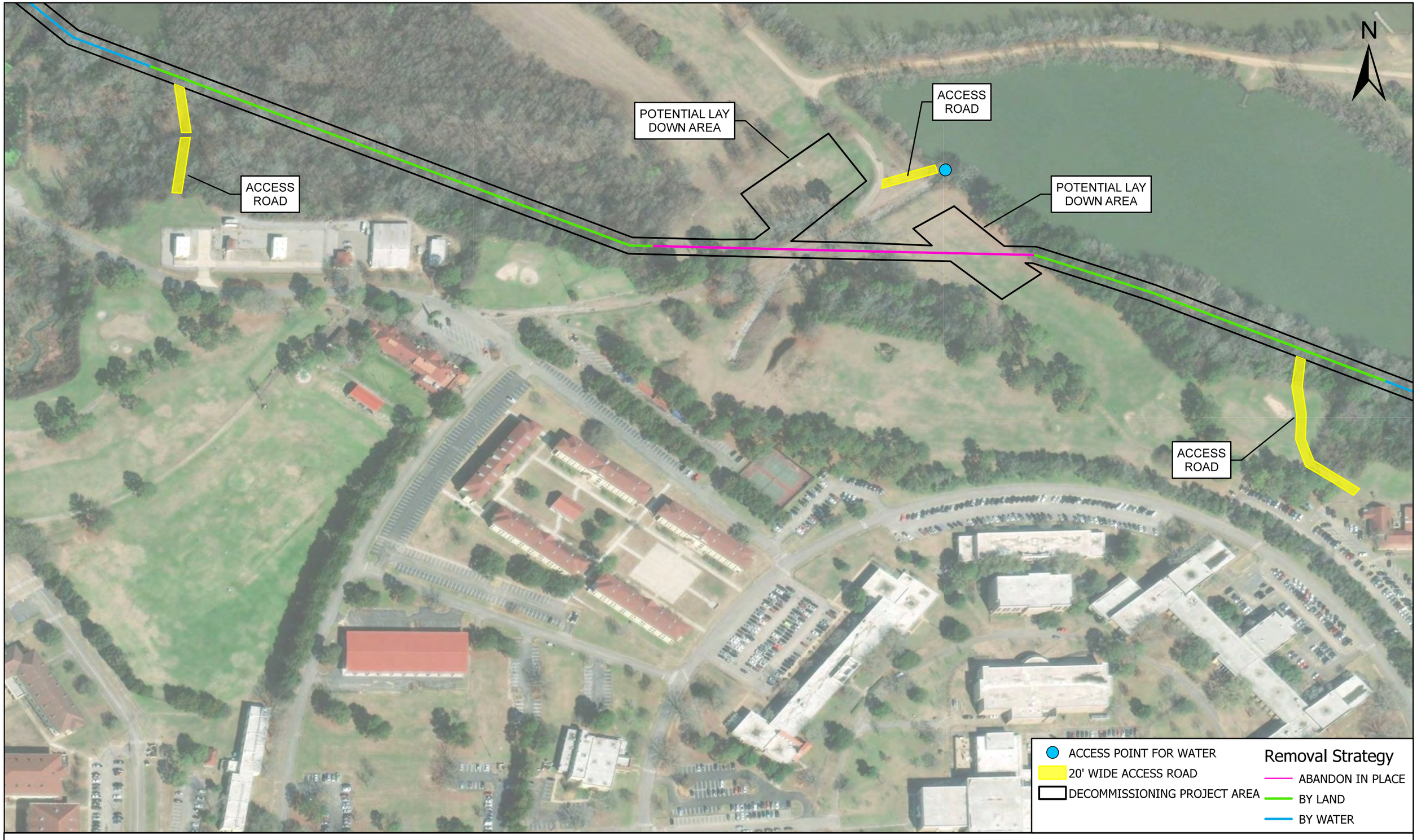


FIGURE 2-2b. ALTERNATIVE 1 - DECOMMISSIONING OF THE MAXWELL FIELD OUTFALL

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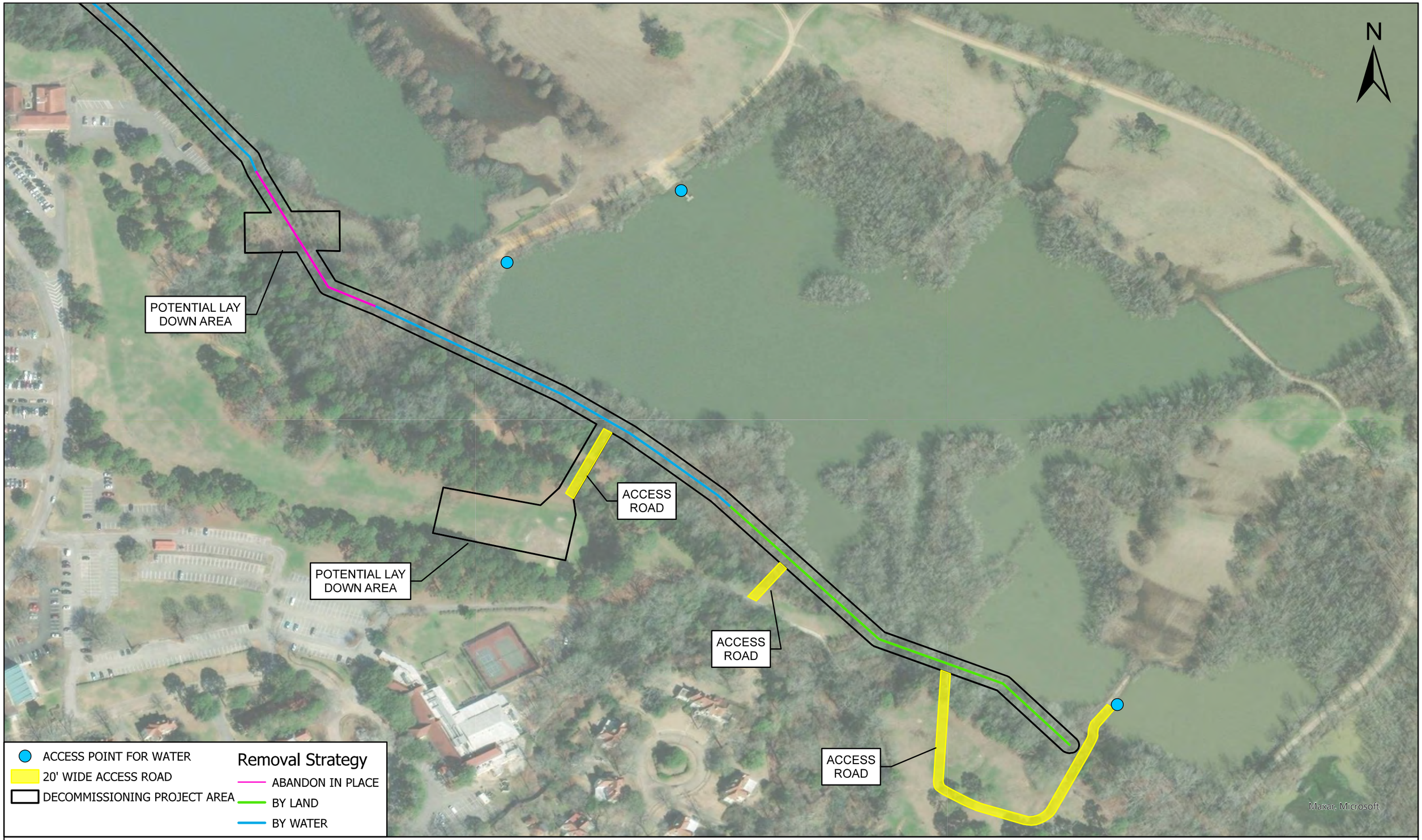


FIGURE 2-2c - DECOMMISSIONING OF THE MAXWELL FIELD OUTFALL

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3. Affected Environment and Environmental Consequences

This section provides a description of the affected environment for each of the potentially impacted resources, along with an analysis of the potential environmental consequences associated with Alternative 1 (Preferred Alternative) and the No-Action Alternative.

In the following sections, the duration of each impact is described either as short term, such as limited to the construction period or immediately thereafter, or long term, which includes operational impacts that recur through time or continue well beyond the period of construction. Types of impacts can be beneficial or adverse. Beneficial impacts improve the resource or issue analyzed. Adverse impacts negatively affect the resource or issue analyzed. The intensity of a potential impact refers to its severity and considers the level of controversy associated with impacts on human health; whether the action establishes a precedent for further actions with significant effects; the level of uncertainty about projected impacts; and the extent to which the action threatens to violate federal, state, or local environmental protection laws or constrains future activities. Potential beneficial impacts are discussed separately from potential adverse impacts. The thresholds of change for the intensity of impacts are defined as follows:

- Negligible: When the impact is localized and not measurable at the lowest level of detection
- Minor: When the impact is localized and slight, but detectable
- Moderate: When the impact is readily apparent and appreciable
- Major: When the impact is severely or significantly disruptive to current conditions

Intensities that are classified as negligible, minor, or moderate are insignificant impacts in this analysis. Significant impacts are those categorized as "major." Measures that would be implemented to avoid or minimize potential impacts on the environment, including those that otherwise would be significant, are also presented.

3.1 Resource Areas Eliminated from Further Analysis

In accordance with the CEQ directives to focus NEPA analyses on environmental resource areas where there is a potential for significant impact and where the analyses are expected to provide useful information to the decision maker (40 CFR Subpart 1502.2), some resource areas have been eliminated from detailed study in this EA. The rationale for their elimination is summarized as follows:

- **Land Use:** Land use classifications characterize the natural and human activities that occur at or are planned for a given location. MAFB encompasses 2,257 acres in the northwestern portion of Montgomery, Alabama. MAFB is divided into 10 planning districts: Airfield, Recreation, University, West Administration, West Community, Academy, East Community, East Administration, Technology, and Vigilant Warrior (USAF 2015). Construction of the proposed new force main and pump stations and decommissioning of the Maxwell Field Outfall would occur within the Recreation District, along the southern boundary of the golf course. Alternative 1 would have no impact to land use identified for each district; therefore, this resource is excluded from further discussion.
- **Noise:** Noise, often defined as unwanted sound, is one of the most common environmental issues associated with human activities. Public annoyance is the most common impact associated with exposure to elevated noise levels. Short-term noise would occur during construction of the proposed new force main and pump stations and decommissioning of the Maxwell Field Outfall; however, construction would primarily occur on weekdays during daylight hours to minimize noise impacts. The current baseline noise contours only extend off-base to the north, where it overlaps with industrial and open space. No noise-sensitive receptors, such as schools and churches, are located within the current noise contours. Workers would be required to wear appropriate hearing protection. Because impacts to noise would be short term and there would be no impacts to sensitive noise receptors off-base, noise is not considered further in this EA.
- **Safety and Occupational Health:** Safety and occupational health is the promotion and maintenance of the physical, mental, and social well-being of workers by controlling risk to the highest degree and

protecting the safety, health, and welfare of people engaged in work or employment. Implementation of Alternative 1 would have no impact on the availability, capabilities, or capacity of emergency services available on MAFB or neighboring communities. MWWSSB and its contractors would be required to prepare and adhere to site-specific health and safety plans in compliance with Occupational Safety and Health Administration (OSHA) standards and applicable DoD and USAF regulations to establish and maintain safety procedures. Therefore, negligible impacts to safety and occupational health are anticipated and this resource is not considered further in this EA.

- **Socioeconomic Resources:** Implementation of Alternative 1 would have negligible, short-term, direct, beneficial impacts on the local economy during construction. Impacts would be beneficial because local labor and materials could potentially be used for construction of the new force main and pump stations. These impacts would be short term and minor because of the limited duration and scope of construction activities. Negligible, short-term, indirect, beneficial impacts would be expected during construction of the proposed new force main and pump stations and decommissioning of the Maxwell Field Outfall because of incidental spending in the local area by construction workers employed by private construction contractors. No permanent jobs would be generated, and no new personnel would come to MAFB as part of the Proposed Action. There would be no change in the local economy when construction is complete as compared to existing conditions. Therefore, socioeconomic resources are not considered further in this EA.
- **Environmental Justice:** EO 12898, "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations," requires federal agencies to consider disproportionately high adverse effects on the human or environmental health to minority and low-income populations resulting from implementation of a proposed action. The U.S. Environmental Protection Agency's (EPA's) Environmental Justice Screening and Mapping Tool indicates the area surrounding MAFB has certain environmental and demographic indicators that are higher than the state and U.S. average (EPA n.d.). Low-income and minority populations would not be impacted because Alternative 1 would not result in housing relocations, significant changes in employment opportunities, or disproportionate environmental health or safety risks to minority or low-income populations in the vicinity of MAFB. Therefore, environmental justice is not analyzed further in this EA.
- **Protection of Children:** EO 13045, "Protection of Children from Environmental Health Risks and Safety Risks," states that each federal agency "(a) shall make it a high priority to identify and assess environmental health risks and safety risks that may disproportionately affect children; and (b) shall ensure that its policies, programs, activities, and standards address disproportionate risks to children that result from environmental health risks or safety risks." Implementation of Alternative 1 would not result in environmental health or safety risks that would affect children. Access to construction areas would be controlled, thereby limiting unauthorized access by any person, including children. Because there would be no health or safety risks to children, protection of children is not considered further in this EA.
- **Airspace:** Navigable airspace is defined as the airspace at or above the minimum altitudes of flight that includes the airspace needed to ensure safety in the takeoff and landing of aircraft. Alternative 1 would not result in a change in airspace configuration or usage. Therefore, airspace is not a resource considered further in this EA.
- **Prime Farmland:** Prime farmland is land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops and that is available for these uses. No soil types designated as prime farmland occur within the area for Alternative 1 (NRCS 2022). Therefore, prime farmland is not considered further in this EA.
- **Transportation:** Ground transportation resources generally include the roadway and street systems surrounding the affected environment. MAFB has three access control points across the Base: Day Street, Kelly Street, and Maxwell Boulevard. Maxwell Boulevard connects the Base to downtown Montgomery. Maxwell Boulevard runs west–east along the southern boundary of MAFB, where it transitions to Bell Street (USAF 2022). Implementation of Alternative 1 would have short-term impacts

to traffic on MAFB during construction activities. During construction, delivery of materials to and removal of debris from the construction sites would occur. Traffic control procedures, including flaggers, would minimize impacts to traffic flow. Construction traffic would account for a small percentage of the total traffic on the installation. Many of the heavy construction vehicles would be driven to the site and kept onsite for the duration of construction activities, resulting in relatively few additional trips. With implementation of traffic control procedures, impacts to transportation would be negligible, so this resource is not considered further in this EA.

- **Visual Resources:** Visual resources refer to the natural and constructed features that give a particular environment its aesthetic qualities. Alternative 1 would have insignificant impacts to aesthetics and visual resources. Alternative 1 would not result in any obvious modifications to the existing aesthetic or visual landscape at MAFB. The force main would be buried underground and the visual appearance of the new pump stations would be consistent with the developed areas within the vicinity of the site. Therefore, visual resources are not analyzed further in this EA.

3.2 Air Quality

The Clean Air Act (CAA) defines air quality as the "state of the ambient air, with respect to the presence of substances that can cause harm to the public health or welfare."

3.2.1 Regulatory Setting

Air quality is regulated under CAA regulations (40 CFR Parts 50 through 99) and the Alabama Air Pollution Control Act (Alabama Code 22-28-1 through 22-28-23). Under the authority of the CAA, EPA established nationwide air quality standards to protect public health and welfare. These federal standards, known as National Ambient Air Quality Standards (NAAQS), represent the maximum allowable atmospheric concentrations for six criteria pollutants: ozone, nitrogen dioxide (NO_2), carbon monoxide (CO), sulfur dioxide (SO_2), lead, and particulate matter, which includes respirable particulate matter less than or equal to 10 micrometers in diameter (PM_{10}) and respirable particulate matter less than or equal to 2.5 micrometers in diameter ($PM_{2.5}$). The criteria pollutants are shown in Table 3-1.

Table 3-1. Ambient Air Quality Standards

Criteria Pollutant	Federal Standard (Averaging Period)[a]	Federal Attainment Status
CO	35 ppm (1 hour)	Attainment
	9 ppm (8 hours)	
NO_2	0.100 ppm (1 hour)	Attainment
	0.053 ppm (annual arithmetic mean)	
Ozone	0.070 ppm (8 hours)	Attainment
$PM_{2.5}$	9 µg/m^3 (annual arithmetic mean)	Attainment
	35 µg/m^3 (24 hours)	
PM_{10}	150 µg/m^3 (24 hours)	Attainment
SO_2	0.5 ppm (3 hours, secondary standard)	Attainment
	0.075 ppm (1 hour)	Attainment
Lead	0.15 µg/m^3 (rolling 3-month average)	Attainment

Source: EPA 2024a

[a] National standards other than ozone, particulate matter, and those based on annual averages or annual arithmetic means are not to be exceeded more than once per year. The ozone standard is attained when the fourth-highest 8-hour concentration in a year, averaged over 3 years, is equal to or less than the standard. For PM_{10}, the 24-hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 µg/m^3 is equal to or less than 1. For $PM_{2.5}$, the 24-hour standard is attained when 98 percent of the daily concentrations, averaged over 3 years, is equal to or less than the standard.

µg/m^3 = microgram(s) per cubic meter
ppm = part(s) per million, by volume

Under the CAA, the country is classified into attainment, nonattainment, and maintenance areas. Any area not meeting the NAAQS is designated as nonattainment for the specific pollutant or pollutants, whereas areas that meet the NAAQS are designated as attainment areas. Maintenance areas are those areas that were previously designated as nonattainment and subsequently redesignated to attainment, subject to the development of a maintenance plan.

Under the EPA New Source Review (NSR) program, stationary sources of air pollution are required to have permits before construction of the source begins. Approval of the NSR Prevention of Significant Deterioration permit would be required if the proposed project were either a new source, with the potential to emit 250 tons or more per year of an attainment pollutant, or an existing major source of emissions, making a major modification in an attainment area and resulting in a net emissions increase above specified levels. Nonattainment NSR approval would be required if the proposed project were a new stationary source or major source of emissions, making a major modification in a nonattainment area with the potential to emit nonattainment pollutants exceeding NSR thresholds.

The CAA General Conformity Rule (40 CFR Parts 6, 51, and 93) requires federal agencies to make written conformity determinations for federal actions in or affecting nonattainment or maintenance areas if the action exceeds *de minimis* levels for any criteria pollutant. If the emissions of a criteria pollutant or its precursors do not exceed the *de minimis* level, the federal action has minimal air quality impact and, therefore, the action is determined to conform for the pollutant under study and no further analysis is necessary.

Greenhouse gases (GHGs) are compounds that may contribute to accelerated climate change by altering the thermodynamic properties of Earth's atmosphere. GHGs consist of carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), and fluorinated gases (EPA 2024b). Under the EPA Mandatory Reporting Rule, facilities that emit 25,000 metric tons or more per year of carbon dioxide equivalent (CO_2e) emissions from specific source categories must submit annual reports to the EPA.

All air quality NEPA assessments conducted by the Air Force are required to assess GHGs in accordance with *DAF Greenhouse Gas (GHG) & Climate Change Assessment Guide* (AFCEC 2023). Based on this guidance, a GHG Emissions Evaluation should be conducted to quantify the GHG emissions from the Proposed Action, determine if the action's emissions are insignificant, and conduct a relative significance assessment of the alternatives. GHGs are analyzed like any other air pollutant and quantified using the Air Force's Air Conformity Applicability Model (ACAM). The GHG Emissions Evaluation is automated in ACAM.

The Air Force has adopted the Prevention of Significant Deviation threshold for GHGs of 75,000 tons per year (tpy) or 68,039 metric tons per year (mtpy) as an indicator or threshold of insignificance for air quality impacts in all areas under NEPA (AFCEC 2023). This indicator does not define a significant impact; however, it identifies actions that are insignificant. The Air Force considers proposed actions (or alternatives) with a net change in GHG (CO_2e) emissions below 75,000 tpy as being too insignificant to warrant further consideration beyond the ACAM analysis. Actions with a net change in GHG emissions above 75,000 tpy or 68,039 mtpy are considered only potentially significant and require further analysis to determine if they would have a significant impact.

The relative significance assessment considers the affected area and degree (intensity) of the Proposed Action's effects and uses the rule of reason and concept of proportionality to compare the alternatives' GHG contributions. This assessment involves calculating the percentage of each alternative's annual GHG emissions relative to the annual GHG emissions of the state where the action is proposed and to U.S. and global annual GHG emissions. These percentages are then compared to assess the relative significance of each alternative's annual GHG emissions in relation to or proportionally to regional, national, and global annual GHG emissions. State and U.S. emission estimates are based on 5-year averages of individual state-reported emissions, and global emissions are based on the assumption that U.S. GHG emissions are 13.4 percent of global GHG emissions. The relative significance assessment is automatically performed in ACAM.

3.2.2 Affected Environment

MAFB is located in Montgomery County, Alabama. Montgomery County is in attainment with all NAAQS; therefore, a General Conformity analysis is not required.

3.2.2.1 Climate Change

Climate change is a long-term change in the average weather patterns that define Earth's local, regional, and global climates.

For Montgomery, Alabama, which is the closest city to MAFB with recent data, the average high temperature is 92 degrees Fahrenheit (°F) in July and August, which are the hottest months, and the average low temperature is 36°F in January, which is the coldest month. Montgomery has an average annual precipitation of 53.1 inches per year. The wettest month of the year is February, with an average rainfall of 5.28 inches (U.S. Climate Data 2022).

Temperatures in Alabama have remained steady in the last century, in contrast to general global trends. However, 2016 to 2020 was the warmest consecutive 5-year interval. Annual average temperatures in Alabama are projected to rise by as much as approximately 7°F by 2050 and 13°F by 2100. It is expected that future warmer temperatures will increase atmospheric water vapor, in turn increasing extreme precipitation events in Alabama (Runkle et al. 2022).

3.2.3 Environmental Consequences

The threshold level for a significant adverse impact to air quality is defined as a violation of an ambient air quality standard or regulatory threshold.

3.2.3.1 Alternative 1

Air quality impacts associated with Alternative 1 were evaluated based on whether emissions would be localized and whether a reasonable potential exists for a violation of an ambient air quality standard or regulatory threshold.

Implementation of Alternative 1 at MAFB would result in short-term, less-than-significant, adverse impacts to overall air quality from construction activities. The operation of various equipment during construction activities would create exhaust emissions and generate dust and other particles in the air during the execution of Alternative 1. Mobile source emissions also would be generated from vehicular traffic. Operational activities resulting from construction of Alternative 1 would be negligible.

Construction emissions were estimated using ACAM (Version 5.0.23a). Table 3-2 summarizes projected air emissions from construction activities under Alternative 1. A copy of the calculations used to develop these estimates is provided in the Record of Air Analysis in Appendix C.

Table 3-2. Construction Emissions for Alternative 1

	Emissions for 2025 (tpy)					
Emission Source	**VOC**	**CO**	**NO_X**	**SO_2**	**PM_{10}**	**$PM_{2.5}$**
Construction Emissions	0.140	1.57	1.21	0.002	10.8	0.048
Total Emissions	**0.140**	**1.57**	**1.21**	**0.002**	**10.8**	**0.048**
de minimis levels (tpy)	250	250	250	250	250	250
Threshold Exceeded for Any Activity?	No	No	No	No	No	No
	Emissions for 2026 (tpy)					
	VOC	**CO**	**NO_x**	**SO_2**	**PM_{10}**	**$PM_{2.5}$**
Construction Emissions	0.100	0.292	0.192	0.000	0.008	0.007
Total Emissions	**0.100**	**0.292**	**0.192**	**0.000**	**0.008**	**0.007**
de minimis levels (tons per year)	250	250	250	250	250	250
Thresholds Exceeded for Any Activity?	No	No	No	No	No	No

Note: No lead emissions would be generated during construction activities.
NO_x = nitrogen oxides
VOC = volatile organic compound

Based on the estimated emissions listed in Table 3-2, the emissions from construction activities associated with Alternative 1 would be below the Air Force's insignificance indicator for all criteria pollutants. Therefore, Alternative 1 would not be subject to Prevention of Significant Deterioration or NSR requirements. The analysis indicates that the emissions would be below the *de minimis* thresholds under EPA's General Conformity Rules. A Record of Air Analysis would be used to document that the proposed project is exempt from General Conformity requirements. Appendix C contains the Record of Air Analysis and detailed emission calculations.

Best management practices (BMPs) would be implemented during construction to reduce potential impacts to air quality, including having no visible emissions such as dust and wind-blown soil. These control measures could include applying water, or using other stabilization measures, on areas of bare soil or soil piles; creating wind breaks; and covering dump trucks that transport materials that could become airborne. Additionally, contractors would be required to maintain construction equipment in accordance with manufacturers' specifications to reduce exhaust emissions. Construction of Alternative 1 would have no significant impact on air quality.

Climate Change and GHGs

Table 3-3 presents the maximum annual construction emissions of GHGs estimated for Alternative 1 using ACAM. ACAM calculations of CO_2e are calculated by factoring in the Global Warming Potential of each GHG. GHGs are assigned a Global Warming Potential which is a measurement of how much heat the gas traps in the atmosphere calculated over a specific time interval. As indicated, peak GHG emissions would be 226 metric tons CO_2e for construction in 2025, well below the indicator of insignificance for GHG emissions, which is 68,039 mtpy (AFCEC 2023). The Air Force considers actions with a net change in GHG emissions below this amount as being too insignificant to warrant further consideration beyond the ACAM analysis.

Table 3-3. Estimated Annual Air Emissions (in mtpy) of GHGs

Source	CO_2	CH_4	N_2O	CO_2e
Alternative 1 – 2025	**225**	**0.009**	**0.002**	**226**
Alternative 1 – 2026	**51**	**0.002**	**0.001**	**51**
Insignificance Threshold				68,039

Table 3-4 compares GHG emissions for Alternative 1, the state of Alabama, and the U.S. This relative significance assessment is automatically performed in ACAM and provides additional context on the relative amounts of GHG emissions that would be generated under Alternative 1. Based on this relative comparison analysis, Alternative 1 would not have a significant GHG contribution relative to regional or global emission levels.

Table 3-4. GHG Relative Significance Assessment

Alternative 1 GHG Emissions	CO_2	CH_4	N_2O	CO_2e
% of Alabama Total	0.0001%	0.0000009%	0.000009%	0.0001%
% of U.S. Total	0.000003%	0.00000002%	0.00000009%	0.000003%

Table 3-5 presents the annual social cost of GHG per year for Alternative 1. The social cost of GHG is a theoretical estimate of the long-term monetary damage (based on 2020 U.S. dollars) that may result from the GHG emissions and can be used to provide additional context on the overall impact of the action on climate change. These costs are automatically calculated in ACAM and are derived by multiplying the annual GHG emissions for a given year by the annual Social Cost of GHG per metric ton for the corresponding GHGs.

Table 3-5. Annual Social Cost of GHG per Year

Year	Social Cost GHG ($/year [in 2020$])			
	CO_2	CH_4	N_2O	CO_2e
2025	**$18,680.00**	**$20.00**	**$60.00**	**$18,770.00**
2026	**$4,260.00**	**$0.00**	**$20.00**	**$4,280.00**

The changing climate is not anticipated to impact future operations at the new facilities or cause an increase in the impacts associated with Alternative 1. MAFB is not located in a coastal region or along a tidally influenced river reach. Therefore, sea level rise from climate change would not impact Alternative 1. Alternative 1 would have no significant impact on climate change.

3.2.3.2 No-Action Alternative

Under the No-Action Alternative, the new force main and pump stations would not be constructed and the Maxwell Field Outfall would remain in service. There would be no emissions from construction activities or from aircraft operation, no increase in fugitive dust emissions, and no changes to or from climate change. Therefore, no impacts to air quality or climate change would occur.

3.3 Water Resources

Water resources include both surface water and groundwater. Surface water resources include lakes, rivers, streams, and wetlands. These resources can be important to economic, ecological, recreational, and human health resources. Stormwater is included in the surface water analysis because it has the potential to flow into connected surface waters and impact surface water quality.

Groundwater includes subsurface hydrologic resources. Groundwater properties are often described in terms of depth to aquifer or water table, water quality, and surrounding geologic composition. Stormwater flows, defined as runoff from precipitation that are increased by impervious surfaces, may introduce sediments and other contaminants into the water resource environment.

3.3.1 Regulatory Setting

The establishment of federal policies to restore and maintain the chemical, physical, and biological integrity of the nation's waters and, where attainable, to achieve a level of water quality that provides for the protection and propagation of fish, shellfish, wildlife, and recreation in and on the water were set forth in the Clean Water Act of 1977 (CWA) (33 USC § 1344) and the Water Quality Act of 1987 (33 USC § 1251, as amended). The EPA has delegated the authority to implement Section 402 of the CWA to ADEM. ADEM regulations require that nonpoint source stormwater discharges related to the Proposed Action or alternatives comply with the requirements of a NPDES permit, including a stormwater pollution prevention plan (SWPPP) detailing site-specific BMPs. Section 404 of the CWA requires authorization from the Secretary of the Army, acting through the U.S. Army Corps of Engineers (USACE) with EPA oversight, for the discharge of dredged and fill material into all waters of the U.S., including wetlands. This portion of the CWA is administered by the USACE with EPA oversight. Section 401 of the CWA requires certification of water quality for Section 404 discharges. ADEM administers the Section 401 program.

Section 10 of the Rivers and Harbors Act of 1899 (RHA), as amended, requires authorization from the Secretary of the Army, acting through the USACE, for the construction of any structure in or over any navigable water of the U.S. Navigable waters of the U.S. are defined as "those waters that are subject to the ebb and flow of the tide and/or are presently used, or have been used in the past, or may be susceptible for use, to transport interstate or foreign commerce." The law applies to any dredging or disposal of dredged materials, excavation, filling, rechannelization, or any other modification of a navigable water of the U.S., and applies to all structures, from the smallest floating dock to the largest commercial undertaking. It further includes, without limitation, any wharf, dolphin, weir, boom breakwater, jetty, groin, bank protection (riprap, revetment, bulkhead), mooring structures such as pilings, aerial or subaqueous power transmission lines, intake or outfall pipes, permanently moored floating vessel, tunnel, artificial canal, boat ramp, aids to navigation, and any other permanent or semi-permanent obstacle or obstruction.

Additionally, Air Force actions must comply with EO 11990, “Protection of Wetlands,” and EO 11988, "Floodplain Management.” When one or both of these EOs apply, a finding of no practicable alternative (FONPA) must be completed if it is determined that there is no practicable alternative to implementing an action that would impact the wetland or floodplain. The FONPA finding is based on the NEPA analysis and documented in the NEPA decision document.

3.3.2 Affected Environment

3.3.2.1 Surface Water

MAFB is located on the western bank of the Alabama River within the Cahaba River Basin. The region of influence for water resources includes the Mortar Creek-Alabama Watershed (HUC 0315020101), as well as the aquifers beneath the watershed (USGS 2023). A waters of the U.S. delineation was conducted for the project on 23 May and 23 August 2022. The delineation report is included in Appendix D.

The proposed route for the new force main crosses three perennial streams (designated Stream 1, Stream 2, and Stream 3), with a wetland (designated Wetland WL1) abutting Stream 1 (Figures 3-1, 3-1a, 3-1b, and 3-1c).

Approximately half the existing Maxwell Field Outfall is aboveground and suspended above sensitive aquatic habitats, including wetlands in sloughs along the Alabama River, a Section 10 waterway, and tributary streams that flow into sloughs (Figures 3-2, 3-2a, 3-2b, and 3-2c). Within the project area for decommissioning the Maxwell Field Outfall, there are three wetlands (designated Wetland WL2, Wetland WL3, and Wetland WL4), one stream (designated Stream 4), and multiple large sections of open water.

Stream 1 is a perennial stream that runs through Wetland WL1. The stream is approximately 25 feet wide and 3 feet deep at the ordinary high-water mark (OHWM).

Stream 2 is a perennial stream that is approximately 3 feet wide and 2 feet deep at the OHWM. The banks are vegetated.

Stream 3 is a perennial stream that is approximately 20 feet wide and 2 feet deep at the OHWM and is reinforced with concrete and stone. The banks are stone and vegetated.

Stream 4 is a perennial stream that is approximately 4 feet wide and 2 feet deep at the OHWM.

Wetland WL1 is dominated by rice cutgrass (*Leersia oryzoides*), sensitive fern (*Onoclea sensibilis*), and broadleaf arrowhead (*Sagittaria latifolia*). The observed hydrology indicators included saturation and sitting water, and geomorphic position.

Wetland WL2 is dominated by black gum (*Nyssa sylvatica*), sweet gum (*Liquidambar styraciflua*), rice cut grass, sensitive fern, and broadleaf arrowhead. The observed hydrology indicators included saturation, oxidized rhizospheres along living roots, and geomorphic position.

Wetland WL3 is dominated by sweet gum, rice cut grass, alligator weed (*Alternanthera philoxeroides*), American sycamore (*Platanus occidentalis*), and Chinese tallow-tree (*Triadica sebifera*). The observed hydrology indicators included saturation, oxidized rhizospheres along living roots, and geomorphic position.

Wetland WL4 is dominated by sweet gum, rice cut grass, alligator weed, American sycamore, and Chinese tallow-tree. The observed hydrology indicators included saturation, oxidized rhizospheres along living roots, and geomorphic position.

Project areas for Pump Stations 1, 2, and 3 are located on solid ground, outside of jurisdictional waters of the U.S.



FIGURE 3-1. SURFACE WATERS WITHIN NEW FORCE MAIN AND PUMP STATIONS PROJECT AREA

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FIGURE 3-1a. SURFACE WATERS WITHIN NEW FORCE MAIN AND PUMP STATIONS PROJECT AREA

0 0.05 0.1 Mi

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FIGURE 3-1b. SURFACE WATERS WITHIN PROJECT AREAS FOR NEW FORCE MAIN, PUMP STATIONS, AND GRAVITY SEWER CONVEYANCE

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FIGURE 3-1c. SURFACE WATERS WITHIN NEW FORCE MAIN AND PUMP STATIONS PROJECT AREA

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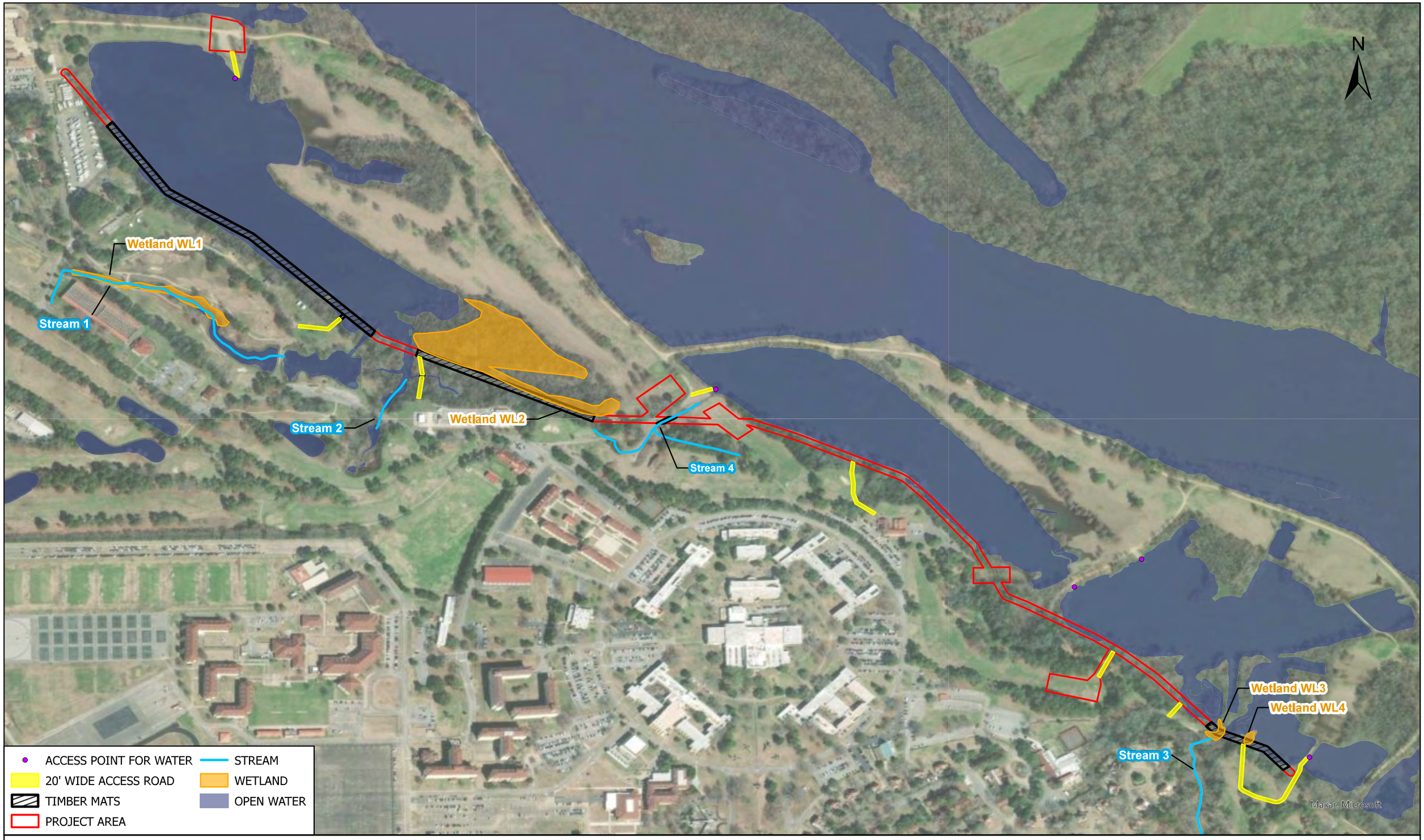


Figure 3-2. SURFACE WATERS WITHIN PROJECT AREAS FOR DECOMMISSIONING OF THE MAXWELL FIELD OUTFALL

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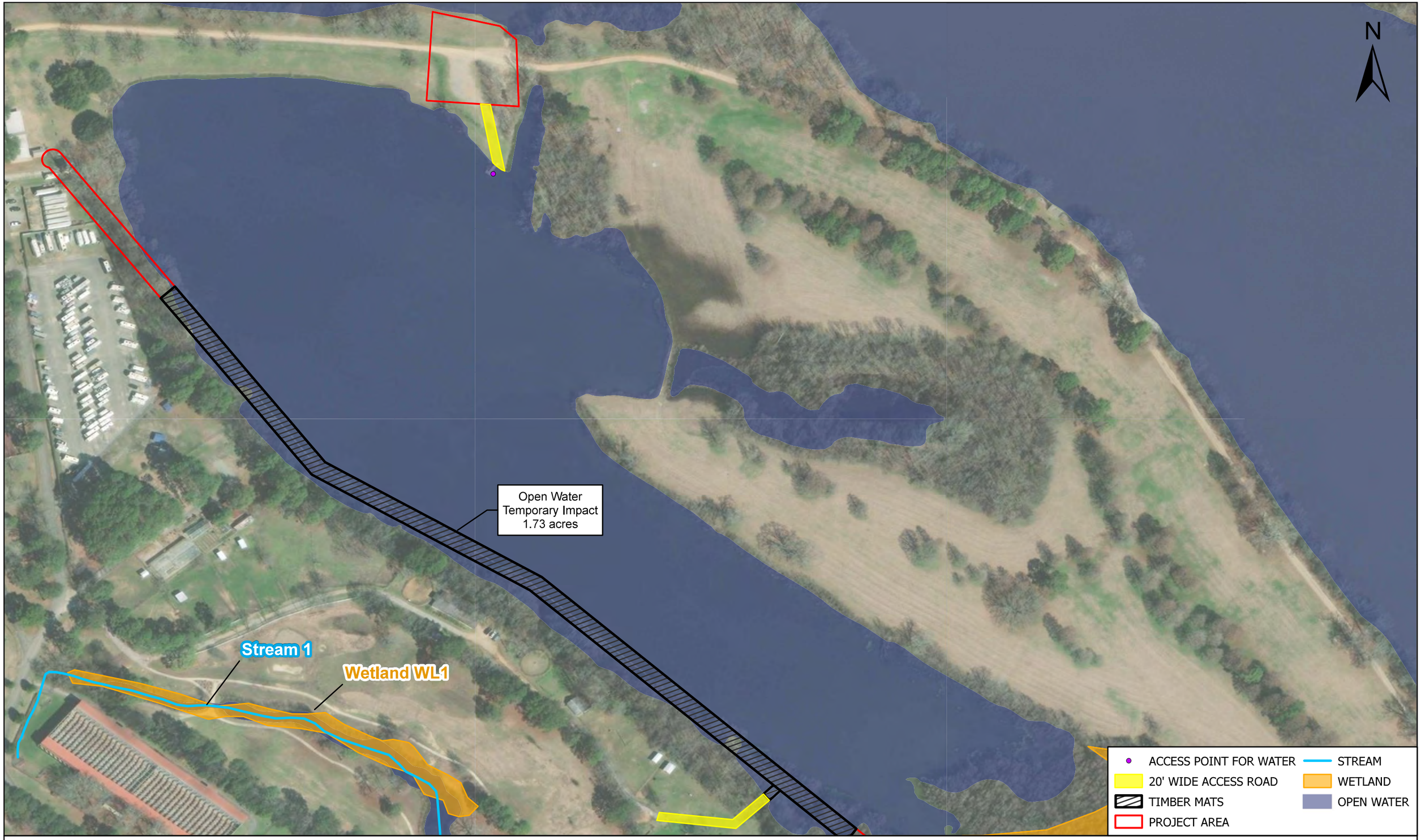


FIGURE 3-2a. SURFACE WATERS WITHIN MAXWELL FIELD OUTFALL DECOMMISSION PROJECT AREA

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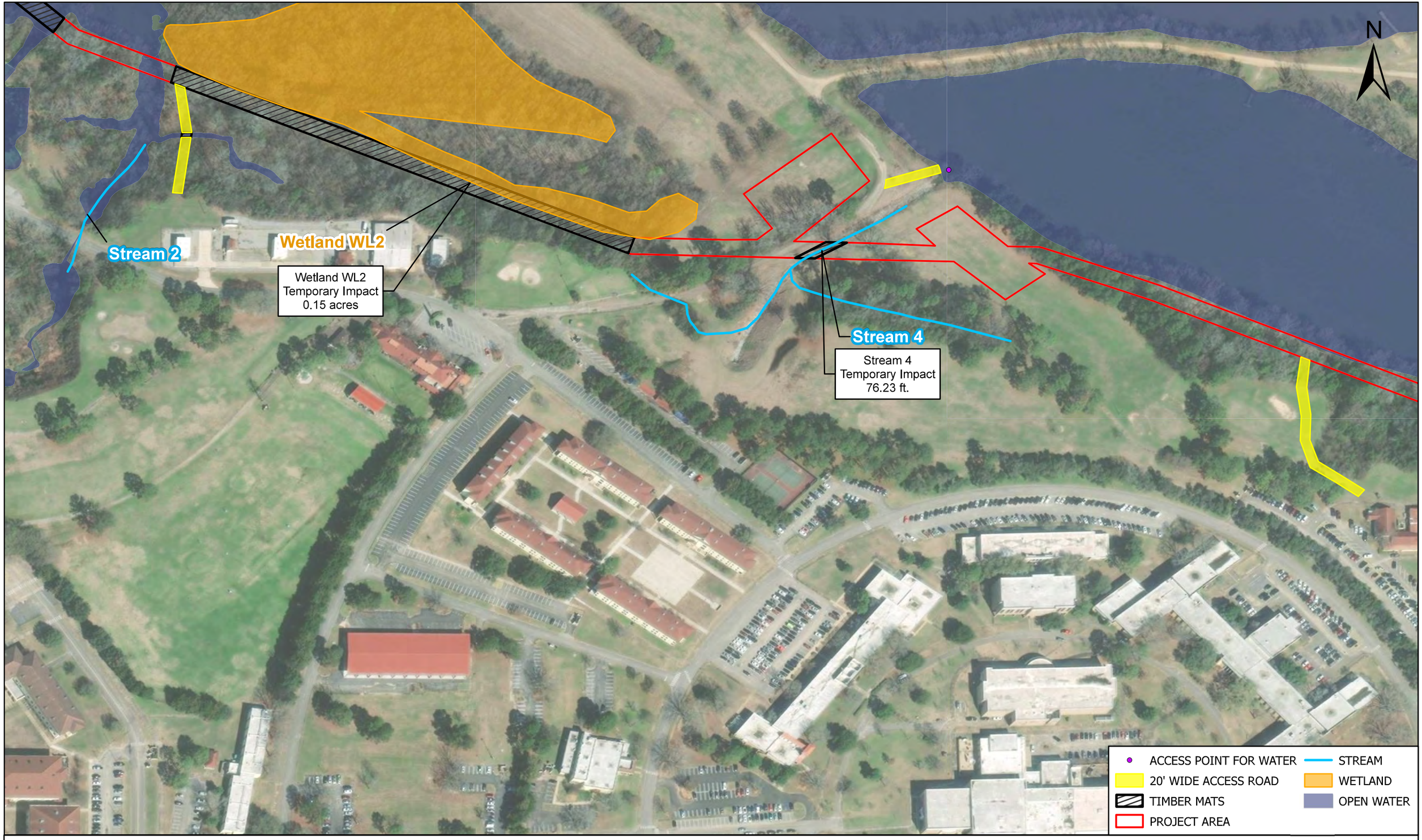


FIGURE 3-2b. SURFACE WATERS WITHIN MAXWELL FIELD OUTFALL DECOMMISSION PROJECT AREA

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N

Wetland WL4

Wetland WL4
Temporary Impact
0.03 acres

Wetland WL3

Wetland WL3
Temporary Impact
0.04 acres

Open Water
Temporary Impact
0.35 acres

Stream 4

ACCESS POINT FOR WATER
20' WIDE ACCESS ROAD
TIMBER MATS
PROJECT AREA
STREAM
WETLAND
OPEN WATER

Maxar, Microsoft

FIGURE 3-2c. SURFACE WATERS WITHIN MAXWELL FIELD OUTFALL DECOMMISSION PROJECT AREA

0 0.04 0.08 Mi

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3.3.2.2 Groundwater

Most of the groundwater used at MAFB occurs under artesian conditions, with water-table conditions occurring in the Pleistocene terrace deposits and recent alluvium and outcrop areas of the Eutaw formation. The Eutaw aquifer formation, which is part of the Tuscaloosa Group aquifer system, is the principal aquifer supporting the Montgomery County area and MAFB. The Eutaw aquifer formation depth is 100 to 200 feet below ground surface (bgs). Based on data collected during the geotechnical investigation completed for this project, groundwater was encountered in some boring locations along the proposed new force main route at varying depths between 19.1 and 38.2 feet bgs. The average groundwater depths at the locations for Pump Stations 1, 2, and 3 were 37.4, 30.7, and 22.0 feet bgs, respectively (TTL 2023).

A portion of the proposed project is located in an area with groundwater contamination in the surficial and Eutaw aquifers (BHATE 2022). The primary contaminants in the plume are chlorinated solvents including trichloroethylene and tetrachloroethylene.

3.3.2.3 Floodplains

The Federal Emergency Management Agency (FEMA) has developed flood maps, known officially as Flood Insurance Rate Maps (FIRMs), to identify areas of high- and moderate- to low-flood risk. The FEMA maps identify Special Flood Hazard Areas and are used by the National Flood Insurance Program (NFIP) to determine where the NFIP's floodplain management regulations must be enforced and flood insurance requirements apply.

MAFB is situated between two floodplains: the Alabama River to the north and the Westend Ditch to the south and west.

Based on the FEMA FIRMs 01101C0088J (FEMA 2015a) and 01101C0089J (FEMA 2015b), portions of the proposed new force main route are within the 100-year floodplain, which has a 1 percent annual chance of flooding, and the 500-year floodplain, which has a 0.2 percent annual chance of flooding (Figure 3-3). Pump Stations 1 and 2 are not within the 100-year or 500-year floodplains. Pump Station 3 is within the 100-year floodplain. The decommissioning of the Maxwell Field Outfall would occur within the 100-year floodplain and the regulatory floodway. A regulatory floodway means the channel of a river or other watercourse and the adjacent land areas that must be reserved to discharge the base flood without cumulatively increasing the water surface elevation more than a designated height.

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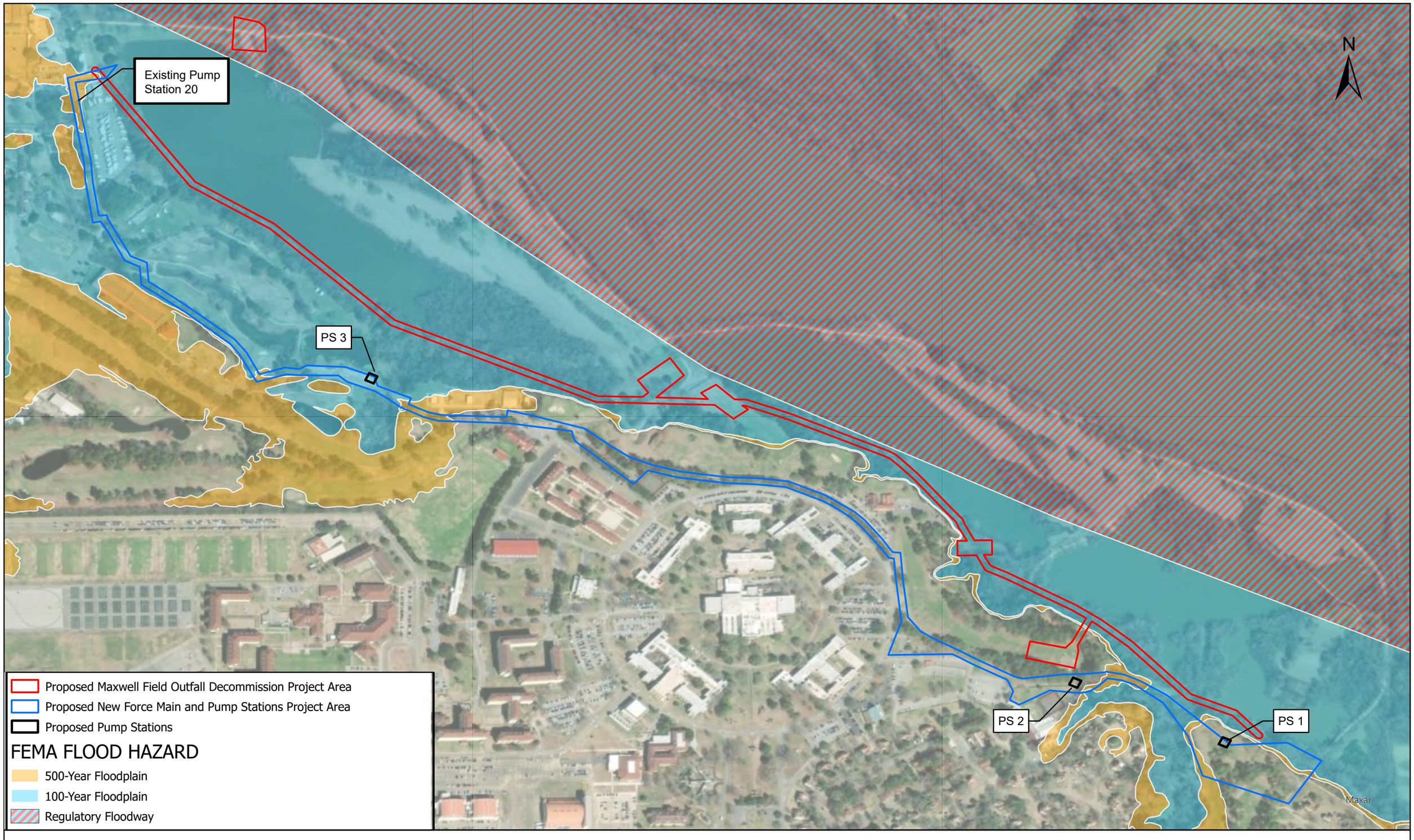


FIGURE 3-3. FLOODPLAINS

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3.3.3 Environmental Consequences

The threshold level for a significant adverse impact to water resources is defined as (1) a net loss of wetland acreage or substantial degradation of existing wetland quality, including sedimentation, (2) discharge of stormwater during construction that causes excessive offsite erosion, or (3) a substantial reduction of the quantity or quality of groundwater.

3.3.3.1 Alternative 1

Surface Waters and Groundwater

Construction of the new force main would avoid impacts to all streams and wetlands along the proposed route. Based on coordination with USACE (see Appendix A), a CWA Section 404 permit would not be required for the construction of a new force main and pump stations.

The decommissioning of the existing Maxwell Field Outfall would involve work over impounded waterbodies along the Alabama River. Decommissioning activities would result in approximately 0.22 acres of temporary wetland impacts, 2.08 acres of temporary open water impacts, and 76.23 feet of linear stream impacts, as shown on Figures 3-3a, 3-3b, and 3-3c. A CWA Section 404 permit, ADEM and RHA Section 10 authorization would be obtained prior to implementation of decommissioning activities that require work within regulated waters. Mitigation measures would be developed during the CWA permitting process and would be implemented by MWWSSB to avoid significant impacts to wetlands and streams/rivers. Temporary timber/swamp mats would be installed in the travel way for construction equipment and pipe transportation as required to reduce disturbance to wetlands. The disturbed areas would be returned to pre-existing conditions when the pipe removal operations are complete.

The use of HDD construction techniques at the Stream 1/Wetland WL1 crossing has the potential for loss or seepage of drilling fluid (water and bentonite clay) that is forced to the surface. An inadvertent release would have short-term, minor, adverse impacts to surface water quality in the area of the release by creating temporary turbidity in the water from suspended sediment. The risk would be mitigated by having an adequate depth of subsurface material between the drilling operation and ground surface and through monitoring the pressure of the drilling mud in the HDD bore hole. In the event of loss or seepage of drilling fluid, measures would be implemented to minimize and contain any turbidity and sedimentation. Measures could include installation of containment dikes in the form of berms, silt fence, and hay bales; and use of a vacuum truck or pump to remove the bentonite.

There would be minor, short-term, adverse impacts on stormwater during construction from increased erosion and soil disturbances. A NPDES stormwater permit would be acquired prior to construction. In accordance with ADEM requirements, a Construction Best Management Practices Plan would be prepared for the project, which would describe the design, installation, and maintenance of effective erosion controls, sediment controls, and pollution prevention measures appropriate for the site conditions.

Alternative 1 would not use groundwater for any purposes. The trench for the new force main would be approximately 5 to 6 feet deep and is not expected to encounter groundwater. Excavations for the wet wells at the pump stations are also not expected to encounter groundwater, based on groundwater levels measured during the geotechnical investigation (TTL 2023). Therefore, no impacts to the contaminated groundwater plume would be expected. All construction activities would be coordinated with the Maxwell Environmental Restoration Program Remedial Project Manager. If contaminated groundwater were encountered during construction activities, the handling, storage, transportation, and disposal activities would be conducted in accordance with applicable federal, state, and local regulations, Air Force Instructions, and MAFB management procedures.

During construction and demolition activities, potential adverse impacts to surface water and groundwater quality could occur because of spills. This risk would be minimized by implementing BMPs, such as properly storing materials and fueling and maintaining construction equipment offsite or in designated areas with appropriate control and containment. In the event of an accidental spill or release, the MAFB *Spill Prevention Control and Countermeasures Plan* and/or *Hazardous Materials Management Plan*

(USAF 2021) would be implemented. Therefore, no significant impacts to groundwater quality would be expected.

Overall, no significant impacts to surface water or groundwater would be expected from implementation of Alternative 1.

Floodplains

Under Alternative 1, portions of the new force main would be constructed within the 100-year and 500-year floodplains and Pump Station 3 would be constructed within the 100-year floodplain. Estimated project disturbance areas within floodplains are provided in Table 3-6.

Table 3-6. Estimated Project Disturbance Areas within Floodplains

	Disturbance Area in Regulatory Floodway (acres)	Disturbance Area in 100-year Floodplain (acres)	Disturbance Area in 500-year Floodplain (acres)
Installation of New Force Main and Construction of Pump Stations	0.00	4.32	1.67
Decommissioning of the Maxwell Field Outfall	0.83	9.14	0.02

The City of Montgomery does not have jurisdiction over MAFB, so no floodplain permitting through the city would be required. Overall, the volume of the Maxwell Field Outfall that would be removed in the floodway and 100-year floodplain would be greater than the volume of the new force main and pump station added in the 100-year and 500-year floodplains. Therefore, Alternative 1 is not expected to adversely impact flood storage capacity in the 100-year and 500-year floodplains. Post-construction, temporary disturbance areas within floodplains would be stabilized and returned to preexisting hydrological conditions.

3.3.3.2 No-Action Alternative

Under the No-Action Alternative, there would be no impacts to water resources from construction activities. Approximately 4,000 feet of the Maxwell Field Outfall would remain aboveground and at risk to be compromised from external events, such as tree fall, which could result in a large sanitary sewer discharge into the surrounding wetlands and the Alabama River. The No-Action Alternative has the potential for significant impacts to water resources from a large sanitary sewer discharge.

3.4 Soils and Geologic Resources

Geologic resources consist of Earth's surface and subsurface materials.

3.4.1 Regulatory Setting

Soil resources in Alabama are regulated under the 2022 Code of Alabama, Title 9 – Conservation and Natural Resources, Chapter 8, which provides for the conservation of the soil and soil resources of Alabama and for the control and prevention of soil erosion.

3.4.2 Affected Environment

3.4.2.1 Geologic Resources

MAFB occurs just south of the Appalachian Mountain foothills, within the East Gulf Coastal Plain physiographic region and Coastal Plain province of the Atlantic Plain region. The region is characterized by low rounded or eroding hills and shallow valleys that gradually slope to the sea (USAF 2020).

MAFB is within the Alluvial Deltaic plain on the bank of the Alabama River (USAF 2020). The Base is underlain by alluvium deposits of the Alabama River and the Eutaw formation. Alluvium deposits are composed of sand, gravel, silt, and clay; Eutaw formation consists of two sandy units separated by a clay unit (USAF 2022). The topography of MAFB generally is level with elevations averaging 168 feet above mean sea level (USAF 2020). Alternative 1 is located within elevations ranging from approximately 125 to 200 feet above mean sea level and areas that generally are flat.

3.4.2.2 Soils

The soil survey of Montgomery County, Alabama, generally describes the Coastal Plains Region and most of the soils in this area are derived from marine and fluvial sediment that eroded from the Appalachian and Piedmont plateaus. Surficial geology is dominated by Quaternary Terrace and Alluvial deposits consisting of course sands, gravel, silts, and clays deposited over time by the Alabama River (USAF 2020). Based on results of the geotechnical subsurface investigation completed for the project, soils in Alternative 1 were typically found to be river terrace sediments consisting of clay and sandy clay that extend 3 to 10 feet bgs (TTL 2023). Soils affected by implementation of Alternative 1 are described in Table 3-7 and shown on Figure 3-4 and Figure 3-5.

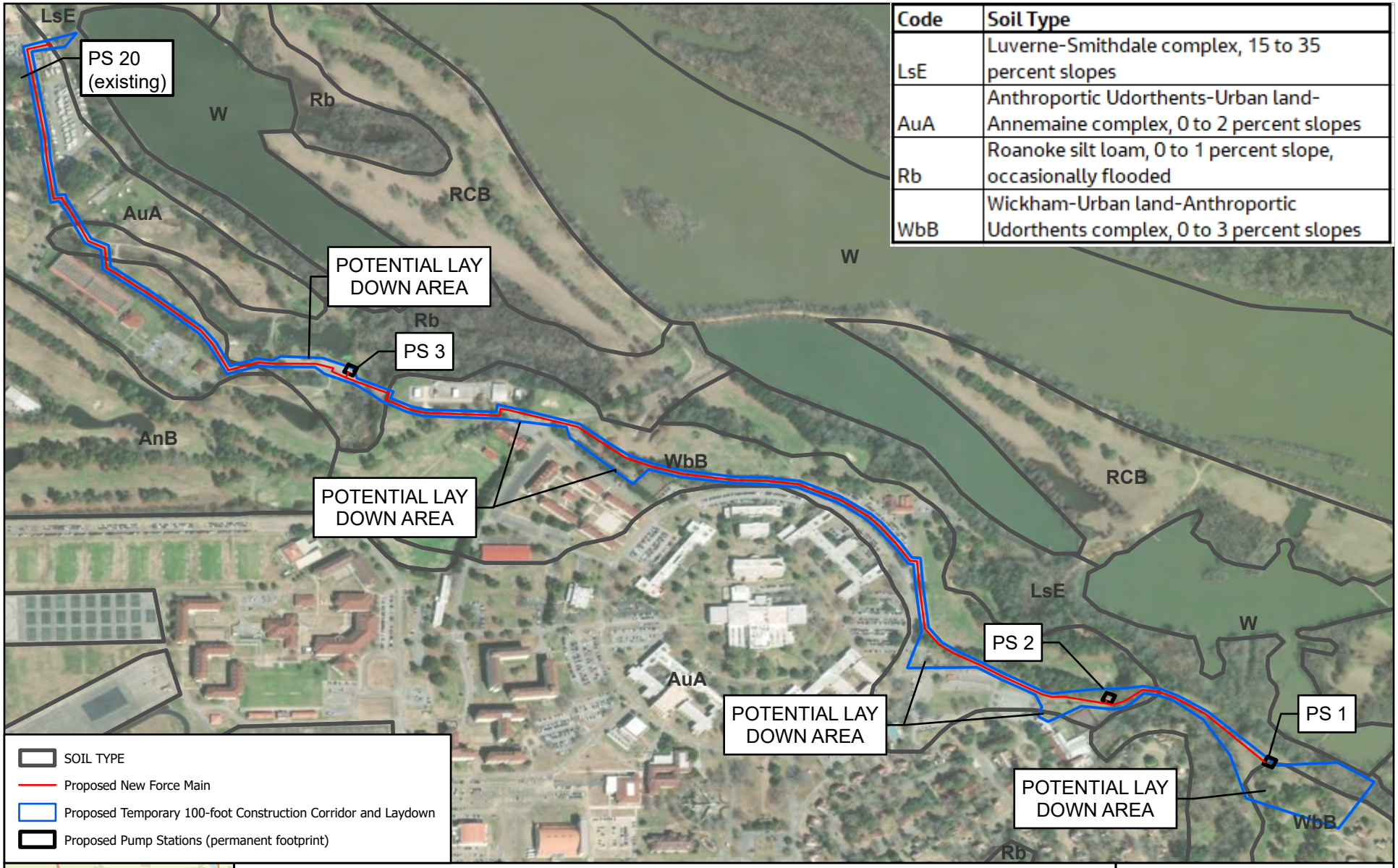
Table 3-7. Alternative 1 Soil Types

Project	Soil Type	Wind Erodibility	Water Erodibility[a]
Construction of New Force Main	Wickham-Urban land-Anthroportic Udorthents complex, 0 to 3 percent slopes	Moderate Susceptibility	Low Susceptibility
	Luverne-Smithdale complex, 15 to 35 percent slopes	Moderate Susceptibility	Low Susceptibility
	Anthroportic Udorthents-Urban land-Annemaine complex, 0 to 2 percent slopes	Moderate Susceptibility	Moderate Susceptibility
	Roanoke silt loam, 0 to 1 percent slope, occasionally flooded	Low Susceptibility	Moderate Susceptibility
Construction of Pump Station 1	Luverne-Smithdale complex, 15 to 35 percent slopes	Moderate Susceptibility	Low Susceptibility
	Wickham-Urban land-Anthroportic Udorthents complex, 0 to 3 percent slopes	Moderate Susceptibility	Low Susceptibility
Construction of Pump Station 2	Wickham-Urban land-Anthroportic Udorthents complex, 0 to 3 percent slopes	Moderate Susceptibility	Low Susceptibility
Construction of Pump Station 3	Roanoke silt loam, 0 to 1 percent slope, occasionally flooded	Low Susceptibility	Moderate Susceptibility
Decommissioning the Maxwell Field Outfall	Luverne-Smithdale complex, 15 to 35 percent slopes	Moderate Susceptibility	Low Susceptibility
	Roanoke silt loam, 0 to 1 percent slope, occasionally flooded	Low Susceptibility	Moderate Susceptibility
	Wickham-Urban land-Anthroportic Udorthents complex, 0 to 3 percent slopes	Moderate Susceptibility	Low Susceptibility
	Water	N/A	N/A

Source: NRCS 2019

[a] Values are based on K-factors of disturbed soils.

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Code	Soil Type
LsE	Luverne-Smithdale complex, 15 to 35 percent slopes
AuA	Anthroportic Udorthents-Urban land-Annemaine complex, 0 to 2 percent slopes
Rb	Roanoke silt loam, 0 to 1 percent slope, occasionally flooded
WbB	Wickham-Urban land-Anthroportic Udorthents complex, 0 to 3 percent slopes

Figure 3-4

SOIL TYPES WITHIN PROPOSED NEW FORCE MAIN AND PUMP STATIONS PROJECT AREA

Esri, TomTom, Garmin, SafeGraph, FAO, METI/NASA, USGS, EPA, NPS, USFWS, Maxar

Coordinate System: GCS North American 1983

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0 0.1 0.21 Mi

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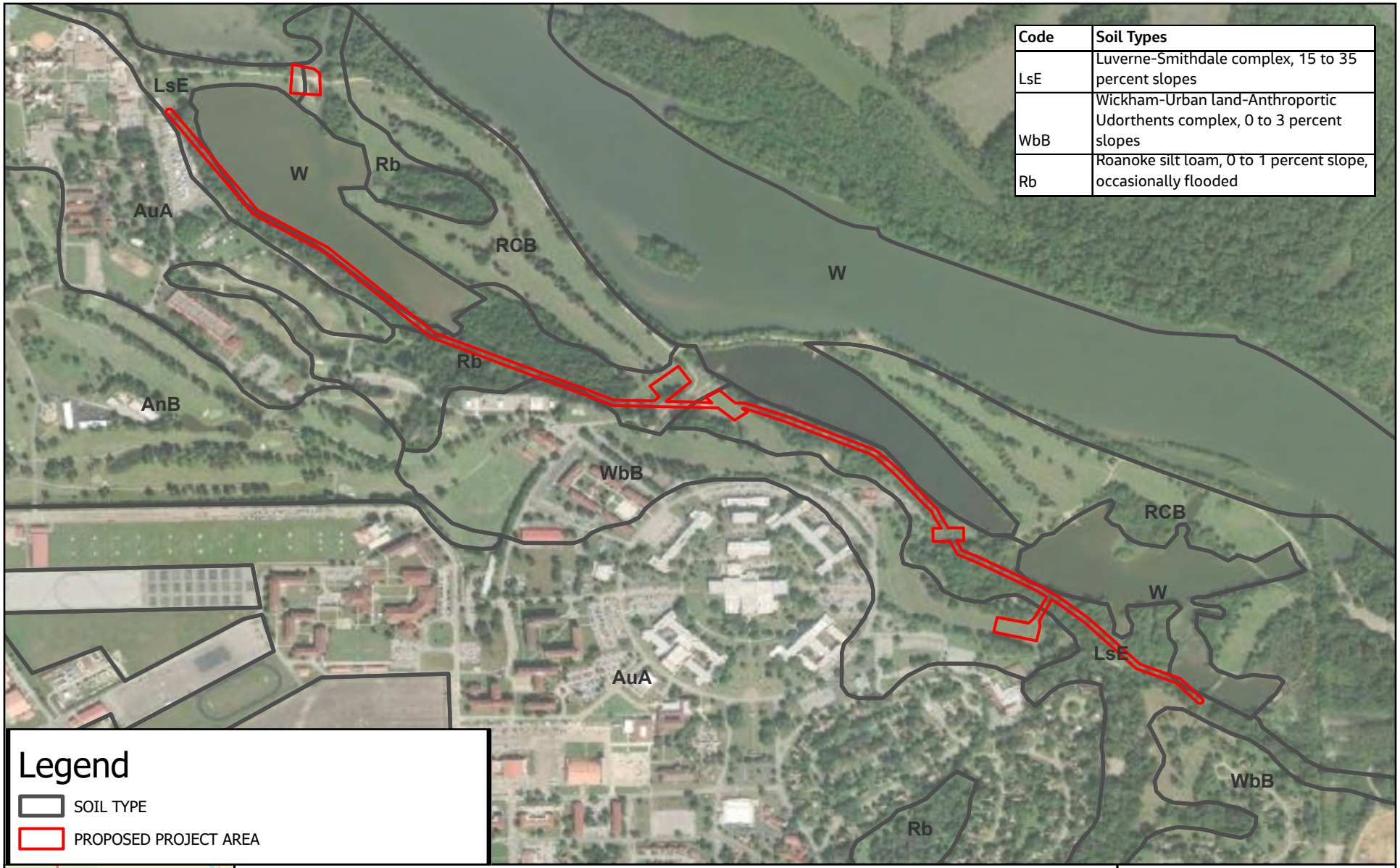


Figure 3-5

SOIL TYPES WITHIN MAXWELL FIELD OUTFALL DECOMMISSION PROJECT AREA

Esri, HERE, Garmin, SafeGraph, FAO, METI/NASA, USGS, EPA, NPS, Maxar

Coordinate System: GCS North American 1983

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3.4.3 Environmental Consequences

The threshold level for a significant impact to geology, topography, and soils is defined as (1) a substantial alteration of subsurface geological formations or mineral resources, topography, or soil; or (2) substantial soil erosion or sedimentation impacts.

3.4.3.1 Alternative 1

Geological Resources

Post-construction, site contours along the proposed new force main route and at the proposed Pump Station 1 would closely resemble pre-existing conditions. Pump Station 2 has a slope that would be cut back to fit the site within the required area. Pump Station 3 would have a slightly steeper slope along the north side to extend the flat area for the pump station site. There would be no significant changes or impacts to geologic resources or topography.

Soils

Under Alternative 1, there would be short-term, minor, adverse impacts to soils from construction activities. Installation of a new force main and pump stations would result in approximately 16.53 acres of ground disturbance and decommissioning the Maxwell Field Outfall would result in approximately 10.04 acres of ground disturbance.

The majority of the soils along the proposed force main route have been previously disturbed by land development activities. Soils that would be affected by decommissioning activities were previously disturbed during installation of the Maxwell Field Outfall. Soil disturbance would result from clearing, grading, excavation, and HDD activities. Heavy equipment and grading may compact soils, which could reduce soil porosity and result in increased runoff. Vegetation removal exposes soils, making them more susceptible to erosion from wind and water/precipitation. The construction contractor would be required to develop and implement effective sedimentation and erosion control procedures and BMPs to be used during construction to minimize erosion of surrounding soils from soil/ground disturbance. Measures would be consistent with the *Alabama Handbook for Erosion Control, Sediment Control and Stormwater Management on Construction Sites and Urban Areas* (Alabama Soil and Water Conservation Committee 2022).

Appropriate BMPs would be selected based on site-specific conditions and applicable state and federal permits and could include the following:

- Sediment barriers (silt fence, straw bales, straw wattles, or brush barriers)
- Applying water or other approved suppressants to disturbed soil
- Mulching, matting, or netting exposed soils
- Geotextile slope stabilization
- Prompt revegetation of disturbed areas

During the HDD process, there is potential for seepage of drilling mud/fluid (bentonite and water) into the soil profile around the drill path, which could reduce soil porosity. The risk would be mitigated by having an adequate depth of subsurface material between the drilling operation and ground surface and through monitoring the pressure of the drilling mud in the HDD bore hole.

With implementation of BMPs and an HDD Contingency Plan, impacts to soils would be less than significant.

3.4.3.2 No-Action Alternative

Under the No-Action Alternative, the new force main and pump stations would not be constructed and the Maxwell Field Outfall would remain in service. Therefore, no impacts to soils and geological resources would be anticipated.

3.5 Cultural Resources

Cultural resources are defined as prehistoric or historic districts, sites, buildings, structures, or objects considered important to a culture, subculture, or community for scientific, traditional, religious, or other purposes. They include archaeological resources, historic architectural or engineering resources, and other traditional resources.

3.5.1 Regulatory Setting

Section 106 of the NHPA, as amended (54 USC § 306108), directs federal agencies to "take into account the effects of their undertakings on historic properties" (36 CFR 800.1a). The CFR defines "historic property" as "any precontact or historic district, site, building, structure, or object included in, or eligible for inclusion in, the National Register of Historic Places (NRHP), which is maintained by the Secretary of the Interior" (36 CFR 800.16).

For the purposes of this investigation, cultural resources may include archaeological resources (any site that contains material remains of past human life or activities) or other places or items that possess cultural importance to individuals or a group. These may include discrete places such as cemeteries or may represent more broadly defined places such as scenic landscapes. When identified through documentary research or fieldwork, these sites are evaluated for eligibility based on the following criteria:

The quality of significance in American history, architecture, archaeology, engineering, and culture is present in the districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association, and:

a) That are associated with the events that have made a significant contribution to the broad patterns of our history; or

b) That are associated with the lives of persons significant in our past; or

c) That embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or

d) *That have yielded or may be likely to yield, information important in prehistory or history* (36 CFR 60.4).

The criterion most often applied to archaeological sites is the last—and arguably the broadest—of the four; its phrasing allows regulators to consider a broad range of research questions and analytical techniques that may be relevant to the specific resource (36 CFR 60.4[d]). Occasionally, certain resources fall into categories that require further evaluation using one or more of the Criteria Considerations. If a resource is identified and falls into one of these categories, the following Criteria Considerations (as defined in 36 CFR 60.4) may be applied in conjunction with one or more of the four NRHP criteria previously listed:

a) A religious property deriving primary significance from architectural or artistic distinction or historical importance, or

b) A building or structure removed from its original location, but which is significant primarily for architectural value, or which is the surviving structure most importantly associated with a historic person or event, or

c) A birthplace or grave of a historical figure of outstanding importance if there is no other appropriate site or building directly associated with his or her productive life, or

d) A cemetery which derives its primary significance from graves of persons of transcendent importance, from age, from distinctive design features, or from association with historic events, or

e) A reconstructed building when accurately executed in a suitable environment and presented in a dignified manner as part of a restoration master plan, and when no other building or structure with the same association has survived, or

f) A property primarily commemorative in intent if design, age, tradition, or symbolic value has invested it with its own historical significance, or

g) A property achieving significance within the past 50 years if it is of exceptional importance.

In addition to the above resource types, a property may be eligible for the NRHP for its traditional cultural significance. A Traditional Cultural Property can be defined generally as one that is eligible for inclusion in the NRHP because of its association with cultural practices or beliefs of a living community that (a) are rooted in that community's history, and (b) are important in maintaining the continuing cultural identity of the community (Parker and King 1998). Examples of properties possessing such significance include:

- A location associated with the traditional beliefs of a Native American group about its origins, its cultural history, or the nature of the world;
- A rural community whose organization, buildings and structures, or patterns of land use reflect the cultural traditions valued by its long-term residents;
- An urban neighborhood that is the traditional home of a particular cultural group, and that reflects its beliefs and practices;
- A location where Native American religious practitioners have historically gone, and are known or thought to go today, to perform ceremonial activities in accordance with traditional cultural rules of practice; and
- A location where a community has traditionally caried out economic, artistic, or other cultural practices important in maintaining its historical identity.

Properties to which traditional cultural value is ascribed often take on vital significance in maintaining a group's sense of identity, and therefore can be eligible for the NRHP.

Properties listed in the NRHP or recommended eligible for the NRHP are treated the same under Section 106 of the NHPA; they are also generally treated the same at the state level. After cultural resources within the Area of Potential Effects (APE) are identified and evaluated, effects evaluations are completed to determine whether the proposed project has no effect, no adverse effect, or a potential adverse effect on historic properties.

Effects are evaluated by assessing the impacts that the proposed project would have on the characteristics that make the property eligible for listing in the NRHP and on the property's integrity. Types of potential adverse effects include physical impacts such as the destruction of all or part of a resource; actions that adversely impact the historic setting of a resource, even if built resources are not physically impacted; noise and vibration impacts evaluated according to accepted professional standards; changes to significant viewsheds; and cumulative effects or those that may occur later in time. If the project will have an adverse effect on historic properties, measures can be taken to avoid, minimize, or mitigate that effect. In some instances, changes to the proposed project can be made to avoid adverse effects. In other cases, adverse effects may be unavoidable, and mitigation measures to compensate for these impacts will be proposed and agreed upon by consulting parties.

The American Indian Religious Freedom Act (AIRFA) of 1978 sought to correct the possibility of federal agencies to interpret Section 106 in a manner that excludes historic properties of religious significance to Native Americans from eligibility for inclusion in the NRHP (Parker and King 1998). The AIRFA states that

"*henceforth, it shall be the policy of the United States to protect and preserve for American Indians their inherent right of freedom to believe, express, and exercise the traditional religions of the American Indian, Eskimo, Aleut, and Native Hawaiians, including but not limited to access to sites, use and possession of sacred objects, and the freedom to worship through ceremonials and traditional rites*" (Public Law 95-341 1978). The intent of AIRFA has been interpreted as ensuring that Native Americans obtain First Amendment protection. Because such sites may be eligible for inclusion in the NRHP, any effects that may occur, as a result of providing access to them, may trigger Section 106 review under the NHPA.

The NHPA also requires that, in carrying out its responsibilities under the Section 106 review process, a federal agency must consult with any Native American Tribe that attaches religious and cultural significance to historic properties that may be affected by the agency's undertakings (ACHP 2021). The United States acknowledges federally recognized Native American Tribes as sovereign nations; thus, federal government interaction with federally recognized tribes takes place on a "government-to-government" basis. The government-to-government consultation process embodies the unique relationship between the United States and Native American Tribes and takes place directly between the federal agency and the federally recognized Tribe.

3.5.2 Affected Environment

The APE is defined as the area in which the Proposed Action may directly or indirectly cause alterations in the character or use of historic properties, if any such properties exist. Direct effects refer to the causality, not the physicality, of the effect to historic properties; indirect effects refer to those caused by the undertaking at a later time or farther removed in distance but still reasonably foreseeable (U.S. Court of Appeals Case #18-5179).

The archaeological APE for the project encompasses the total footprint of the proposed force main and three access roads, which have a combined length of approximately 13,584 feet within a 100-foot-wide corridor, as well as four locations for additional pipe access and equipment laydown for a total area of 60.9 acres. The visual APE includes the total project footprint and a 150-foot-wide buffer around it, for a total area of 176.6 acres.

3.5.2.1 Archaeological Resources

The Phase I archaeological survey for the project was conducted from 20-23 September 2022 and took place entirely on MAFB property. The surveyor examined a total of 60.93 acres, most of which are on a terrace above the floodplain south of the Alabama River. All proposed pipe removal areas are at the base of the terrace. Approximately 22.62 acres (37 percent) of the APE were visibly disturbed or were located on a steep slope and, therefore, were subjected to visual inspection. Disturbed areas were primarily associated with military base infrastructure, parking lots, roadways, and utilities along the APE. Approximately 38.04 acres (63 percent) of the APE were shovel tested.

The archaeological survey revisited portions of two previously identified sites, 1MT200 and 1MT279, and identified two new sites, 1MT563 and 1MT564. The site showed considerable disturbance from the golf course and the pipe that cuts through the site on the north end. A total of 12 shovel test pits were excavated where the site overlaps the APE. No artifacts were found during the site revisit. Based on the lack of artifacts and amount of disturbance encountered, it is likely that 1MT200 is no longer extant. No further work is recommended for the site.

Most of Site 1MT279 is outside the APE or is on a steep slope or disturbed areas. No artifacts were found during the site revisit. Based on the lack of artifacts and amount of disturbance encountered, it is likely that portions of 1MT279 previously identified within the APE are no longer extant. No further work is recommended for Site 1MT279.

Site 1MT563 is on a wooded section of the terrace edge and a small toe that extends north from the terrace edge, bound by a steep downslope to the floodplain. A steep slope down to the floodplain limited the amount of the APE that could be shovel tested. Site 1MT563 likely does not offer much potential for further research based on its small size and location between a steep slope and the Base. Therefore, Site 1MT563 is recommended not eligible for listing in the NRHP because of the lack of sufficient archaeological integrity. Therefore, no additional archaeological work is recommended for Site 1MT563.

Site 1MT564 is on a terrace that has been heavily altered by grading and Base construction activities. No diagnostics were found. Based on the sparse collection of artifacts and the heavily disturbed nature of the setting, Site 1MT564 is recommended not eligible. No further archaeological work is recommended for the site.

Government-to-government consultation on the results of the archaeological survey is ongoing between MAFB and the affected Native American Tribes.

3.5.2.2 Architectural Resources

The architectural survey for the project was conducted from 20-23 September 2022, and took place entirely on MAFB property. All property within the APE was surveyed. The records search identified 10 resources in the APE. Of these properties, one is listed in the NRHP but would not be affected by the project. The survey recorded 11 buildings on Alabama Historical Commission Historic Building forms. None of the 11 newly recorded buildings are recommended eligible for listing in the NRHP.

Eight historic properties were identified within the APE: one NRHP-listed district (MAFB Senior Officers' Quarters Historic District), one NRHP-eligible district (Chennault Circle Historic District), and six individual structures. The Curry House is listed on the NRHP as a contributing building to the MAFB Senior Officers' Quarters Historic District. The Maxwell Club and Air War College and three buildings that contribute to the Chennault Circle Historic District (Buildings 1400, 1401, and 1403) are eligible for listing in the NRHP.

3.5.3 Environmental Consequences

3.5.3.1 Alternative 1

A significant effect on cultural resources (adverse effect) could occur if historic properties (NRHP-eligible resources) or important aspects of the cultural environment (for example, sacred sites or religious practices) are destroyed, altered, or moved, or if their historic setting is altered.

Archaeological Resources

Based on the findings of the Phase I survey, there are no NRHP-eligible archaeological sites within the APE. No further archaeological work is recommended within the APE for the project. If any unanticipated discoveries of archaeological resources or cultural items occur, work would be temporarily halted at the discovery site until the appropriate notifications and consultations were completed and procedures would be in place to minimize adverse effects and render disposition of cultural items. No adverse effects on archaeological resources are expected.

Architectural Resources

There are eight historic properties within the APE. The project would not introduce any audible or atmospheric elements to historic properties, nor would it result in the transfer, sale, or lease of any properties. Portions of the project would be located near the trees that line the Chennault Circle Historic District. Project and ground-disturbing activities would be at least 20 feet away from the trunks of the historic trees and would not impact the health of the trees. In addition, there would be no staging areas or debris piled near the trunks of the trees or contributing buildings of the Chennault Circle Historic District. The project would have no adverse effect on these historic properties.

Therefore, implementation of Alternative 1 would have no adverse effect on identified cultural resources eligible for or included in the NRHP.

3.5.3.2 No-Action Alternative

Under the No-Action Alternative, the new force main and pump stations would not be constructed and the Maxwell Field Outfall would remain in service. Therefore, no impacts would be anticipated to cultural resources from the No-Action Alternative.

3.6 Biological Resources

Biological resources consist of special-status plants and animals and their habitats that occur, or are likely to occur, in the project area.

3.6.1 Regulatory Setting

Three federal laws are applicable to the analysis of biological resources for the project:

- The Endangered Species Act (ESA), as amended, requires the government to protect threatened and endangered plants and animals (listed species) and the habitats upon which they depend. The ESA requires federal agencies to ensure that any action it authorizes, funds, or conducts does not adversely impact listed species or "destroy or adversely modify" critical habitat for that species. "Critical habitat" is defined as a specific geographic area that contains features for the conservation of an endangered species and may require special management and protection.
- The Migratory Bird Treaty Act (MBTA), as amended, implements various treaties and conventions between the United States and Canada, Japan, Mexico, and Russia for the protection of migratory birds. Under the MBTA, taking, killing, or possessing listed birds is unlawful, unless permitted by regulation.
- The Bald and Golden Eagle Protection Act of 1940 (BGEPA), as amended, provides for the protection of the bald eagle and the golden eagle by prohibiting, except under certain specified conditions, the taking, possession, and commerce of such birds.

Alabama does not have a state law equivalent to the federal ESA, so species do not have regulatory protection as state endangered or threatened species. However, some species do receive regulatory protection through the Alabama Regulations on Game Fish and Fur Bearing Animals published annually.

3.6.2 Affected Environment

3.6.2.1 Vegetation

MAFB is within the Eutaw Belt of the Central Pine Belt region and dominated by bottomland and floodplain forests and floodplain marsh communities. The urban forest areas consist of hardwoods and hardwood-dominated lowland areas (wetlands or floodplains), with maintained grassy areas (USAF 2020).

All of the vegetative communities on MAFB are highly impacted by invasive species and anthropogenic activities (CCR Environmental 2021b). The majority of land on MAFB is developed or improved land, with the most natural area within the Alabama River floodplain and the "bluff area" that extends from the floodplain onto the main level of MAFB (CCR Environmental 2021b).

Vegetation communities observed within the proposed project area during 2021 flora surveys of MAFB consisted of alluvial forest riparian areas and upland hardwood forest, pond margins/ditches, and open field (CCR Environmental 2021b). Vegetation communities within Alternative 1 include alluvial forest and upland hardwood forest.

Alluvial forest riparian areas occur along waterways and floodplain areas where wetter conditions occur. These areas are located adjacent to the floodplain lakes and primarily consist of bottomland hardwood forest. The canopy in this community was dominated by the following trees: river birch (*Betula nigra*), sycamore (*Platanus occidentalis*), possumhaw holly (*Ilex decidua*), box-elder (*Acer negundo*), green ash (*Fraxinus pensylvanica*), silver maple (*Acer saccharinum*), in addition to the highly invasive exotic Chinese tallow-tree, which comprises nearly 100 percent of the canopy in some areas.

Upland hardwood forest occurs at higher elevations, along the "bluff" area where drier conditions occur. This vegetation community is characterized by overstory, shade-tolerant deciduous trees with shrubs and herbaceous ground cover (USAF 2020). The forest canopy in this community was dominated by the following trees: a variety of oaks (*Quercus spp.*), sugarberry (*Celtis laevigata*), sweet gum, black cherry (*Prunus serotina*), laurel cherry (*Prunus caroliniana*), as well as exotic invasives such as chinaberry (*Melia azedarach*), Bradford pear (*Pyrus calleryana*), and waxy privet (*Ligustrum japonicum*).

Areas of pond margins/ditches were mapped along edges and banks of ponds and may include open-water areas. Vegetation in these areas was mostly herbaceous in various states of maintenance (for example, consistently mowed grassy areas, overgrown fairways and areas on the former Cypress Tree Golf Course) and was mapped as old field vegetation.

3.6.2.2 Wildlife

MAFB properties provide a variety of terrestrial habitats as well as limited aquatic habitats. Wildlife surveys, both formal and informal, have been conducted over the years at MAFB, including a Natural Community and Rare Plant and Animal Survey, Threatened and Endangered Species Survey, Wildlife Hazard Assessment, and Bat Acoustic Survey. Fish and wildlife occurring at MAFB include 14 species of terrestrial mammals, 12 bat species, more than 31 avian species, 29 herpetofaunal species, 16 fish species, and 27 insect families (USAF 2020; CCR Environmental 2021a).

3.6.2.3 Protected Species

Based on the USFWS Information for Planning and Consultation (IPaC) report (Appendix A) prepared for this EA and MAFB's *Integrated Natural Resources Management Plan* (INRMP) (USAF 2020), a list of federally threatened and endangered species, candidate species, and species proposed for federal listing occurring or with potential to occur within Alternative 1 is presented in Table 3-8. The USFWS IPaC report (Appendix A) prepared for this EA indicates that alligator snapping turtle (*Macrochelys temminckii*), southern clubshell (*Pleurobema decisum*), monarch butterfly (*Danaus plexippus*), and Georgia rockcress (*Arabis georgiana*) have potential to occur within Alternative 1. In August 2024, prior to the public comment period, an updated IPaC species list (Appendix E) was generated to verify that no new species were added after the initial USFWS consultation concluded in May 2023.

Table 3-8. Protected Species Occurring or with Potential to Occur within Alternative 1

Common Name	Scientific Name	Federal Status
Tricolored bat	*Perimyotis subflavus*	Proposed Endangered
Bald eagle	*Haliaeetus leucocephalus*	BGEPA
Wood stork	*Mycteria americana*	Threatened
Alligator snapping turtle	*Macrochelys temminckii*	Proposed Threatened
Southern clubshell	*Pleurobema decisum*	Endangered
Monarch butterfly	*Danaus plexippus*	Candidate
Georgia rockcress	*Arabis georgiana*	Threatened

Source: USFWS 2024; USAF 2020

Tricolored bat (*Perimyotis subflavus*), which is proposed endangered, was detected on MAFB during bat acoustic surveys conducted in 2017 (CCR 2021a; USAF 2020). These bats are associated with forested landscapes, where they forage near trees and along waterways. Maternity and summer roosts are mainly in dead or live tree foliage, caves, mines, and rock crevices. Maternity colonies also may use human-made structures or tree cavities. Hibernation sites are in caves, mines, or cave-like tunnels (NatureServe Explorer 2023). The presence of tricolored bats at MAFB was confirmed during 2023 bat surveys conducted at the installation (USAF 2023).

Although the bald eagle (*Haliaeetus leucocephalus*) is no longer protected under the ESA, it is still afforded protection under the BGEPA and the MBTA. The bald eagle is a large-bodied raptor that typically nests in forested areas adjacent to large bodies of water, staying away from heavily developed areas when possible. Bald eagles are tolerant of human activity when feeding, and may congregate around fish processing plants, dumps, and below dams where fish concentrate. For perching, bald eagles prefer tall, mature coniferous or deciduous trees that afford a wide view of the surroundings. In winter, bald eagles can also be seen in dry, open uplands if there is access to open water for fishing (Cornell 2024). The bald eagle has the potential to occur on the installation within potential nesting and perching habitat (USAF 2020). Large loblolly pine trees could potentially be used by eagles for nesting, as well as large deciduous

trees with potential for perching. Dry, open/grassy areas provide suitable small mammal prey opportunities, in addition to open water for fishing, especially in the former Cypress Tree Golf Course area within the Alabama River floodplain. Additional potential bald eagle habitat nearby includes lakes and the Alabama River.

Wood stork (*Mycteria americana*) forages in prairie ponds, flooded pastures, ditches, and other shallow standing water, including salt water. This species usually roosts communally in tall snags and nests in Florida, Georgia, and South Carolina. Stopover habitat is located in wetlands. At MAFB, there have been confirmed sightings of wood stork in the wetland areas along River Road. The wood stork is not known to breed in Alabama (USAF 2020).

Alligator snapping turtle inhabits the slow-moving deep water of rivers and their tributaries. Canals, sloughs, swamps, bayous, and ponds near rivers also may be used. They often bury themselves in the mud at the bottom and are mostly active during the nighttime hours (ADCNR 2022). A female alligator snapping turtle was captured during a May 2024 survey within the footprint of the proposed Maxwell Field Outfall demolition area (Sawyer, pers. comm. 2024).

Southern clubshell lives burrowed in gravel and sand at the bottom of large creeks and rivers in the Mobile River Basin (USFWS 2023). Critical habitat has been designated for this species in Elmore County. No suitable habitat occurs on MAFB (USAF 2020).

Monarch butterfly inhabits fields, roadside areas, open areas, wet areas, and urban gardens. Milkweed and flowering plants are needed for monarch habitat. Adults feed on the nectar of many flowers, but milkweed is needed for breeding (USFWS 2022). No milkweed species were observed within the proposed project area; therefore, there is no breeding habitat for monarch butterfly near the Proposed Action. Potential nectaring species occur in the project area.

Georgia rockcress inhabits sunny and mostly sunny areas with circumneutral to slightly basic soils (CCR Environmental 2021b). The species has the potential to occur on rocky bluffs, gently sloping rock outcrops, outcrops along rivers, and sandy loam along eroding riverbanks (CCR Environmental 2021b). Habitat for this species does not occur onsite because of historical land disturbance and heavy infestations of invasive and exotic species on the slopes of the Alabama River (LG2 2021). Georgia rockcress was not observed during 2021 surveys on MAFB (CCR Environmental 2021b; LG2 2021).

Pursuant to Section 4(a)(3)(B)(i) of the ESA, the Secretaries of the Departments of Interior (USFWS) and Commerce (NOAA Fisheries) are prohibited from designating as critical habitat any lands or other geographical areas owned or controlled by the DoD, or designated for its use, that are subject to an INRMP prepared pursuant to Section 101 of the Sikes Act (16 USC § 670a). This restriction applies if either Secretary determines in writing that a given INRMP provides a benefit to the species for which critical habitat is proposed for designation pursuant to Section 318 of the 2004 National Defense Reauthorization Act (Public Law 108-136). To take advantage of the above exemption and avoid USFWS or NOAA Fisheries designation of critical habitat on DoD installations, each installation implements its INRMP by executing appropriate projects and activities in accordance with specific timeframes identified in the INRMP. The DoD prioritizes projects with assistance from the USFWS, appropriate state fish and wildlife agencies, and NOAA Fisheries if applicable. The MAFB INRMP was approved for implementation on 5 May 2020, and, as a result, there are no federally designated critical habitats in or in the vicinity of Alternative 1 project areas.

3.6.3 Environmental Consequences

The threshold level for a significant adverse impact to biological resources is defined as (1) excessive loss or impairment of vegetative communities; (2) loss of wildlife that negatively affects the regional population of the respective species; or (3) unpermitted take of a species protected under the ESA, MBTA, or BGEPA.

3.6.3.1 Alternative 1

Common Vegetation and Wildlife

Habitat impacts from Alternative 1 are presented in Table 3-9. Most of the habitat impacts (18.58 acres) would be confined to developed areas, such as the golf course and housing areas, where little to no habitat value is provided, and to areas that were previously disturbed during installation of the Maxwell Field Outfall. There would be a total loss of approximately 8 acres of forest habitat from land clearing during construction activities. During decommissioning activities, more than 52 percent of the pipeline would be removed from the water using barges and boats, which would reduce impacts to vegetation. Disturbed areas would be revegetated after construction is complete. No habitat would be lost outside the boundaries of the project areas.

Table 3-9. Alternative 1 Habitat Impacts

Habitat Type	Habitat Impacts (acres)	
	New Force Main and Pump Station Construction	Maxwell Field Outfall Decommission
Alluvial Forest	0.24	4.45
Upland Hardwood Forest	1.89	1.41
Developed Area	14.4	4.18
Open Water	0	0.83
Total	**16.53**	**10.87**

Soil and vegetation disturbance from construction can create suitable conditions for the establishment of non-native, invasive, or noxious weed species. This possibility would be addressed, as necessary, in accordance with MAFB's INRMP (USAF 2020). Vegetation would be restored within all temporary disturbance areas upon completion of construction, in accordance with MAFB's INRMP. Impacts to vegetation would be less than significant.

During land clearing, grading, and use of heavy equipment, limited incidental animal injury or mortality to small wildlife could occur. It is expected that most wildlife would avoid the active construction sites and adjacent areas during construction; however, less mobile individuals could be injured or crushed. Aquatic animals could be struck and injured or killed by boats and barges used during removal activities from the water. Displacement of wildlife from noise and human activity would be limited to the construction period. Incidental losses of animals during construction would not seriously affect regional animal population levels.

Protected Species

Under Alternative 1, there could be negligible, short-term, adverse indirect impacts to protected species associated with temporary displacement and temporary habitat loss.

Pursuant to the ESA, the USAF must make a separate determination of affect for each federally listed threatened or endangered species potentially present in or near the project area. Those determinations must conclude with one of the following statements:

- *No effect* or *no adverse modification of critical habitat*. This determination is reached if the proposed action and its interrelated and interdependent actions will not directly or indirectly affect listed species or destroy/adversely modify designated critical habitat. Formal Section 7 consultation is not required when a "*no effect*" determination is reached.
- *May affect but not likely to adversely affect species/adversely modify critical habitat*. This determination is appropriate when effects to the species or critical habitat are expected to be beneficial, discountable, or insignificant. Beneficial effects are contemporaneous positive effects without any adverse effects to the species or habitat. Insignificant effects relate to the size of the impact (and should never reach the scale where take occurs), while discountable effects are those that

are extremely unlikely to occur. Informal Section 7 consultation is required when a "*may affect, not likely to adversely affect*" determination is reached.

- *May affect and likely to adversely affect species/adversely modify critical habitat*. This determination is reached if any adverse effect to listed species or critical habitat may occur as a direct or indirect result of the proposed action or its interrelated or interdependent actions, and the effect is not discountable or insignificant. In the event the overall effect of the proposed action is beneficial to the listed species or critical habitat but may also cause adverse effect on individuals of the listed species or segments of the critical habitat, then the determination should still be "is likely to adversely affect." Formal Section 7 consultation is required when a "*may affect, and likely to adversely affect*" determination is reached.

The USFWS concurred with the "no effect" determination for southern clubshell, Georgia rockcress, and monarch butterfly, in a letter dated 24 May 2023 (Appendix A). USFWS noted that while wood stork can be found in the area, they would not be impacted by this project.

Because the alligator snapping turtle and tricolored bat have not yet been listed, nor are they yet considered candidate species for listing, the USFWS was unable to officially comment on the effects determinations made by the USAF under the ESA. If either of these species were to be listed prior to agency action on the Proposed Action, informal consultation with the USFWS may be necessary.

MAFB currently implements the DoD's *Recommended Best Management Practices for the Alligator Snapping Turtle on Department of Defense Installations* (DoD 2021), which includes surveys and habitat management and protection practices. Minor, short-term, adverse impacts to alligator snapping turtle from incidental injury or mortality could occur during decommissioning activities over water; however, because alligator snapping turtle is most active at night and spends most of its time submerged in the bottom of rivers, impacts from construction would be minimal.

Tree clearing would result in minor, indirect, impacts to tricolored bat from habitat alteration. Tree removal would occur, if possible, during the winter season (01 November to 31 March) to avoid direct impacts to tricolored bats. Preconstruction surveys for tricolored bats would be conducted before tree clearing activities outside of the winter season. Proposed construction would occur during daytime working hours and would not affect normal foraging or travel activities of the bat species.

Preconstruction surveys for breeding birds would be conducted to avoid impacts on BGEPA and MBTA species if vegetation clearing would be required during the bird breeding season (01 March to 31 August).

With implementation of surveys and additional consultation, as needed, impacts to protected species would be less than significant.

3.6.3.2 No-Action Alternative

Under the No-Action Alternative, the new force main and pump stations would not be constructed and the Maxwell Field Outfall would remain in service. Approximately 4,000 feet of the Maxwell Field Outfall would remain aboveground and at risk to be compromised from external events, such as tree fall, which could result in a large sanitary sewer discharge into the surrounding habitats and the Alabama River. The No-Action Alternative has the potential for significant impacts to plant and wildlife species and habitats from a large sanitary sewer discharge. There also could be adverse impacts to biological resources from repeated maintenance actions in sensitive environments that would be necessary to maintain pipeline operation.

3.7 Hazardous Materials and Wastes

Hazardous materials have been declared hazardous through federal listings, including Extremely Hazardous Substances listed in Appendix A of 40 CFR Part 355, *Emergency Planning and Notification*; those listed as hazardous if released, under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) in 40 CFR Section 302.4, *Designation of Hazardous Substances*; and by definition of hazardous chemicals by OSHA in 29 CFR Section 1910.1200, *Hazard Communication*. A toxic substance is a substance that when ingested or absorbed is harmful or fatal to living organisms. As discussed previously, toxicity is an attribute of some hazardous waste. Through the Toxic Substances

Control Act, EPA regulates toxic substances such as asbestos, lead-based paint, polychlorinated biphenyls, and radon.

For purposes of this EA, "hazardous material" refers to any item or agent (biological, chemical, or physical) that has the potential to cause harm to humans, animals, or the environment, either by itself or through interaction with other factors.

3.7.1 Regulatory Setting

Hazardous and toxic materials are regulated under the Resource Conservation and Recovery Act (RCRA) and CERCLA. RCRA addresses the handling, disposal, and recycling of hazardous materials and the transportation, treatment, and storage of hazardous waste. CERCLA, commonly known as the Superfund Act, deals with hazardous and toxic material site identification, determining liability, and directing cleanup. The rules for the ADEM Hazardous Waste Program are found in Division 14 of the ADEM Administrative Code.

3.7.2 Affected Environment

The EPA considers MAFB a large-quantity generator of hazardous waste. Hazardous waste at MAFB is accumulated at one approved 90-day storage area, Building 1057, and 13 initial accumulation points throughout the Base. Hazardous and toxic substances disposal procedures are identified in the MAFB *Hazardous Waste Management Plan* (USAF 2021), and all wastes are disposed of in compliance with all federal, state, and local regulations. In addition, the MAFB *Spill Prevention, Control, and Countermeasures Plan* provides guidance and procedures to respond to hazardous material spills and any associated airborne releases (USAF 2021).

3.7.2.1 Environmental Restoration Program Sites

MAFB's Environmental Restoration Program (ERP) identifies, investigates, and cleans up contamination resulting from previous Air Force activities to protect human health and the environment. MAFB's ERP manages 44 sites and is overseen by ADEM. These sites include former landfills, dump areas, former fire training areas, underground storage tanks, the tank farm, and a groundwater plume. Eight of these sites require further investigation or remediation under CERCLA (USAF 2022). There are no active ERP sites in the Proposed Action area. The Proposed Action area intersects one closed ERP site, SD-001, as well as a contaminated groundwater plume (Bhate 2020; Bhate 2022). ERP Site SD-001 is considered closed with unrestricted use/unrestricted exposure. The groundwater plume is discussed further in Section 3.3.2.2.

3.7.3 Environmental Consequences

The threshold level for a significant adverse impact to hazardous materials and wastes is defined as (1) a release of hazardous or toxic materials/wastes, or (2) a violation of regulations pertaining to hazardous or toxic materials/wastes.

3.7.3.1 Alternative 1

Alternative 1 would result in short-term, negligible, adverse direct impacts to hazardous materials and petroleum products from construction activities. Construction would require the use of hazardous materials such as gasoline, oils, coolant, and lubricants commonly used by construction equipment, paints, welding gases, solvents, preservatives, and sealants.

Equipment servicing and repair activities could temporarily generate oily and hazardous wastes, such as spent solvents, residual fuels, used oils, used batteries, antifreeze, and filters. Construction activities would be conducted consistent with hazardous waste and pollution use and storage regulations, with guidelines specified in an SWPPP. It is anticipated that the quantity of hazardous materials used during construction activities would be minimal and their use would be of short duration. Contractors would be responsible for the management of hazardous materials, which would be handled in accordance with federal and state regulations and MAFB's *Hazardous Waste Management Plan* (USAF 2021) and *Spill Prevention, Control, and Countermeasures Plan*. BMPs documented in an SWPPP or a project-specific site construction safety

plan would be followed to avoid significant risks or health hazards associated with the use of hazardous materials and hazardous waste generation and disposal. Short-term, adverse direct effects from the use of hazardous and toxic substances during construction would be negligible with the use of BMPs. There would be negligible, short-term, adverse indirect impacts to hazardous materials with the use of BMPs and the SWPPP.

Alternative 1 would not require excavation to the depth of groundwater and no impacts to the contaminated groundwater plume would be expected. All construction activities would be coordinated with the MAFB ERP Remedial Project Manager. If contaminated groundwater or soils were encountered during construction activities, the handling, storage, transportation, and disposal activities would be conducted in accordance with applicable federal, state, and local regulations, Air Force Instructions, and MAFB management procedures.

When construction is complete, use of hazardous materials and wastes would return to levels comparable with operation of the existing sewer facilities. With implementation of BMPs and the SWPPP, impacts to hazardous materials and wastes would be less than significant.

3.7.3.2 No-Action Alternative

Under the No-Action Alternative, the new force main and pump stations would not be constructed and the Maxwell Field Outfall would remain in service. The hazardous materials used and the hazardous wastes generated would be in the same quantities as those currently used and generated at each site. Therefore, no impacts would be anticipated to human health or the environment from the use of hazardous materials and generation of hazardous waste.

3.8 Utilities

Utilities refers to the available energy sources, water supply, wastewater systems, and solid waste.

3.8.1 Affected Environment

3.8.1.1 Energy Sources

Cooperative Utility Services, LLC, a joint opportunity created by Central Alabama Electric Cooperative and Dixie Electric Cooperative, owns and operates the electrical distribution systems at MAFB. The substations are owned by the Alabama Power Company. Natural gas is supplied by Alabama Gas Company (USAF 2022).

3.8.1.2 Water Supply

MWWSSB provides water supplies and sewer services to MAFB. Water sources include groundwater from MWWSSB's west and southwest well fields and surface water from the Tallapoosa River. The plants that treat and distribute water in the Montgomery service area are the Day Street, Hanan, East Montgomery Area (Rolling Hills, Wallahatchie, Horse Farm, Kilby, Waugh), and the C.T. Perry Water Treatment Plants (MWWSSB 2023). Water is transported to MAFB via 8- and 12-inch-diameter service lines. Of the MWWSSB's 96 mgd capacity, MAFB consumes approximately 1 mgd (USAF 2022).

3.8.1.3 Wastewater System

MWWSSB provides sewage service to MAFB. An estimated sewage volume of 5.75 million gallons per month (approximately 0.19 mgd) is sent to the MWWSSB's sewage disposal and treatment facilities (USAF 2022).

3.8.1.4 Solid Waste

Air Force contractors manage all municipal solid waste generated at MAFB. After collection, solid waste is taken to the local RePower South facility where recyclables are sorted. Solid waste from the RePower South facility, as well as construction and demolition debris, are taken to the North Montgomery Landfill.

The North Montgomery Landfill has an approved maximum daily waste volume of 2,000 tons per day of municipal solid waste and 400 tons per day of construction/demolition waste (USAF 2022).

3.8.2 Environmental Consequences

The threshold level for a significant adverse impact to utilities is defined as an exceedance of the existing utility service capacity.

3.8.2.1 Alternative 1

Energy Sources and Water Supply

Alternative 1 would result in short-term, negligible, adverse impacts on energy sources and water supply from construction activities. Short-term interruptions could occur when proposed facilities are connected to utilities. Interruptions in services would be coordinated with area users prior to disconnection, to the greatest extent practicable. There would be no long-term change in energy and water demand.

Wastewater System

Alternative 1 would have long-term beneficial impacts to the wastewater system at MAFB because it would replace dated facilities that have potential to fail if not replaced.

Solid Waste

Alternative 1 would result in short-term negligible impacts to solid waste from an increase in construction and demolition debris. Contractors would be required to recycle construction and demolition debris to the greatest extent practicable, thereby diverting it from landfills. Under Alternative 1, long-term, negligible, adverse impacts could result from permanently using landfill capacity through the disposal of nonrecyclable construction and demolition debris. However, the quantity of waste generated would not exceed the capacity of regional facilities. There would be no long-term change in the future quantity of solid waste generated compared to existing levels.

Overall, there would be no exceedances of the existing utility service capacity under Alternative 1 and impacts to utilities would be less than significant.

3.8.2.2 No-Action Alternative

Under the No-Action Alternative, the new force main and pump stations would not be constructed and the Maxwell Field Outfall would remain in service. The No-Action Alternative would have long-term, moderate, adverse impacts on the wastewater system at MAFB. The existing sewer infrastructure on MAFB is more than 50 years old and could fail if left in service, resulting in significant impacts. Under the No-Action Alternative, there would be no impacts to energy sources, water supply, or solid waste.

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4. Reasonably Foreseeable Actions and Cumulative Effects

This EA also considers cumulative effects as required by 40 CFR 1508.1(i)(3) and concurrent actions as required by 40 CFR 1501.3(b). A cumulative effect, as defined by the CEQ (40 CFR 1508.1(i)(3)), is an effect that results from "the incremental effects of the action when added to the effects of other past, present, and reasonably foreseeable actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative effects can result from actions with individually minor but collectively significant effects taking place over a period of time."

Cumulative effects occur if the incremental effects of the Proposed Action result in an increased impact when added to the environmental effects of past, ongoing, and reasonably foreseeable future activities. Reasonably foreseeable future activities are defined as those that have an application for operations pending and would occur in the same time frame as the Proposed Action. Past activities are considered only when their effects still would be present during implementation of the Proposed Action.

The potential for cumulative effects on the environment from the Proposed Action was evaluated by reviewing historical aerial photos to identify recent actions, and by reviewing ongoing and planned actions that could affect the same environmental resources as the Proposed Action. Actions considered included construction projects that are under way or are programmed to occur in the near future. Cumulative effects were not analyzed for resources that were eliminated from further consideration. Cumulative effects are detailed in Section 4.1 for each resource area that was considered in detail.

4.1 Past, Present, and Reasonably Foreseeable Actions

Projects identified with potential for cumulative effects with the Proposed Action include the following:

- MH-139 Beddown: Ongoing projects include construction of a new Operations Group building and renovation of Building 1455 (hangar) for flight simulator facility.
- Western Airfield Ditches for Bird Air Strike Hazard Program: This near future project involves reshaping terrain on the southern end of the airfield.
- Commercial Vehicle Inspection Gate: Construction of a new gate will start in 2024.
- Air University Campus Plan: Consists of various new construction and renovation projects that will continue through 2028.

4.1.1 Air Quality

Construction activities related to Alternative 1 would cause minor, adverse, cumulative effects on air quality when combined with other planned, ongoing, or recently completed projects in the area. These cumulative effects would not be significant because the scope of this project would not increase air pollutants to levels that exceed regulatory thresholds. The emissions would be temporary, localized, and eliminated after the activity is completed. These emissions would quickly dissipate as they are transported from the activity source, thereby preventing significant contribution to cumulative effects on air quality. Alternative 1 would result in short-term cumulative effects on air quality from the generation of fugitive dust when combined with other planned construction projects in the area. Effects would not be significant because dust suppression techniques would be used during construction to minimize effects from dust. The limited amount of GHG emissions from Alternative 1 would not contribute significantly to climate change, but any emission of GHGs represents an incremental increase in global GHG concentrations.

4.1.2 Water Resources

Alternative 1 would result in cumulative benefits to water resources from the reduction of a potential sewer spill into streams and wetlands on MAFB and the Alabama River. Alternative 1 also would contribute to minor cumulative adverse effects on shallow groundwater from a potential for spills or releases to contaminate the shallow groundwater. All ongoing and planned construction and demolition projects would require appropriate BMPs and stormwater controls. In the event of a spill or accidental release, the

MAFB *Spill Prevention Control and Countermeasures Plan* and/or *Hazardous Materials Management Plan* would be implemented. Therefore, no significant effects from individual projects would be expected, and any cumulative effects would be expected to be short term, negligible, and less than significant.

4.1.3 Soil and Geologic Resources

Alternative 1 would contribute to minor long-term adverse cumulative effects on soils from the construction of new developed areas. Under Alternative 1, soils would be graded, compacted, shifted to other areas, and paved over. Measures to prevent and minimize soil erosion are required to be implemented by regulation for Alternative 1 and for other projects that involve land disturbance, thereby minimizing associated adverse cumulative effects.

4.1.4 Cultural Resources

Alternative 1 would have no adverse effects on cultural resources; therefore, no cumulative effects to cultural resources would occur.

4.1.5 Biological Resources

Alternative 1 would result in minor adverse cumulative effects to wildlife from disturbances during construction, incidental injuries and mortalities, and habitat loss. Alternative 1 would result in cumulative beneficial effects to aquatic habitat from the reduction of potential sewer spills into the Alabama River. With implementation of conservation measures, no significant cumulative effects would be expected.

4.1.6 Hazardous Materials and Wastes

Alternative 1 would contribute to minor, short-term, adverse cumulative effects associated with the use of hazardous materials and disposal of hazardous waste during construction activities. With proper handling and disposal of hazardous materials and wastes in accordance with federal, state, and local regulations and MAFB's *Hazardous Materials Management Plan* during construction and operation, cumulative effects to hazardous materials and wastes would be less than significant.

4.1.7 Utilities

Replacement of the existing, dated sewer system infrastructure would have beneficial effects to utilities on MAFB and no significant adverse cumulative effects would occur from implementation of Alternative 1.

Alternative 1 would contribute to minor, long-term, adverse cumulative effects on solid waste when added to other construction and demolition projects in the vicinity. However, construction waste generation would not be expected to exceed the capacities of local waste facilities and would not be significant.

5. Best Management Practices and Mitigation Measures

Mitigation measures differ from BMPs and environmental protection measures in that BMPs are actions that reduce potential impacts and are required by statutes, regulations, or to fulfill permitting or consultation requirements, and environmental protection measures are actions used to minimize impacts and are not required as part of statutes, regulations, or to fulfill permitting requirements but are typically measures taken during design and construction phases of a project to reduce impacts to the environment. The following BMPs would be implemented under Alternative 1:

- BMPs to reduce impacts from stormwater runoff would be used. These could include reseeding disturbed areas, incorporating low-maintenance plant species, installing sediment fencing, applying water to disturbed soil, and limiting soil disturbance only to areas where the construction is proposed. An erosion and sedimentation pollution control plan would be developed in accordance with the stormwater management requirements of Montgomery County and ADEM.
- BMPs to reduce impacts to air quality would be used, including applying water to or using other stabilization measures on areas of bare soil or soil piles; creating wind breaks; and covering dump trucks that transport materials that could become airborne.
- Post-construction, temporary disturbance areas within floodplains would be stabilized and returned to preexisting hydrological conditions.
- Contractors would maintain construction equipment in accordance with manufacturers' specifications to keep unnecessary noise impacts and air emissions to a minimum.
- If contaminated groundwater or soils were encountered during construction activities, the handling, storage, transportation, and disposal activities would be conducted in accordance with applicable federal, state, and local regulations, Air Force Instructions, and MAFB management procedures.
- To limit noise disturbances, construction would primarily occur on weekdays during daylight hours.
- Temporary fencing would be installed around the construction site to prevent unauthorized access to the active construction zone.
- Vegetation would be restored within all temporary disturbance areas upon completion of construction, in accordance with MAFB's INRMP.
- Preconstruction surveys for breeding birds would be conducted to avoid impacts on BGEPA and MBTA species if vegetation clearing would be required during the bird breeding season (01 March to 31 August).
- Tree removal would occur, if possible, during the winter season (01 November to 31 March) to avoid direct impacts to tricolored bats.
- If any unanticipated discoveries of archaeological resources or cultural items occur, work would be temporarily halted at the discovery site until the appropriate notifications and consultations were completed and procedures would be in place to minimize adverse effects and render disposition of cultural items.
- During construction, clearly indicated detours and traffic control signalers would be used to keep traffic moving during periods of heavy construction-related traffic or temporary road closures.
- Construction equipment fueling and maintenance would occur offsite or in designated areas with appropriate controls and containment.
- In the event of an accidental spill or release, implement the MAFB *Spill Prevention Control and Countermeasures Plan* and/or *Hazardous Materials Management Plan* (USAF 2021).

The following conservation measures recommending by USFWS during consultation (refer to Appendix A) would also be implemented under Alternative 1:

- Implement BMPs to minimize erosion and prevent sedimentation of drainages in the project area, both during and after construction.
- Install erosion and stormwater control devices prior to construction activities to protect water quality.
- Maintain a naturally vegetated buffer (preferably 100 feet or greater) adjacent to any ditches or drainages to reduce erosion and protect water quality.
- Retain as much natural vegetation as possible by clearing and grubbing only necessary areas.
- Immediately revegetate any disturbed areas with native species or an annual grass.
- To the extent feasible, complete any work that results in exposed earth during periods of low water and when significant rainfall is not predicted.

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7. List of Preparers

Table 7-1. List of Preparers

Name	Education and Experience	Primary Responsibilities
Nicole Bentivegna/Jacobs	M.S., Environmental Science (2012), 12 years of experience	Project Scientist, responsible for preparation of EA text
Melanie Wiggins/Jacobs	M.A.S., Environmental Policy and Management (2006), B.S., Biology (1993), 27 years of experience	Project Biologist, responsible for preparation of EA text
Ursula Rogers/Jacobs	B.S., Biology (2004), 15 years of experience	Project Biologist, responsible for preparation of EA text
Caitlin Santinelli/Jacobs	B.S., Earth and Atmospheric Science (2008), 13 years of experience	Project Engineer, primarily responsible for air quality analysis
Richard Reaves/Jacobs	Ph.D., Wetland and Wildlife Ecology (1995), 28 years of experience	Senior technical review and quality assurance of the EA
Sarah Boles/Jacobs	B.S., Biological Engineering (2017), 9 years of experience	Project Engineer, responsible for GIS analysis
Sara Orton/Jacobs	MPS, Preservation Studies (2000), 24 years of experience	Responsible for cultural resources analysis and state agency consultation

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Appendix A. Interagency/Intergovernmental Coordination and Responses

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Name	Title	Agency
Federal, State, and Local Agency Contacts		
Larry O. Gissentanna	DoD and Federal Agency Project Manager	U.S. Environmental Protection Agency, Region 4
Trevor Popkin	Chief, Regulatory Division	U.S. Army Corps of Engineers
William Straw	Regional Environmental Officer	Federal Emergency Management Agency
William Pearson	Daphne Field Supervisor	U.S. Fish and Wildlife Service, Region 4
Brian Hendry	Community Planner	FAA Southern Region
Lee Anne Wofford	State Historic Preservation Officer	Alabama Historical Commission
Lance LeFleur	Director	Alabama Department of Environmental Management
Kenneth Boswell	Director	Alabama Department of Community and Economic Affairs
Christopher Blankenship	Commissioner	Alabama Department of Conservation and Natural Resources
Jeff Smitherman	Director	Alabama Emergency Management
Greg Clark	Executive Director	Central Alabama Regional Planning and Development
Brian Atkins	Division Director	Alabama Office of Water Resources
Colonel Douglas DeMaio	Commander, 187th Fighter Wing	Alabama Air National Guard
Nancy Carnley	Commission Chairperson	Alabama Indian Affairs Commission
Pat Byington	President	Alabama Environmental Council
Steven L. Reed	Mayor	City of Montgomery
Robert E. Smith, Jr.	Director of Planning	City of Montgomery Planning Department
Scott Rizer	Military Affairs	Montgomery Area Chamber of Commerce
Anna B. Buckalew	President and CEO	Montgomery Area Chamber of Commerce
Wade Davis	Executive Director	Montgomery Regional Airport
Colonel Craig Drescher	Commander	908th Airlift Wing, AFRC
John W. Desmarais, Sr.	HQ CAP Director of Operations	Civil Air Patrol National Headquarters
Colonel Tyler P. Frander	CAP-USAF Commander	Civil Air Patrol National Headquarters
Doug Singleton	Chairman	Montgomery County Commission
Cultural/Tribal Contacts		
Eloise Josey	Executive Director	Alabama Indian Affairs Commission

Bryant Celestine	Tribal Historic Preservation Officer	Alabama-Coushatta Tribe of Texas
Samantha Robinson		Alabama-Quassarte Tribal Town of the Creek Nation
David Cook		Kialegee Tribal Town of the Creek Nation of Oklahoma
Kenneth H. Carleton	Tribal Archaeologist	Mississippi Band of Choctaw Indians
Corain Lowe-Zepeda	Cultural Preservation Manager	Muscogee (Creek) Nation
Larry Haikey	Tribal Historic Preservation Officer	Poarch Band of Creek Indians
Ian Thompson	Director, Historic Preservation Department	Choctaw Nation of Oklahoma
Terry Clouthier	Tribal Historic Preservation Officer	Thlopthlocco Tribal Town

1

DEPARTMENT OF THE AIR FORCE
42D AIR BASE WING (AETC)
MAXWELL AIR FORCE BASE ALABAMA

5 May 2023

Mr. Gregory Rollins
42d Civil Engineer Squadron
400 Cannon Street
Montgomery, AL 36112-0000

William Pearson
Field Supervisor
U.S. Fish and Wildlife Service
Alabama Ecological Services Field Office
1208 Main Street
Daphne, AL 36526

SUBJECT: Environmental Assessment for the Proposed Sanitary Sewer Line and Pump Stations at Maxwell Air Force Base, Alabama

Dear Mr. Pearson:

The Montgomery Water Works and Sanitary Sewer Board (MWWSSB) is preparing an Environmental Assessment to evaluate potential environmental impacts associated with the Field Outfall Decommission and New Force Main and Sewer Pump Stations Construction Project at Maxwell Air Force Base (AFB), Alabama (hereafter referred to as the project). Pursuant to Section 7 of the *Endangered Species Act of 1973* (ESA) (16 *United States Code* 1531-1544), USAF has determined that the project *may affect, but is not likely to adversely affect*, federally listed species, including the alligator snapping turtle (*Macrochelys temminckii*) and tricolored bat (*Perimyotis subflavus*).

Proposed Action

The Proposed Action includes construction of a new force main and three pump stations (Alternative I1-1) and the decommissioning of the Maxwell Field Outfall (a gravity sewer line) (Alternative D1-1) at Maxwell AFB in Montgomery, Alabama (Figure 1-1). The purpose of the Proposed Action is to provide a long-term solution to the deterioration of the existing sewer infrastructure on Maxwell AFB. The need for Proposed Action is to provide and maintain infrastructure that is adequate to support the needs of the 42nd Air Base Wing and its tenant units. The Maxwell Field Outfall pipe is more than 50 years old, exposed to the elements and canopy fall, and difficult to access. The existing conditions create the concern of catastrophic failure that would result in release of untreated sewer water into wetlands and potentially into the Alabama River.

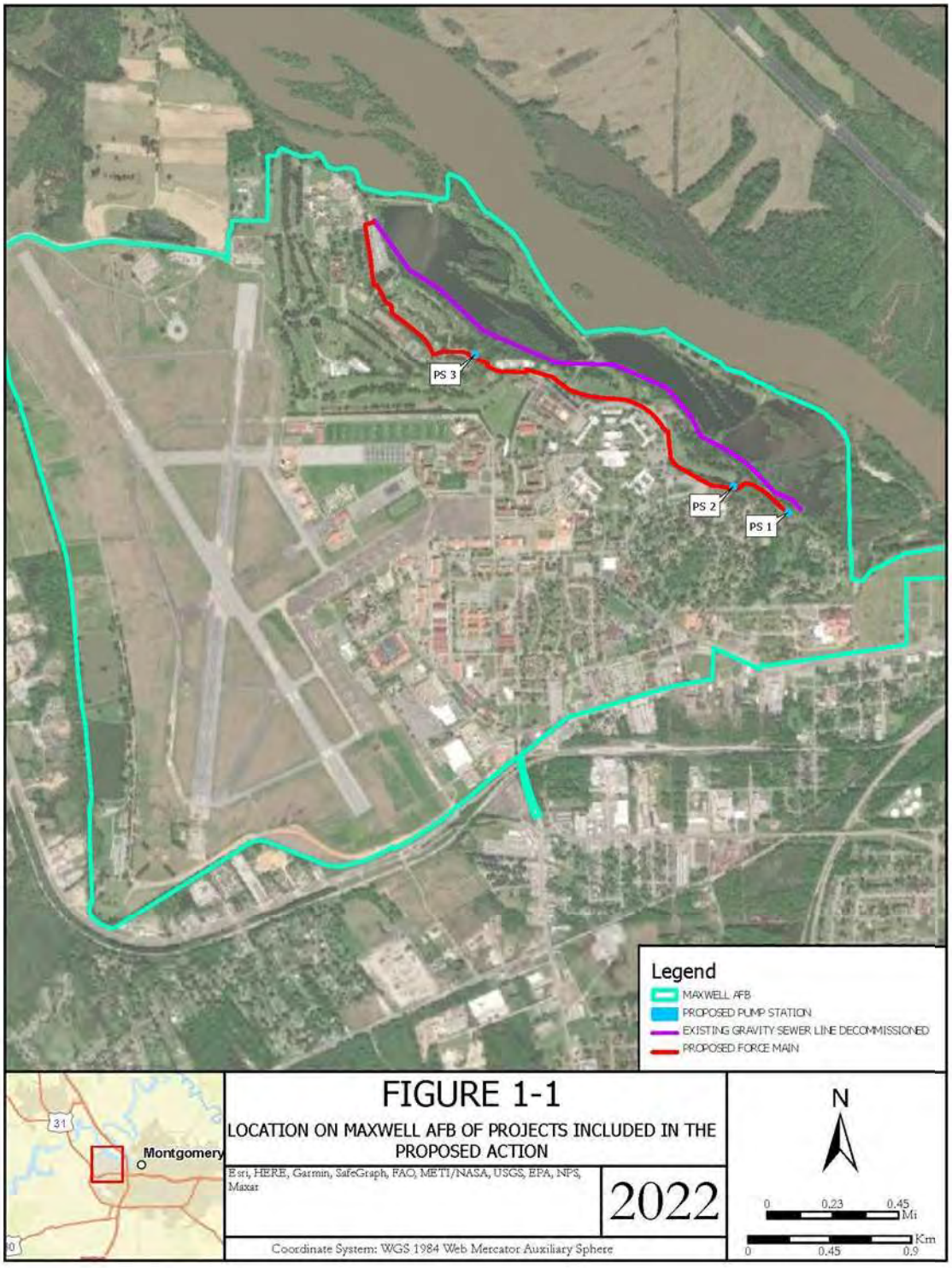


Figure 1-1: Location on Maxwell AFB of Projects Included in the Proposed Action

Alternative I1-1

As part of the new force main construction, a new, common, 12-inch-diameter force main that increases to an 18-inch diameter would be installed via open-cut trenching along most of the route, with jack-and-bore or horizontal-direction drill planned for installation of the force main across two perennial streams. The length of the proposed force main would be approximately 10,000 feet. Up to 2,000 feet of new gravity piping would be constructed to connect the three proposed pump stations to existing outfalls and the interceptor.

The locations of the pump stations along the route were determined by hydraulic analyses of system operation and locations where existing retained or proposed new lateral gravity sewer conveyance connections would connect with the proposed force main. Existing lateral gravity sewer conveyances were part of a gravity flow system, and the pump stations are necessary to raise the sewer water to the elevation of the force main. Three duplex submersible pump stations would be constructed to discharge into the new force main to convey wastewater to the Montgomery Water Works and Sanitary Sewer Board's existing Pump Station 20. Pump Station 20 would convey water from the proposed force main to the Towassa Water Pollution Control Plant for treatment. The pump stations would be sized based on results from a 2021 Towassa basin flow study and historical data.

Alternative D1-1

Decommissioning of the existing field outfall would include the removal of existing aerial portions of the pipeline. The existing pipe supports would remain in place. Portions of the pipeline that are buried would be capped where the pipe enters and exits the ground surfaces.

To access the pipeline, a 60-foot-wide area along the length of the pipe would be required. The location of the existing pipeline varies inside the 60-foot corridor, depending on if the existing pipeline is over water or close to the water's edge. Clearing activities within the 60-foot corridor would be minimized and would only occur to the extent necessary to safely access the pipeline. For many areas, clearing activities would only require the removal of fallen trees and debris.

The majority of the pipeline would be removed from the water side using barges and boats. In areas where the pipe cannot be accessed by water, removal would be from land using the 60-foot corridor. Temporary marsh mats would be installed for construction equipment and pipe transportation, as required. It is estimated that approximately 85 percent of the gravity sewer would be removed.

Laydown areas would be used for temporary storage of equipment and materials, including segments of pipe. Clearing is not expected to occur in these areas. Once pipeline removal operations are complete, the area would be returned to pre-existing conditions.

In some areas, temporary access roads may need to be constructed to access the 60-foot corridor. This may require minimal tree clearing and the installing clay fill material. Along the steeper slopes, installation of rock fill may occur to stabilize the access road. Once the existing pipe has been removed, all the fill material would be removed, and the disturbed area would be returned to pre-existing conditions.

All of the vegetative communities on Maxwell AFB are highly impacted by invasive species and anthropogenic activities (CCR 2021). The majority of land on Maxwell AFB is developed or improved land, with the most natural area within the Alabama River floodplain and the "bluff area" that extends from the floodplain onto the main level of Maxwell AFB (CCR 2021).

Vegetation communities observed within the proposed project area during 2021 flora surveys of Maxwell AFB consisted of alluvial forest riparian areas and upland hardwood forest, pond margins or ditches, and open field (CCR 2021). Vegetation communities within the proposed project area for Alternative I1-1 include alluvial forest and upland woodland forest, and vegetation communities within the proposed project area for Alternative D1-1 include alluvial forest and upland hardwood forest.

Under Alternative I1-1, short- and long-term minor adverse impacts on vegetation would be expected from temporary disturbances during construction activities (for example, trampling and removal) and from the permanent removal of vegetation for the construction of new facilities. Implementation of Alternative I1-1 would result in 0.2 acre of impacts to alluvial forest and 1.9 acres of impacts to upland hardwood forest. Tree clearing may occur during construction.

Under Alternative D1-1, short- and long-term minor adverse impacts on vegetation would be expected from temporary disturbances during construction activities (for example, trampling and removal). Implementation of Alternative D1-1 would result in up to approximately 4.5 acres of impacts to alluvial forest and up to approximately 1.4 acres of impacts to upland hardwood forest. These impacted areas were disturbed during installation of the Maxwell Field Outfall but have experienced approximately 60 years of vegetative regrowth. Clearing activities within the 60-foot access corridor would be minimized and would only occur to the extent necessary to safely access the pipeline. For many areas, clearing activities will only require the removal of fallen trees and debris. More than 52 percent of the pipeline would be removed from the water using barges and boats, which would also reduce impacts to vegetation.

Soil and vegetation disturbance from construction can create suitable conditions for the establishment of non-native, invasive, or noxious weed species, which would be addressed, as necessary, in accordance with Maxwell AFB's Integrated Natural Resources Management Plan (INRMP; USAF 2020). Vegetation would be restored within all temporary disturbance areas upon completion of construction. Impacts to vegetation would be less than significant.

Threatened, Endangered, and Candidate Species and Critical Habitat

The Maxwell AFB INRMP and the U.S. Fish and Wildlife Service Information for Planning and Consultation System (Attachment 1) were reviewed to determine if any federally listed, threatened, endangered, or candidate species and their critical habitats potentially occur in the vicinity of the Proposed Action. Table 1 summarizes the species that are federally listed or proposed to be listed within the timeframe of the Proposed Action and have the potential to occur on Maxwell AFB. The species included in this list are based on the on-Base habitat identified in the Maxwell AFB INRMP (USAF 2020).

Table 1-1: Federally Listed Species with the Potential to Occur on Maxwell AFB

Common Name	Scientific Name	Status	Preferred Habitat
Federal			
Tricolored bat	*Perimyotis subflavus*	Proposed Endangered	Inhabits forested landscapes, where they forage near trees and along waterways. Roosts are mainly in dead or live tree foliage, human-made structures, caves, mines, and rock crevices.
Alligator snapping turtle	*Macrochelys temminckii*	Proposed Threatened	Inhabits slow-moving deep water of rivers and their tributaries, as well as canals, sloughs, swamps, bayous, and ponds near rivers.
Southern clubshell	*Pleurobema decisum*	Endangered	Inhabits burrows in gravel and sand at the bottom of large creeks and rivers.
Monarch butterfly	*Danaus plexippus*	Candidate	Inhabits fields, roadside areas, open areas, wet areas, or urban gardens. Milkweed plants are needed for monarch butterfly breeding habitat.
Georgia rockcress	*Arabis georgiana*	Threatened	Inhabits sunny and mostly sunny areas with circumneutral to slightly basic soils. Potentially occurs on rocky bluffs, gently sloping rock outcrops, outcrops along rivers, and sandy loam along eroding riverbanks.

Fauna surveys occurred in 2021, and bat surveys were conducted from 2016 through 2018 on the Installation.

Although the alligator snapping turtle has not been previously detected during surveys of Maxwell AFB, the sloughs in the Alternative D1-1 project area are suitable habitat for this species. Minor, short-term, adverse impacts to the alligator snapping turtle from incidental injury and mortality could occur during decommissioning activities over water; however, because the alligator snapping turtle is most active at night and spends most of its time submerged in the bottom of rivers, impacts from construction would be minimal. Equipment working in the wetlands that could not be operated from barges or boats would be on marsh or timber mats to minimize or prevent compaction of substrate and to minimize the potential for adverse effects to the alligator snapping turtle. The Proposed Action *may affect, but is not likely to adversely affect*, the alligator snapping turtle.

The tricolored bat has the potential to forage and roost in the forested areas beside the river during spring, summer, and fall. Alternatives I1-1 and D1-1 could result in minor, short-term adverse indirect impacts to the tricolored bat associated with temporary displacement and temporary habitat loss. Cutting of a roost tree while bats are present could result in injury to or mortality (direct impact) of tricolored bats. Maxwell AFB will restrict tree clearing during the maternity season to minimize impacts to maternity sites and roosts when bats are present. The Proposed Action *may affect, but is not likely to adversely affect*, the tricolored bat.

Site surveys have determined that there is no habitat for the southern clubshell and Georgia rockcress within or adjacent to the project area. Growing season surveys determined that there are no milkweed species (*Asclepias spp.*) within the project area and the monarch butterfly would not breed within the project area. Because of a lack of suitable habitat to support these species within the project area, there would be no effect to the southern clubshell, Georgia rockcress, and monarch butterfly.

With the previously identified protection measures, USAF determined the project *may affect, but is not likely to adversely affect*, the alligator snapping turtle and tricolored bat on Maxwell AFB. Further, USAF determined there would be no effect to the southern clubshell, monarch butterfly, and Georgia rockcress because the species would not occur in the project area.

USAF requests written concurrence with our determination as part of the informal consultation process. If you have any questions or concerns, please contact Benjamin Mark at (334) 953-7155 or benjamin.mark.ctr@us.af.mil. Thank you in advance for your assistance in this effort.

Sincerely,

ROLLINS.GREGORY.E.1056443971 Digitally signed by ROLLINS.GREGORY.E.1056443971 Date: 2023.04.28 09:10:20 -05'00'

GREGORY E. ROLLINS, GS-14, DAFC
Director, 42d Civil Engineer Squadron

Attachment:
U.S. Fish and Wildlife Service Information for Planning and Consultation System Report

References

CCR Environmental (CCR). 2021. *Floral Survey Report, Maxwell Air Force Base and Associated Facilities Alabama, USA*. September.

United States Air Force (USAF). 2020. *Integrated Natural Resources Management Plan, Maxwell Air Force Base*. May.

Attachment 1

U.S. Fish and Wildlife Service Information for Planning and Consultation System Report

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Alabama Ecological Services Field Office
1208 B Main Street
Daphne, AL 36526-4419
Phone: (251) 441-5181 Fax: (251) 441-6222
Email Address: alabama@fws.gov

In Reply Refer To: March 31, 2023
Project Code: 2023-0063124
Project Name: Maxwell AFB Field Outfall Decommission and New Force Main and Sewer Pump Stations Construction EA

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

Project consultation requests may be submitted by mail or email (Alabama@fws.gov). **Ensure that the Project Code in the header of this letter is clearly referenced in any request for consultation or correspondence submitted to our office.**

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered

species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF

Migratory Birds: In addition to responsibilities to protect threatened and endangered species under the Endangered Species Act (ESA), there are additional responsibilities under the Migratory Bird Treaty Act (MBTA) and the Bald and Golden Eagle Protection Act (BGEPA) to protect native birds from project-related impacts. Any activity, intentional or unintentional, resulting in take of migratory birds, including eagles, is prohibited unless otherwise permitted by the U.S. Fish and Wildlife Service (50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)). For more information regarding these Acts see https://www.fws.gov/birds/policies-and-regulations.php.

The MBTA has no provision for allowing take of migratory birds that may be unintentionally killed or injured by otherwise lawful activities. It is the responsibility of the project proponent to comply with these Acts by identifying potential impacts to migratory birds and eagles within applicable NEPA documents (when there is a federal nexus) or a Bird/Eagle Conservation Plan (when there is no federal nexus). Proponents should implement conservation measures to avoid or minimize the production of project-related stressors or minimize the exposure of birds and their resources to the project-related stressors. For more information on avian stressors and recommended conservation measures see https://www.fws.gov/birds/bird-enthusiasts/threats-to-birds.php.

In addition to MBTA and BGEPA, Executive Order 13186: *Responsibilities of Federal Agencies to Protect Migratory Birds*, obligates all Federal agencies that engage in or authorize activities that might affect migratory birds, to minimize those effects and encourage conservation measures that will improve bird populations. Executive Order 13186 provides for the protection of both migratory birds and migratory bird habitat. For information regarding the implementation of Executive Order 13186, please visit https://www.fws.gov/birds/policies-and-regulations/executive-orders/e0-13186.php.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. **Ensure that the Project Code in the header of this letter is clearly referenced with any request for consultation or correspondence about your project that you submit to our office.**

Attachment(s):

- Official Species List

OFFICIAL SPECIES LIST

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Alabama Ecological Services Field Office
1208 B Main Street
Daphne, AL 36526-4419
(251) 441-5181

PROJECT SUMMARY

Project Code: 2023-0063124
Project Name: Maxwell AFB Field Outfall Decommission and New Force Main and Sewer Pump Stations Construction EA
Project Type: Wastewater Pipeline - New Constr - Below Ground
Project Description: Field Outfall Decommission and New Force Main and Sewer Pump Stations Construction
Project Location:

The approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@32.3882531,-86.34629285761542,14z



Counties: Montgomery County, Alabama

ENDANGERED SPECIES ACT SPECIES

There is a total of 4 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

---

1. 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.

REPTILES

NAME	STATUS
Alligator Snapping Turtle *Macrochelys temminckii* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/4658	Proposed Threatened

CLAMS

NAME	STATUS
Southern Clubshell *Pleurobema decisum* There is **final** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/6113	Endangered

INSECTS

NAME	STATUS
Monarch Butterfly *Danaus plexippus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9743	Candidate

FLOWERING PLANTS

NAME	STATUS
Georgia Rockcress *Arabis georgiana* There is **final** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/4535	Threatened

CRITICAL HABITATS

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

CL 5/30

CEIE

United States Department of the Interior

FISH AND WILDLIFE SERVICE
1208-B Main Street
Daphne, Alabama 36526

MAY 2 4 2023

IN REPLY REFER TO:
2023-0063124

Mr. Gregory Rollins
42d Civil Engineer Squadron
400 Cannon Street
Maxwell AFB, AL 36112-0000

Dear Mr. Rollins,

Thank you for your letter dated May 5, 2023, requesting our evaluation and consultation associated with the field outfall decommission and new force main and sewer pump station construction project on Maxwell Air Force Base, Montgomery County, Alabama. We have reviewed the information and provide the following comments in accordance with the Endangered Species Act of 1973 (87 Stat. 884, as amended; 16 U.S.C. 1531 et seq.).

Threatened and Endangered Species

Our records indicate that the following threatened [T] and endangered [E] species may occur in or near your project area:

- Wood Stork (*Mycteria americana*) – Threatened
- Southern Clubshell (*Pleurobema decisum*) – Endangered
- Georgia Rockcress (*Arabis georgiana*) – Threatened
- Monarch butterfly (*Danaus plexippus*) – Candidate

Based on the information provided in your letter, we concur with your no affect determination on the southern clubshell, Georgia rockcress, and monarch butterfly. The wood stork can also be found in the area but should not be impacted by this project. Although you provided a may affect, not likely adversely affect determination for the alligator snapping turtle (*Macrochelys temminckii*) and tricolor bat (*Perimyotis subflavus*), we cannot comment on your determination for these two species, as both species are proposed to be listed under the Endangered Species Act, but no final decision has been made at this time.

We recommend incorporating the following measures into the project design to protect water quality:

- Implement BMPs to minimize erosion and prevent sedimentation of drainages in the project area, both during and after construction.

- Install erosion and stormwater control devices prior to construction activities to protect water quality.

- Maintain a naturally vegetated buffer (preferably 100 feet or greater) adjacent to any ditches or drainages to reduce erosion and protect water quality.

- Retain as much natural vegetation as possible by clearing and grubbing only necessary areas.

- Immediately revegetate and disturbed areas with a native species or an annual grass.

- To the extent feasible, complete any work that results in exposed earth during periods of low water and when significant rainfall is not predicted.

For more information regarding best management practices, consult the Alabama Handbook for Erosion Control, Sediment Control and Stormwater Management on Construction Sites and Urban Areas (2018), available on-line at:

https://alabamasoilandwater.gov/wp-content/uploads/2021/03/2018-Handbook-Vol-1.pdf

As long as BMPs are adhered to, no further endangered or threatened species consultations will be required for this portion of this project unless: 1) the identified action is subsequently modified in a manner that causes an effect on the listed species or on a proposed or designated critical habitat; 2) new information reveals the identified action may affect federally protected species or critical habitat in a manner or to an extent not previously considered; or 3) a new species is listed or critical habitat is designated under the Endangered Species Act that may be affected by the identified action.

If you have any questions or need additional information, please contact Mr. Scott Lamont of my staff at (251) 441-5857 or at scott_lamont@fws.gov. Please refer to the reference number located at the top of this letter in future phone calls or written correspondence.

Sincerely,

William J. Pearson
Field Supervisor
Alabama Ecological Services Field Office

ALABAMA HISTORICAL COMMISSION

Lisa D. Jones
Executive Director
State Historic Preservation Officer

468 South Perry Street
Montgomery, Alabama 36130-0900

Tel: 334-242-3184
Fax: 334-242-1083

October 23, 2023

Lindsay Kiel
Jacobs Engineering Group, Inc.
2725 Rocky Mountain Avenue Suite 330
Loveland, CO 80537

Re: AHC 23-1092
Maxwell AFB Pump Stations and Force Mains Project
Montgomery County

Dear Ms. Kiel:

Upon review of the revised cultural resource assessment report submitted to our office for the above referenced project, we agree with the author's findings. While the eligibility for listing on the National Register of Historic Places (NRHP) for archaeological site 1MT200 remains undetermined, the portion of the site located within the currently proposed Area of Potential Effects (APE) lacks integrity and does not contribute to the site's overall NRHP eligibility. Given this along with the fact that the proposed project activities within the site consist only of a laydown yard, the proposed project activities will not constitute an adverse effect on archaeological site 1MT200. We agree that while archaeological site 1MT279's eligibility for listing on the NRHP remains undetermined, the portion of the site located within the currently proposed APE lacks integrity and does not contribute the site's overall NRHP eligibility. We agree that the proposed project activities will not constitute an adverse effect on archaeological site 1MT279. We also agree that archaeological sites 1MT563 and 1MT564 are not eligible for listing on the NRHP. Therefore, we concur with a determination of No Effect to Historic Properties.

Consultation with the State Historic Preservation Office does not constitute consultation with Tribal Historic Preservation Offices, other Native American tribes, local governments, or the public. If archaeological materials are encountered during construction, the procedures codified at 36 CFR 800.13(b) will apply. Archaeological materials consist of any items, fifty years old or older, which were made or used by man. These items include but are not limited to, stone projectile points (arrowheads), ceramic sherds, bricks, worked wood, bone and stone, metal, and glass objects. The federal agency or the applicant receiving federal assistance should contact our office immediately. If human remains are encountered, the provisions of the Alabama Burial Act (Code of Alabama 1975, §13A-7-23.1, as amended; Alabama Historical Commission Administrative Code Chapter 460-X-10 Burials) should be followed. This stipulation shall be placed on the construction plans to ensure contractors are aware of it.

We appreciate your commitment to helping us preserve Alabama's historic archaeological and architectural resources. Should you have any questions, please contact William Lowe at 334.230.2670 or William.Lowe@ahc.alabama.gov. Have the AHC tracking number referenced above available and include it with any future correspondence.

Sincerely,

Lee Anne Hewett

Lee Anne Hewett
Deputy State Historic Preservation Officer

LAH/EDS/lah

POARCH BAND OF CREEK INDIANS

5811 Jack Springs Road • Atmore, Alabama 36502
Tribal Offices: (251) 368-9136 • Administrative Fax: (251) 368-4502
www.poarchcreekindians-nsn.gov

January 8, 2024

Mr. Benjamin Mark
US Dept. of Defense
42d Civil Engineer Squadron
400 Cannon Street
Montgomery, Alabama 36112-0000

Re: THPO: 2024-01-0004: Maxwell Air Force Base Field Outfall Decommission and New Force Main and Sewer Pump Stations Construction Project

Dear Mr. Mark,

The Poarch Band of Creek Indians, Tribal Historic Preservation Office, would like to thank you for the opportunity to consult on the Maxwell Air Force Base Field Outfall Decommission and New Force Main and Sewer Pump Stations Construction Project located in Montgomery, Alabama. In order to have a meaningful contribution per 36CFR800, we are requesting a copy of the Archaeological Survey Referenced.

Thank you for the opportunity to comment on this project. We look forward to working with you in the future. Should further correspondence pertaining to the project be necessary, please reference the above file number when responding. If you have any questions, please do not hesitate to call 251-368-9136 extension 2072.

Sincerely,

William L. (Billy) Bailey, Jr.
Tribal Historic Preservation Specialist

DEPARTMENT OF THE AIR FORCE
42D AIR BASE WING (AETC)
MAXWELL AIR FORCE BASE ALABAMA

15 Apr 2024

Mr. Jared Kennington
42d Civil Engineer Squadron
400 Cannon Street
Montgomery AL 36112-0000

Mr. William L. Bailey, Jr.
Tribal Historic Preservation Specialist
Poarch Band of Creek Indians
5811 Jack Spring Road
Atmore AL 36502

Dear Mr. Bailey

Maxwell Air Force Base (AFB) is pleased to provide the enclosed Cultural Resources Assessment Report that was produced in support of the Environmental Assessment (EA) being prepared for the Montgomery Water Works and Sanitary Sewer Board's Maxwell AFB Field Outfall Decommission and New Force Main and Sewer Pump Stations Construction Project. Maxwell AFB appreciates your interest in the referenced project, and we look forward to hearing from you. Please reach out to me at jared.kennington.1@us.af.mil if questions arise.

Sincerely

JARED KENNINGTON, GS-12, DAFC
Installation Tribal Liaison Officer

Attachment:
Cultural Resources Assessment Report for the Maxwell AFB Pump Stations and Force Mains Project, Montgomery County, Alabama

Doug Singleton, District 5
CHAIRMAN

Isaiah Sankey, District 4
VICE CHAIRMAN

Daniel Harris, Jr., District 1
Carmen Moore-Zeigler, District 2
Ronda M. Walker, District 3

Florence M. Cauthen
ADMINISTRATOR

Kindell Anderson
DEPUTY ADMINISTRATOR

June 13, 2023

Mr. Gregory Rollins
42nd Civil Engineer Squadron
400 Cannon Street
Montgomery, Alabama, 36112

Dear Mr. Rollins,

I am in receipt of your letter dated May 31, 2023, requesting the Montgomery County Commission be a Cooperating Agency with the Department of the Air Force in an Environmental Assessment to analyze the potential environmental impacts of a new Montgomery Water Works and Sanitary Sewer Board infrastructure project on Maxwell Air Force Base. The Commission will gladly comply with your request, and we look forward to participating as a Cooperating Agency for this project.

I will be the point of contact for the Montgomery County Commission for the duration of this project.
Please feel free to contact me as needed, my information is provided below.

Regards,

Michael W. Armistead
General Counsel
Montgomery County Commission
P.O. Box 1667, Montgomery, AL 36102-1667
101 S. Lawrence St., Montgomery, AL 36104
o: 334.832.1254
c: 334.318.9308
MichaelArmistead@mc-ala.org

From: Rangel, Angela M CIV USARMY CESAM (USA) <Angela.M.Rangel@usace.army.mil> **Sent:** Thursday, July 13, 2023 6:23 PM
To: Reaves, Richard <Richard.Reaves@jacobs.com>
Subject: [EXTERNAL] SAM-2023-00497-AMR Waxwell AFB Sewer System

Richard:
It appears that part of the old sewer pipe that would be deconstructed is located in Section 10 waters (that open lake area). Therefore, the deconstruction will need a permit NWP 33, Temporary construction, access and dewatering.
And for the new portion, we could incorporate into the same letter for the NWP 33, that the new activity would not require a permit, provided, there are no impacts to waters of US while directionally drilling under those resources.

Will Montgomery Water Works and Sanitary Sewer Board be the ones to hold the permit? In other words, will they take responsibility for the permit?

Angela M. Rangel, Project Manager
USACE Mobile District
Regulatory Division
109 St. Joseph Street
Mobile, Alabama 36602

251-694-3873 Office
251-455-6785 Cell

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Appendix B. Public Notices

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choose to know

Montgomery Advertiser

montgomeryadvertiser.com

Daily-Montgomery, Montgomery County, AL

TO: MONTGOMERY WATER WORKS
2000 INTERSTATE PARK DR STE
MONTGOMERY , AL 36109

of Affidavits1
This is not an invoice

E-Verify#: DHS72179

PROOF OF PUBLICATION

State of Alabama
County of Montgomery:

Before the undersigned authority personally appeared said Legal Clerk who on oath, says that he/she is a personal representative of the *Montgomery Advertiser*, a daily newspaper published in Montgomery, Alabama: that the attached copy of advertisement, being a Legal in the matter of:

Ad Number: 0005778636
Was Published in said newspaper in the issue(s) dated:

MGM-Montgomery Advertiser

07/26/2023

Affiant further says that the said *Montgomery Advertiser* is a newspaper published in said Montgomery County, Alabama, and that the said newspaper has heretofore been published in said Montgomery County, Alabama, and has been entered as second class matter at the Post Office in said Montgomery County, Alabama, for a period of one year next preceding the first publication of the attached copy of advertisement; and affiant further says that she has neither paid nor promised any person, firm or corporation any discount, rebate, commission or refund for the purpose of securing this advertisement for publication in the said newspaper.

Now due on said account is $217.56

Legal Clerk

Subscribe and sworn before me this 26th day of July, 2023

Notary Public, State of Wisconsin, County of Brown

5.19.27

My Commission expires

NANCY HEYRMAN
Notary Public
State of Wisconsin

Re: Legal AD

NOTICE FOR EARLY PUBLIC REVIEW OF A PROPOSED ACTIVITY IN A 100-YEAR FLOODPLAIN AND WETLAND

To: All Interested Agencies, Groups, and Individuals

The Montgomery Water Works and Sanitary Sewer Board has proposed improvements to address aging and deteriorating wastewater infrastructure that serves the Maxwell Air Force Base. The Proposed Action includes the decommissioning of the existing Maxwell Field Outfall. Activities associated with the decommissioning would not change existing elevations or alter flood storage capacity. The Proposed Action will avoid or minimize impacts to wetlands. There would be no effects to wetlands or other waters from the other components of the Proposed Action. This notice is required by Section 2(b) of Executive Order (EO) 11990, "Protection of Wetlands" and by Section 2(a)(4) of EO 11988, "Floodplain Management," and has been prepared and made available to the public by the U.S. Air Force (USAF) in accordance with Title 32, Code of Federal Regulations, Part 989.24(c) and Air Force Instruction 32-7064, Integrated Natural Management, for actions proposed in wetlands and floodplains.

The decommissioning of the Maxwell Field Outfall would include the removal of approximately 7,000 feet of aerial portions of the pipeline and the capping of the interceptor as it exits and enters the ground surfaces. The pipe supports would be left in place. Clearing would be minimized and done only to the extent necessary to safely access the pipeline. Appropriate BMPs would be implemented based on site-specific conditions and applicable state and federal permits. The disturbed areas would be returned to pre-existing conditions. No other alternatives were identified as feasible for the decommissioning of the Maxwell Field Outfall. The USAF is preparing an environmental assessment (EA) in accordance with the National Environmental Policy Act to analyze the potential environmental impacts to the Proposed Action.

The USAF is seeking advance public comment on the proposed project to determine if there are any public concerns regarding the project's potential impacts and is soliciting public input or comments on potential project alternatives. The full EA will also be available for public review in the summer of 2023. Please provide written comments to: Nina Williams, Jacobs, 4121 Carmichael Rd, Suite 400, Montgomery, AL 36106; or by email to: Nina.Williams@jacobs.com. Written comments will be accepted for 30 days from the publication of this notice.

Mont. Adv. 07/26/2023 #5778636

LocaliQ
Alabama
GANNETT

PO Box 631247 Cincinnati, OH 45263-1247

AFFIDAVIT OF PUBLICATION

Ursula Rogers
Accounts Payable
Montgomery Water Works
Po Box 1631
Montgomery AL 36102-1631

STATE OF ALABAMA, COUNTY OF MONTGOMERY

The Montgomery Advertiser, a newspaper published in the city of Montgomery, and of general circulation in the County of Montgomery, State of Alabama, and personal knowledge of the facts herein state and that the notice hereto annexed was Published in said newspapers in the issue:

09/01/2024, 09/03/2024

and that the fees charged are legal.
Sworn to and subscribed before on 09/03/2024

Legal Clerk

Notary, State of WI, County of Brown

5.15.27

My commission expires

Publication Cost:	$172.56	
Tax Amount:	$0.00	
Payment Cost:	$172.56	
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Customer No:	1128238	1
PO #:		

THIS IS NOT AN INVOICE!

Please do not use this form for payment remittance.

NANCY HEYRMAN
Notary Public
State of Wisconsin

NOTICE OF 30-DAY PERIOD FOR PUBLIC COMMENT

The Montgomery Water Works & Sanitary Sewer Board/Jacobs has prepared an environmental assessment (EA) to analyze the impacts that could result from the Maxwell Field Outfall (gravity sewer line) decommission and new force main and sewer pump stations construction on Maxwell Air Force Base in Montgomery County, Alabama.

The EA and draft Finding of No Significant Impact and Finding of No Practicable Alternative are available for public review and comment for 30 days at the Juliette Hampton Morgan Memorial Library, 245 High Street, Montgomery, AL 36104 and online at https://www.maxwell.af.mil/.

Written comments submitted within 30 days of the publication of this notice will be considered. Comments should be sent to Kerry Henry at Kerry.Henry@jacobs.com. If you have any questions, please call 334-220-4091.

AL-40155330

Appendix C. Air Quality Emission Estimates and Record of Non-Applicability

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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: 5.0.23a

a. Action Location:

Base: MAXWELL-GUNTER AFB
State: Alabama
County(s): Montgomery
Regulatory Area(s): NOT IN A REGULATORY AREA

b. Action Title: Decommissioning of Maxwell Field Outfall and Construction of New Force Main Sewer with 3 Pump Stations

c. Project Number/s (if applicable):

d. Projected Action Start Date: 1 / 2025

e. Action Description:

Alternative 1 – Decommissioning of Maxwell Field Outfall and construction of new force main sewer with three pump stations – This alternative includes installation of three pump stations to convey wastewater from the existing branch sewers served by the Maxwell Field Outfall and a common force main with discharge connection at Pump Station 20. The three pump stations would discharge into a 12-inch-diameter force main that increases to an 18-inch-diameter force main. Pump stations were located to minimize the number of stations required, to minimize connecting gravity sewer modifications, and to provide O&M access. Force main routing was evaluated to maximize ease of access for maintenance, to minimize length, to minimize disturbance to activities on Maxwell AFB, and to avoid the extensive wetlands along the existing Maxwell Field Outfall. Under Alternative 1, the pipeline would be completely buried and not be at risk to compromise from external events, such as tree fall. The Maxwell Field Outfall would remain in service during construction and bypass pumping would not be required. The Maxwell Field Outfall would be decommissioned once the force main is operational. The estimated cost to implement Alternative 1 is approximately $8,800,000.

f. Point of Contact:

Name: Caitlin Santinelli
Title: Scientist
Organization: Jacobs
Email: caitlin.santinelli@jacobs.com
Phone Number:

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" (hsba.e., no net gain/loss in emission stabilized and the action is fully implemented) emissions. The ACAM analysis uses the latest and most

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

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" (hsba.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.*

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

Analysis Summary:

2025

Pollutant	Action Emissions (ton/yr)	INSIGNIFICANCE INDICATOR	
		Indicator (ton/yr)	Exceedance (Yes or No)
NOT IN A REGULATORY AREA			
VOC	0.140	250	No
NOx	1.212	250	No
CO	1.567	250	No
SOx	0.002	250	No
PM 10	10.816	250	No
PM 2.5	0.048	250	No
Pb	0.000	25	No
NH3	0.002	250	No

2026

Pollutant	Action Emissions (ton/yr)	INSIGNIFICANCE INDICATOR	
		Indicator (ton/yr)	Exceedance (Yes or No)
NOT IN A REGULATORY AREA			
VOC	0.100	250	No
NOx	0.192	250	No
CO	0.292	250	No
SOx	0.000	250	No
PM 10	0.008	250	No
PM 2.5	0.007	250	No
Pb	0.000	25	No
NH3	0.001	250	No

2027 - (Steady State)

Pollutant	Action Emissions (ton/yr)	INSIGNIFICANCE INDICATOR	
		Indicator (ton/yr)	Exceedance (Yes or No)
NOT IN A REGULATORY AREA			
VOC	0.000	250	No
NOx	0.000	250	No
CO	0.000	250	No

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

SOx	0.000	250	No
PM 10	0.000	250	No
PM 2.5	0.000	250	No
Pb	0.000	25	No
NH3	0.000	250	No

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.

Caitlin Santinelli, Scientist — Apr 12 2024

Name, Title — **Date**

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

1. General Information

- Action Location

Base: MAXWELL-GUNTER AFB
State: Alabama
County(s): Montgomery
Regulatory Area(s): NOT IN A REGULATORY AREA

- Action Title: Decommissioning of Maxwell Field Outfall and Construction of New Force Main Sewer with 3 Pump Stations

- Project Number/s (if applicable):

- Projected Action Start Date: 1 / 2025

- Action Purpose and Need:

The purpose of the proposed project is to replace or rehabilitate the pipeline and support structures to prevent a sanitary sewer emergency.

The Maxwell Field Outfall was installed in the 1960s and has been in service for over 50 years. Approximately half of the Maxwell Field Outfall is above ground and suspended above sensitive aquatic habitats (wetlands in sloughs along the Alabama River and tributary streams that flow into the sloughs). The aerial supports for these crossings are deteriorating and put the integrity of the gravity sewer at risk CH2M, 2017, Jacobs, 2021). Trees have grown in proximity to the gravity sewer over the past 50+ years and treefall and limb fall pose additional threats to the Maxwell Field Outfall (Jacobs, 2021). The pipe is over 50 years old, exposed to the elements and canopy fall, and difficult to access. The existing conditions create the concern of catastrophic failure that would result in release of untreated sewer water into wetlands and potentially into the Alabama River.

- Action Description:

Alternative 1 – Decommissioning of Maxwell Field Outfall and construction of new force main sewer with three pump stations – This alternative includes installation of three pump stations to convey wastewater from the existing branch sewers served by the Maxwell Field Outfall and a common force main with discharge connection at Pump Station 20. The three pump stations would discharge into a 12-inch-diameter force main that increases to an 18-inch-diameter force main. Pump stations were located to minimize the number of stations required, to minimize connecting gravity sewer modifications, and to provide O&M access. Force main routing was evaluated to maximize ease of access for maintenance, to minimize length, to minimize disturbance to activities on Maxwell AFB, and to avoid the extensive wetlands along the existing Maxwell Field Outfall. Under Alternative 1, the pipeline would be completely buried and not be at risk to compromise from external events, such as tree fall. The Maxwell Field Outfall would remain in service during construction and bypass pumping would not be required. The Maxwell Field Outfall would be decommissioned once the force main is operational. The estimated cost to implement Alternative 1 is approximately $8,800,000.

- Point of Contact

Name: Caitlin Santinelli
Title: Scientist
Organization: Jacobs
Email: caitlin.santinelli@jacobs.com
Phone Number:

Report generated with ACAM version: 5.0.23a

- Activity List:

Activity Type		Activity Title
2.	Construction / Demolition	New force main/gravity piping

3.	Construction / Demolition	Construction of Pump Station 1
4.	Construction / Demolition	Construction of Pump Station 2
5.	Construction / Demolition	Construction of Pump Station 3

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: Montgomery
Regulatory Area(s): NOT IN A REGULATORY AREA

- Activity Title: New force main/gravity piping

- Activity Description:
Demolish existing 8,000 ft of Maxwell Field Outfall. Demolition includes clearing of land surrounding existing pipeline. Construct 10,000 ft of new force main and 2,000 ft of gravity piping

- Activity Start Date
Start Month: 1
Start Month: 2025

- Activity End Date
Indefinite: False
End Month: 1
End Month: 2026

- Activity Emissions:

Pollutant	Total Emissions (TONs)
VOC	0.145301
SO_x	0.002362
NO_x	1.256445
CO	1.631277

Pollutant	Total Emissions (TONs)
PM 10	10.818209
PM 2.5	0.049902
Pb	0.000000
NH_3	0.002140

- Activity Emissions of GHG:

Pollutant	Total Emissions (TONs)
CH_4	0.010539
N_2O	0.002458

Pollutant	Total Emissions (TONs)
CO_2	260.117707
CO_2e	261.113350

- Global Scale Activity Emissions for SCGHG:

Pollutant	Total Emissions (TONs)
CH_4	0.010539
N_2O	0.002458

Pollutant	Total Emissions (TONs)
CO_2	260.117707
CO_2e	261.113350

2.1 Demolition Phase

2.1.1 Demolition Phase Timeline Assumptions

- Phase Start Date

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

Start Month: 1
Start Quarter: 1
Start Year: 2025

- Phase Duration
Number of Month: 4
Number of Days: 0

2.1.2 Demolition Phase Assumptions

- General Demolition Information
Area of Building to be demolished (ft^2): 24000
Height of Building to be demolished (ft): 4

- Default Settings Used: Yes

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

- Construction Exhaust (default)

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

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

- Vehicle Exhaust Vehicle Mixture (%)

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

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

- Worker Trips Vehicle Mixture (%)

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

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	0.43930	0.00743	3.63468	4.34820	0.10060	0.09255
Rubber Tired Dozers Composite [HP: 367] [LF: 0.4]						
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**
Emission Factors	0.37086	0.00491	3.50629	2.90209	0.15396	0.14165
Tractors/Loaders/Backhoes Composite [HP: 84] [LF: 0.37]						
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**
Emission Factors	0.19600	0.00489	2.00960	3.48168	0.07738	0.07119

- 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	0.02333	0.00467	575.01338	576.98668
Rubber Tired Dozers Composite [HP: 367] [LF: 0.4]				
	CH_4	N_2O	CO_2	CO_2e
Emission Factors	0.02159	0.00432	532.17175	533.99803
Tractors/Loaders/Backhoes Composite [HP: 84] [LF: 0.37]				
	CH_4	N_2O	CO_2	CO_2e
Emission Factors	0.02149	0.00430	529.86270	531.68105

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

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	NH_3
LDGV	0.29745	0.00168	0.14387	4.37185	0.00416	0.00368	0.05192
LDGT	0.24199	0.00207	0.19181	3.85952	0.00468	0.00414	0.04336
HDGV	0.88670	0.00464	0.67607	11.33326	0.02119	0.01875	0.09317
LDDV	0.10134	0.00128	0.15169	5.73803	0.00353	0.00325	0.01651
LDDT	0.20513	0.00145	0.48046	5.45378	0.00565	0.00519	0.01745
HDDV	0.12071	0.00426	2.43419	1.54002	0.05112	0.04703	0.06551
MC	2.90026	0.00194	0.62614	12.70426	0.02297	0.02032	0.05300

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

	CH_4	N_2O	CO_2	CO_2e
LDGV	0.01577	0.00519	332.32474	334.26218
LDGT	0.01558	0.00710	409.94586	412.45053
HDGV	0.05525	0.02619	918.81936	927.99725
LDDV	0.04965	0.00069	378.94292	380.39110
LDDT	0.03622	0.00100	428.43480	429.63889
HDDV	0.02332	0.16148	1266.92914	1315.63398
MC	0.10843	0.00302	392.03238	395.64411

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: 2025

- Phase Duration

Number of Month: 4
Number of Days: 0

2.2.2 Site Grading Phase Assumptions

- General Site Grading Information

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

Area of Site to be Graded (ft^2): 240000
Amount of Material to be Hauled On-Site (yd^3): 0
Amount of Material to be Hauled Off-Site (yd^3): 0

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

- Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Graders Composite	1	8
Other Construction Equipment Composite	1	8
Rubber Tired Dozers Composite	1	8
Tractors/Loaders/Backhoes Composite	2	7

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

- Vehicle Exhaust Vehicle Mixture (%)

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

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

- Worker Trips Vehicle Mixture (%)

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

2.2.3 Site Grading Phase Emission Factor(s)

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

Graders Composite [HP: 148] [LF: 0.41]						
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**
Emission Factors	0.33951	0.00490	2.85858	3.41896	0.15910	0.14637
Other Construction Equipment Composite [HP: 82] [LF: 0.42]						
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**
Emission Factors	0.29762	0.00487	2.89075	3.51214	0.17229	0.15851
Rubber Tired Dozers Composite [HP: 367] [LF: 0.4]						
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**
Emission Factors	0.37086	0.00491	3.50629	2.90209	0.15396	0.14165
Tractors/Loaders/Backhoes Composite [HP: 84] [LF: 0.37]						
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**
Emission Factors	0.19600	0.00489	2.00960	3.48168	0.07738	0.07119

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

Graders Composite [HP: 148] [LF: 0.41]				
	CH_4	**N_2O**	**CO_2**	**CO_2e**
Emission Factors	0.02155	0.00431	531.19419	533.01712
Other Construction Equipment Composite [HP: 82] [LF: 0.42]				
	CH_4	**N_2O**	**CO_2**	**CO_2e**
Emission Factors	0.02141	0.00428	527.74261	529.55369

Rubber Tired Dozers Composite [HP: 367] [LF: 0.4]				
	CH_4	N_2O	CO_2	CO_2e
Emission Factors	0.02159	0.00432	532.17175	533.99803
Tractors/Loaders/Backhoes Composite [HP: 84] [LF: 0.37]				
	CH_4	N_2O	CO_2	CO_2e
Emission Factors	0.02149	0.00430	529.86270	531.68105

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

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	NH_3
LDGV	0.29745	0.00168	0.14387	4.37185	0.00416	0.00368	0.05192
LDGT	0.24199	0.00207	0.19181	3.85952	0.00468	0.00414	0.04336
HDGV	0.88670	0.00464	0.67607	11.33326	0.02119	0.01875	0.09317
LDDV	0.10134	0.00128	0.15169	5.73803	0.00353	0.00325	0.01651
LDDT	0.20513	0.00145	0.48046	5.45378	0.00565	0.00519	0.01745
HDDV	0.12071	0.00426	2.43419	1.54002	0.05112	0.04703	0.06551
MC	2.90026	0.00194	0.62614	12.70426	0.02297	0.02032	0.05300

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

	CH_4	N_2O	CO_2	CO_2e
LDGV	0.01577	0.00519	332.32474	334.26218
LDGT	0.01558	0.00710	409.94586	412.45053
HDGV	0.05525	0.02619	918.81936	927.99725
LDDV	0.04965	0.00069	378.94292	380.39110
LDDT	0.03622	0.00100	428.43480	429.63889
HDDV	0.02332	0.16148	1266.92914	1315.63398
MC	0.10843	0.00302	392.03238	395.64411

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: 5
Start Quarter: 1
Start Year: 2025

- Phase Duration
Number of Month: 4
Number of Days: 0

2.3.2 Trenching / Excavating Phase Assumptions

- General Trenching/Excavating Information
Area of Site to be Trenched/Excavated (ft^2): 30000
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	0.40191	0.00542	3.44643	4.21104	0.10704	0.09848
Other General Industrial Equipmen Composite [HP: 35] [LF: 0.34]						
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**
Emission Factors	0.49122	0.00542	3.71341	4.67487	0.13603	0.12515
Tractors/Loaders/Backhoes Composite [HP: 84] [LF: 0.37]						
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**
Emission Factors	0.19600	0.00489	2.00960	3.48168	0.07738	0.07119

- 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	0.02382	0.00476	587.13772	589.15263
Other General Industrial Equipmen Composite [HP: 35] [LF: 0.34]				
	CH_4	**N_2O**	**CO_2**	**CO_2e**
Emission Factors	0.02385	0.00477	588.02637	590.04433
Tractors/Loaders/Backhoes Composite [HP: 84] [LF: 0.37]				
	CH_4	**N_2O**	**CO_2**	**CO_2e**
Emission Factors	0.02149	0.00430	529.86270	531.68105

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

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	NH_3
LDGV	0.29745	0.00168	0.14387	4.37185	0.00416	0.00368	0.05192
LDGT	0.24199	0.00207	0.19181	3.85952	0.00468	0.00414	0.04336
HDGV	0.88670	0.00464	0.67607	11.33326	0.02119	0.01875	0.09317
LDDV	0.10134	0.00128	0.15169	5.73803	0.00353	0.00325	0.01651

LDDT	0.20513	0.00145	0.48046	5.45378	0.00565	0.00519	0.01745
HDDV	0.12071	0.00426	2.43419	1.54002	0.05112	0.04703	0.06551
MC	2.90026	0.00194	0.62614	12.70426	0.02297	0.02032	0.05300

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

	CH_4	N_2O	CO_2	CO_2e
LDGV	0.01577	0.00519	332.32474	334.26218
LDGT	0.01558	0.00710	409.94586	412.45053
HDGV	0.05525	0.02619	918.81936	927.99725
LDDV	0.04965	0.00069	378.94292	380.39110
LDDT	0.03622	0.00100	428.43480	429.63889
HDDV	0.02332	0.16148	1266.92914	1315.63398
MC	0.10843	0.00302	392.03238	395.64411

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: 9
Start Quarter: 1
Start Year: 2025

- Phase Duration

Number of Month: 5
Number of Days: 0

2.4.2 Building Construction Phase Assumptions

- General Building Construction Information

Building Category: Office or Industrial
Area of Building (ft^2): 6000
Height of Building (ft): 4
Number of Units: N/A

- Building Construction Default Settings

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

- Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Cranes Composite	1	4
Forklifts Composite	2	6
Tractors/Loaders/Backhoes Composite	1	8

- Vehicle Exhaust

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

- Vehicle Exhaust Vehicle Mixture (%)

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

- Worker Trips

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

- Worker Trips Vehicle Mixture (%)

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

- Vendor Trips

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

- Vendor Trips Vehicle Mixture (%)

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

2.4.3 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	0.20113	0.00487	1.94968	1.66287	0.07909	0.07277
Forklifts Composite [HP: 82] [LF: 0.2]						
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**
Emission Factors	0.26944	0.00487	2.55142	3.59881	0.13498	0.12418
Tractors/Loaders/Backhoes Composite [HP: 84] [LF: 0.37]						
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**
Emission Factors	0.19600	0.00489	2.00960	3.48168	0.07738	0.07119

- 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	527.58451	529.39505
Forklifts Composite [HP: 82] [LF: 0.2]				
	CH_4	**N_2O**	**CO_2**	**CO_2e**
Emission Factors	0.02138	0.00428	527.10822	528.91712
Tractors/Loaders/Backhoes Composite [HP: 84] [LF: 0.37]				
	CH_4	**N_2O**	**CO_2**	**CO_2e**
Emission Factors	0.02149	0.00430	529.86270	531.68105

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

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	NH_3
LDGV	0.29745	0.00168	0.14387	4.37185	0.00416	0.00368	0.05192
LDGT	0.24199	0.00207	0.19181	3.85952	0.00468	0.00414	0.04336
HDGV	0.88670	0.00464	0.67607	11.33326	0.02119	0.01875	0.09317
LDDV	0.10134	0.00128	0.15169	5.73803	0.00353	0.00325	0.01651
LDDT	0.20513	0.00145	0.48046	5.45378	0.00565	0.00519	0.01745
HDDV	0.12071	0.00426	2.43419	1.54002	0.05112	0.04703	0.06551
MC	2.90026	0.00194	0.62614	12.70426	0.02297	0.02032	0.05300

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

	CH_4	N_2O	CO_2	CO_2e

LDGV	0.01577	0.00519	332.32474	334.26218
LDGT	0.01558	0.00710	409.94586	412.45053
HDGV	0.05525	0.02619	918.81936	927.99725
LDDV	0.04965	0.00069	378.94292	380.39110
LDDT	0.03622	0.00100	428.43480	429.63889
HDDV	0.02332	0.16148	1266.92914	1315.63398
MC	0.10843	0.00302	392.03238	395.64411

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

$VMT_{VE} = BA * BH * (0.42 / 1000) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
BA: Area of Building (ft^2)
BH: Height of Building (ft)
(0.42 / 1000): Conversion Factor ft^3 to trips (0.42 trip / 1000 ft^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

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

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

- Worker Trips Emissions per Phase

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

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

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

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

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

- Vender Trips Emissions per Phase
$VMT_{VT} = BA * BH * (0.38 / 1000) * HT$

VMT_{VT}: Vender Trips Vehicle Miles Travel (miles)
BA: Area of Building (ft^2)
BH: Height of Building (ft)
(0.38 / 1000): Conversion Factor ft^3 to trips (0.38 trip / 1000 ft^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

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

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

3. Construction / Demolition

3.1 General Information & Timeline Assumptions

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

- Activity Title: Construction of Pump Station 1

- Activity Description:
Pump Station 1

- Activity Start Date
Start Month: 2
Start Month: 2026

- Activity End Date
Indefinite: False
End Month: 4
End Month: 2026

- Activity Emissions:

Pollutant	Total Emissions (TONs)
VOC	0.037371
SO_x	0.000267
NO_x	0.104169
CO	0.160074

Pollutant	Total Emissions (TONs)
PM 10	0.004213
PM 2.5	0.003875
Pb	0.000000
NH_3	0.000324

- Activity Emissions of GHG:

Pollutant	Total Emissions (TONs)

Pollutant	Total Emissions (TONs)

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

CH_4	0.001211
N_2O	0.000353

CO_2	30.398420
CO_2e	30.533792

- Global Scale Activity Emissions for SCGHG:

Pollutant	Total Emissions (TONs)
CH_4	0.001211
N_2O	0.000353

Pollutant	Total Emissions (TONs)
CO_2	30.398420
CO_2e	30.533792

3.1 Building Construction Phase

3.1.1 Building Construction Phase Timeline Assumptions

- Phase Start Date
Start Month: 2
Start Quarter: 1
Start Year: 2026

- Phase Duration
Number of Month: 2
Number of Days: 15

3.1.2 Building Construction Phase Assumptions

- General Building Construction Information
Building Category: Office or Industrial
Area of Building (ft^2): 2172
Height of Building (ft): 15
Number of Units: N/A

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

- Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Cranes Composite	1	4
Forklifts Composite	2	6
Tractors/Loaders/Backhoes Composite	1	8

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

- Vehicle Exhaust Vehicle Mixture (%)

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

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

- Worker Trips Vehicle Mixture (%)

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

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

- 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

3.1.3 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
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)

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
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	0.26447	0.00165	0.12554	4.20303	0.00410	0.00363	0.05002
LDGT	0.21445	0.00203	0.15513	3.55532	0.00457	0.00404	0.04199
HDGV	0.79835	0.00466	0.60029	10.51090	0.01990	0.01761	0.09214
LDDV	0.09920	0.00127	0.14980	5.85953	0.00366	0.00337	0.01663
LDDT	0.15524	0.00143	0.41539	5.02359	0.00569	0.00524	0.01708
HDDV	0.10836	0.00419	2.30003	1.49209	0.04405	0.04053	0.06617
MC	2.89206	0.00194	0.62435	12.55422	0.02297	0.02032	0.05338

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

	CH_4	N_2O	CO_2	CO_2e
LDGV	0.01426	0.00499	327.44382	329.28632
LDGT	0.01333	0.00680	402.50065	404.85931
HDGV	0.05139	0.02639	922.15961	931.29885
LDDV	0.04975	0.00069	376.60003	378.05064
LDDT	0.03541	0.00101	422.82454	424.00952
HDDV	0.02299	0.16294	1248.34796	1297.47936
MC	0.10685	0.00301	392.14308	395.71115

3.1.4 Building Construction Phase Formula(s)

- Construction Exhaust Emissions per Phase

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

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 * (0.42 / 1000) * HT

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
BA: Area of Building (ft^2)
BH: Height of Building (ft)
(0.42 / 1000): Conversion Factor ft^3 to trips (0.42 trip / 1000 ft^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

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

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

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

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

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

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

- Vender Trips Emissions per Phase
VMT_{VT} = BA * BH * (0.38 / 1000) * HT

VMT_{VT}: Vender Trips Vehicle Miles Travel (miles)
BA: Area of Building (ft^2)
BH: Height of Building (ft)
(0.38 / 1000): Conversion Factor ft^3 to trips (0.38 trip / 1000 ft^3)

HT: Average Hauling Truck Round Trip Commute (mile/trip)

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

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

3.2 Architectural Coatings Phase

3.2.1 Architectural Coatings Phase Timeline Assumptions

- Phase Start Date
Start Month: 4
Start Quarter: 3
Start Year: 2026

- Phase Duration
Number of Month: 0
Number of Days: 15

3.2.2 Architectural Coatings Phase Assumptions

- General Architectural Coatings Information
Building Category: Non-Residential
Total Square Footage (ft^2): 2172
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

3.2.3 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	0.26447	0.00165	0.12554	4.20303	0.00410	0.00363	0.05002
LDGT	0.21445	0.00203	0.15513	3.55532	0.00457	0.00404	0.04199
HDGV	0.79835	0.00466	0.60029	10.51090	0.01990	0.01761	0.09214
LDDV	0.09920	0.00127	0.14980	5.85953	0.00366	0.00337	0.01663
LDDT	0.15524	0.00143	0.41539	5.02359	0.00569	0.00524	0.01708
HDDV	0.10836	0.00419	2.30003	1.49209	0.04405	0.04053	0.06617
MC	2.89206	0.00194	0.62435	12.55422	0.02297	0.02032	0.05338

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

	CH_4	N_2O	CO_2	CO_2e
LDGV	0.01426	0.00499	327.44382	329.28632
LDGT	0.01333	0.00680	402.50065	404.85931
HDGV	0.05139	0.02639	922.15961	931.29885
LDDV	0.04975	0.00069	376.60003	378.05064
LDDT	0.03541	0.00101	422.82454	424.00952
HDDV	0.02299	0.16294	1248.34796	1297.47936
MC	0.10685	0.00301	392.14308	395.71115

3.2.4 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

4. Construction / Demolition

4.1 General Information & Timeline Assumptions

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

- Activity Title: Construction of Pump Station 2

- Activity Description:
Pump Station 2

- Activity Start Date
Start Month: 5

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

Start Month: 2026

- Activity End Date
Indefinite: False
End Month: 5
End Month: 2026

- Activity Emissions:

Pollutant	Total Emissions (TONs)
VOC	0.027929
SO_x	0.000056
NO_x	0.021788
CO	0.034360

Pollutant	Total Emissions (TONs)
PM 10	0.000858
PM 2.5	0.000789
Pb	0.000000
NH_3	0.000118

- Activity Emissions of GHG:

Pollutant	Total Emissions (TONs)
CH_4	0.000258
N_2O	0.000149

Pollutant	Total Emissions (TONs)
CO_2	6.787675
CO_2e	6.838367

- Global Scale Activity Emissions for SCGHG:

Pollutant	Total Emissions (TONs)
CH_4	0.000258
N_2O	0.000149

Pollutant	Total Emissions (TONs)
CO_2	6.787675
CO_2e	6.838367

4.1 Building Construction Phase

4.1.1 Building Construction Phase Timeline Assumptions

- Phase Start Date
Start Month: 5
Start Quarter: 1
Start Year: 2026

- Phase Duration
Number of Month: 0
Number of Days: 15

4.1.2 Building Construction Phase Assumptions

- General Building Construction Information
Building Category: Office or Industrial
Area of Building (ft^2): 2185
Height of Building (ft): 15
Number of Units: N/A

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

- Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Cranes Composite	1	4
Forklifts Composite	2	6

Tractors/Loaders/Backhoes Composite	1	8

- Vehicle Exhaust

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

- Vehicle Exhaust Vehicle Mixture (%)

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

- Worker Trips

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

- Worker Trips Vehicle Mixture (%)

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

- Vendor Trips

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

- Vendor Trips Vehicle Mixture (%)

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

4.1.3 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
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)

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
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	0.26447	0.00165	0.12554	4.20303	0.00410	0.00363	0.05002
LDGT	0.21445	0.00203	0.15513	3.55532	0.00457	0.00404	0.04199
HDGV	0.79835	0.00466	0.60029	10.51090	0.01990	0.01761	0.09214
LDDV	0.09920	0.00127	0.14980	5.85953	0.00366	0.00337	0.01663
LDDT	0.15524	0.00143	0.41539	5.02359	0.00569	0.00524	0.01708

HDDV	0.10836	0.00419	2.30003	1.49209	0.04405	0.04053	0.06617
MC	2.89206	0.00194	0.62435	12.55422	0.02297	0.02032	0.05338

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

	CH_4	N_2O	CO_2	CO_2e
LDGV	0.01426	0.00499	327.44382	329.28632
LDGT	0.01333	0.00680	402.50065	404.85931
HDGV	0.05139	0.02639	922.15961	931.29885
LDDV	0.04975	0.00069	376.60003	378.05064
LDDT	0.03541	0.00101	422.82454	424.00952
HDDV	0.02299	0.16294	1248.34796	1297.47936
MC	0.10685	0.00301	392.14308	395.71115

4.1.4 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

$VMT_{VE} = BA * BH * (0.42 / 1000) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
BA: Area of Building (ft^2)
BH: Height of Building (ft)
(0.42 / 1000): Conversion Factor ft^3 to trips (0.42 trip / 1000 ft^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

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

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

- Worker Trips Emissions per Phase

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

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

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

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

- Vender Trips Emissions per Phase
$VMT_{VT} = BA * BH * (0.38 / 1000) * HT$

VMT_{VT}: Vender Trips Vehicle Miles Travel (miles)
BA: Area of Building (ft^2)
BH: Height of Building (ft)
(0.38 / 1000): Conversion Factor ft^3 to trips (0.38 trip / 1000 ft^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

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

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

4.2 Architectural Coatings Phase

4.2.1 Architectural Coatings Phase Timeline Assumptions

- Phase Start Date
Start Month: 5
Start Quarter: 3
Start Year: 2026

- Phase Duration
Number of Month: 0
Number of Days: 15

4.2.2 Architectural Coatings Phase Assumptions

- General Architectural Coatings Information
Building Category: Non-Residential
Total Square Footage (ft^2): 2185
Number of Units: N/A

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

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

- Worker Trips Vehicle Mixture (%)

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

4.2.3 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	0.26447	0.00165	0.12554	4.20303	0.00410	0.00363	0.05002
LDGT	0.21445	0.00203	0.15513	3.55532	0.00457	0.00404	0.04199
HDGV	0.79835	0.00466	0.60029	10.51090	0.01990	0.01761	0.09214
LDDV	0.09920	0.00127	0.14980	5.85953	0.00366	0.00337	0.01663
LDDT	0.15524	0.00143	0.41539	5.02359	0.00569	0.00524	0.01708
HDDV	0.10836	0.00419	2.30003	1.49209	0.04405	0.04053	0.06617
MC	2.89206	0.00194	0.62435	12.55422	0.02297	0.02032	0.05338

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

	CH_4	N_2O	CO_2	CO_2e
LDGV	0.01426	0.00499	327.44382	329.28632
LDGT	0.01333	0.00680	402.50065	404.85931
HDGV	0.05139	0.02639	922.15961	931.29885
LDDV	0.04975	0.00069	376.60003	378.05064
LDDT	0.03541	0.00101	422.82454	424.00952
HDDV	0.02299	0.16294	1248.34796	1297.47936
MC	0.10685	0.00301	392.14308	395.71115

4.2.4 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

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

5. Construction / Demolition

5.1 General Information & Timeline Assumptions

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

- Activity Title: Construction of Pump Station 3

- Activity Description:
Pump Station 3

- Activity Start Date
Start Month: 6
Start Month: 2026

- Activity End Date
Indefinite: False
End Month: 6
End Month: 2026

- Activity Emissions:

Pollutant	Total Emissions (TONs)
VOC	0.029071
SO_x	0.000055
NO_x	0.021806
CO	0.033119

Pollutant	Total Emissions (TONs)
PM 10	0.000858
PM 2.5	0.000789
Pb	0.000000
NH_3	0.000105

- Activity Emissions of GHG:

Pollutant	Total Emissions (TONs)
CH_4	0.000254
N_2O	0.000151

Pollutant	Total Emissions (TONs)
CO_2	6.701643
CO_2e	6.753005

- Global Scale Activity Emissions for SCGHG:

Pollutant	Total Emissions (TONs)
CH_4	0.000254
N_2O	0.000151

Pollutant	Total Emissions (TONs)
CO_2	6.701643
CO_2e	6.753005

5.1 Building Construction Phase

5.1.1 Building Construction Phase Timeline Assumptions

- Phase Start Date
Start Month: 6
Start Quarter: 1
Start Year: 2026

- Phase Duration
Number of Month: 0
Number of Days: 15

5.1.2 Building Construction Phase Assumptions

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

- General Building Construction Information

Building Category: Office or Industrial
Area of Building (ft^2): 2290
Height of Building (ft): 15
Number of Units: N/A

- Building Construction Default Settings

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

- Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Cranes Composite	1	4
Forklifts Composite	2	6
Tractors/Loaders/Backhoes Composite	1	8

- Vehicle Exhaust

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

- Vehicle Exhaust Vehicle Mixture (%)

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

- Worker Trips

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

- Worker Trips Vehicle Mixture (%)

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

- Vendor Trips

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

- Vendor Trips Vehicle Mixture (%)

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

5.1.3 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
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)

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
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	0.26447	0.00165	0.12554	4.20303	0.00410	0.00363	0.05002
LDGT	0.21445	0.00203	0.15513	3.55532	0.00457	0.00404	0.04199
HDGV	0.79835	0.00466	0.60029	10.51090	0.01990	0.01761	0.09214
LDDV	0.09920	0.00127	0.14980	5.85953	0.00366	0.00337	0.01663
LDDT	0.15524	0.00143	0.41539	5.02359	0.00569	0.00524	0.01708
HDDV	0.10836	0.00419	2.30003	1.49209	0.04405	0.04053	0.06617
MC	2.89206	0.00194	0.62435	12.55422	0.02297	0.02032	0.05338

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

	CH_4	N_2O	CO_2	CO_2e
LDGV	0.01426	0.00499	327.44382	329.28632
LDGT	0.01333	0.00680	402.50065	404.85931
HDGV	0.05139	0.02639	922.15961	931.29885
LDDV	0.04975	0.00069	376.60003	378.05064
LDDT	0.03541	0.00101	422.82454	424.00952
HDDV	0.02299	0.16294	1248.34796	1297.47936
MC	0.10685	0.00301	392.14308	395.71115

5.1.4 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

$VMT_{VE} = BA * BH * (0.42 / 1000) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
BA: Area of Building (ft^2)
BH: Height of Building (ft)
(0.42 / 1000): Conversion Factor ft^3 to trips (0.42 trip / 1000 ft^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

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

V_{POL}: Vehicle Emissions (TONs)

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

- Worker Trips Emissions per Phase

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

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

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

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

- Vender Trips Emissions per Phase

$VMT_{VT} = BA * BH * (0.38 / 1000) * HT$

VMT_{VT}: Vender Trips Vehicle Miles Travel (miles)
BA: Area of Building (ft^2)
BH: Height of Building (ft)
(0.38 / 1000): Conversion Factor ft^3 to trips (0.38 trip / 1000 ft^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

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

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

5.2 Architectural Coatings Phase

5.2.1 Architectural Coatings Phase Timeline Assumptions

- Phase Start Date

Start Month: 6
Start Quarter: 3
Start Year: 2026

- Phase Duration

Number of Month: 0
Number of Days: 15

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

5.2.2 Architectural Coatings Phase Assumptions

- General Architectural Coatings Information
Building Category: Non-Residential
Total Square Footage (ft^2): 2290
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

5.2.3 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	0.26447	0.00165	0.12554	4.20303	0.00410	0.00363	0.05002
LDGT	0.21445	0.00203	0.15513	3.55532	0.00457	0.00404	0.04199
HDGV	0.79835	0.00466	0.60029	10.51090	0.01990	0.01761	0.09214
LDDV	0.09920	0.00127	0.14980	5.85953	0.00366	0.00337	0.01663
LDDT	0.15524	0.00143	0.41539	5.02359	0.00569	0.00524	0.01708
HDDV	0.10836	0.00419	2.30003	1.49209	0.04405	0.04053	0.06617
MC	2.89206	0.00194	0.62435	12.55422	0.02297	0.02032	0.05338

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

	CH_4	N_2O	CO_2	CO_2e
LDGV	0.01426	0.00499	327.44382	329.28632
LDGT	0.01333	0.00680	402.50065	404.85931
HDGV	0.05139	0.02639	922.15961	931.29885
LDDV	0.04975	0.00069	376.60003	378.05064
LDDT	0.03541	0.00101	422.82454	424.00952
HDDV	0.02299	0.16294	1248.34796	1297.47936
MC	0.10685	0.00301	392.14308	395.71115

5.2.4 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

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 an analysis to estimate GHG emissions and assess the theoretical Social Cost of Greenhouse Gases (SC GHG) 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 GHG emissions and SC GHG analysis.

Report generated with ACAM version: 5.0.23a

a. Action Location:

Base: MAXWELL-GUNTER AFB
State: Alabama
County(s): Montgomery
Regulatory Area(s): NOT IN A REGULATORY AREA

b. Action Title: Decommissioning of Maxwell Field Outfall and Construction of New Force Main Sewer with 3 Pump Stations

c. Project Number/s (if applicable):

d. Projected Action Start Date: 1 / 2025

e. Action Description:

Alternative 1 – Decommissioning of Maxwell Field Outfall and construction of new force main sewer with three pump stations – This alternative includes installation of three pump stations to convey wastewater from the existing branch sewers served by the Maxwell Field Outfall and a common force main with discharge connection at Pump Station 20. The three pump stations would discharge into a 12-inch-diameter force main that increases to an 18-inch-diameter force main. Pump stations were located to minimize the number of stations required, to minimize connecting gravity sewer modifications, and to provide O&M access. Force main routing was evaluated to maximize ease of access for maintenance, to minimize length, to minimize disturbance to activities on Maxwell AFB, and to avoid the extensive wetlands along the existing Maxwell Field Outfall. Under Alternative 1, the pipeline would be completely buried and not be at risk to compromise from external events, such as tree fall. The Maxwell Field Outfall would remain in service during construction and bypass pumping would not be required. The Maxwell Field Outfall would be decommissioned once the force main is operational. The estimated cost to implement Alternative 1 is approximately $8,800,000.

f. Point of Contact:

Name: Caitlin Santinelli
Title: Scientist
Organization: Jacobs
Email: caitlin.santinelli@jacobs.com
Phone Number:

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 start through the expected life cycle of the action. The life cycle for Air Force actions with "steady state" emissions (SS, net gain/loss in emission stabilized and the action is fully implemented) is assumed to be 10 years beyond the SS emissions year or 20 years beyond SS emissions year for aircraft operations related actions.

GHG Emissions Analysis Summary:

AIR CONFORMITY APPLICABILITY MODEL REPORT
GREENHOUSE GAS (GHG) EMISSIONS

GHGs produced by fossil-fuel combustion are primarily carbon dioxide (CO2), methane (CH4), and nitrous oxide (NO2). 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 life cycle of the action.

Action-Related Annual GHG Emissions (mton/yr)						
YEAR	**CO2**	**CH4**	**N2O**	**CO2e**	**Threshold**	**Exceedance**
2025	225	0.00912055	0.00212306	226	68,039	No
2026	51	0.00200267	0.00069849	51	68,039	No
2027 [SS Year]	0	0	0	0	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**
2025	109,976,452	617,802	15,217	110,609,472
2026	109,976,452	617,802	15,217	110,609,472
2027 [SS Year]	0	0	0	0

U.S. Annual GHG Emissions (mton/yr)				
YEAR	**CO2**	**CH4**	**N2O**	**CO2e**
2025	5,136,454,179	25,626,912	1,500,708	5,163,581,798
2026	5,136,454,179	25,626,912	1,500,708	5,163,581,798
2027 [SS Year]	0	0	0	0

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 (yGba.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.

AIR CONFORMITY APPLICABILITY MODEL REPORT
GREENHOUSE GAS (GHG) 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 action will occur) and U.S. annual emissions. The 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**
2025-2037	State Total	219,952,904	1,235,605	30,435	221,218,944
2025-2037	U.S. Total	10,272,908,358	51,253,823	3,001,415	10,327,163,597
2025-2037	Action	276	0.011123	0.002822	277
Percent of State Totals		0.00012539%	0.00000090%	0.00000927%	0.00012517%
Percent of U.S. Totals		0.00000268%	0.00000002%	0.00000009%	0.00000268%

From a global context, the action's total GHG percentage of total global GHG for the same time period is: 0.00000036%.*

* Global value based on the U.S. emits 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).

Climate Change Assessment (as SC GHG):

On a global scale, the potential climate change effects of an action are indirectly addressed and put into context through providing the theoretical SC GHG associated with an action. The SC GHG is an administrative and theoretical tool intended to provide additional context to a GHG's potential impacts through approximating the long-term monetary damage that may result from GHG emissions affect on climate change. It is important to note that the SC GHG is a monetary quantification, in 2020 U.S. dollars, of the theoretical economic damages that could result from emitting GHGs into the atmosphere.

The SC GHG estimates are derived using the methodology and discount factors in the "Technical Support Document: Social Cost of Carbon, Methane, and Nitrous Oxide Interim Estimates under Executive Order 13990," released by the Interagency Working Group on Social Cost of Greenhouse Gases (IWG SC GHGs) in February 2021.

The speciated IWG Annual SC GHG Emission associated with an action (or alternative) are first estimated as annual unit cost (cost per metric ton, $/mton). Results of the annual IWG Annual SC GHG Emission Assessments are tabulated in the IWG Annual SC GHG Cost per Metric Ton Table below:

IWG SC GHG Discount Factor: 2.5%

AIR CONFORMITY APPLICABILITY MODEL REPORT
GREENHOUSE GAS (GHG) EMISSIONS

IWG Annual SC GHG Cost per Metric Ton ($/mton [In 2020 $])			
YEAR	**CO2**	**CH4**	**N2O**
2025	$83.00	$2,200.00	$30,000.00
2026	$84.00	$2,300.00	$30,000.00
2027 [SS Year]	$86.00	$2,300.00	$31,000.00

Action-related SC GHG were estimated by calendar-year for the projected action's lifecycle. Annual estimates were found by multiplying the annual emission for a given year by the corresponding IWG Annual SC GHG Emission value (see table above).

Action-Related Annual SC GHG ($K/yr [In 2020 $])				
YEAR	**CO2**	**CH4**	**N2O**	**GHG**
2025	$18.68	$0.02	$0.06	$18.77
2026	$4.26	$0.00	$0.02	$4.28
2027 [SS Year]	$0.00	$0.00	$0.00	$0.00

The following two tables summarize the U.S. and State's Annual SC GHG by calendar-year. The U.S. and State's Annual SC GHG are in 2020 dollars and were estimated by each year for the projected action lifecycle. Annual SC GHG estimates were found by multiplying the U.S. and State's annual five-year average GHG emissions for a given year by the corresponding IWG Annual SC GHG Cost per Metric Ton value.

State's Annual SC GHG ($K/yr [In 2020 $])				
YEAR	**CO2**	**CH4**	**N2O**	**GHG**
2025	$9,128,045.52	$1,359,165.29	$456,523.65	$10,943,734.46
2026	$9,238,021.97	$1,420,945.53	$456,523.65	$11,115,491.15
2027 [SS Year]	$0.00	$0.00	$0.00	$0.00

U.S. Annual SC GHG ($K/yr [In 2020 $])				
YEAR	**CO2**	**CH4**	**N2O**	**GHG**
2025	$426,325,696.86	$56,379,205.70	$45,021,229.08	$527,726,131.63
2026	$431,462,151.04	$58,941,896.86	$45,021,229.08	$535,425,276.98
2027 [SS Year]	$0.00	$0.00	$0.00	$0.00

Relative Comparison of SC GHG:

To provide additional real-world context to the potential climate change impact associate with an action, a Relative Comparison of SC GHG Assessment is also performed. While the SC GHG estimates capture an indirect approximation of global climate damages, the Relative Comparison of SC GHG Assessment provides a better perspective from a regional and global scale.

The Relative Comparison of SC GHG Assessment uses the rule of reason and the concept of proportionality along with the consideration of the affected area (yGba.e., global, national, and regional) and the SC GHG as the degree (intensity) of the proposed action's effects. The Relative Comparison Assessment provides real-world context and allows for a reasoned choice among alternatives through a relative contrast analysis which weighs each alternative's SC GHG proportionally against (or relative to) existing global, national, and regional SC GHG. The below table provides a relative comparison between an action's SC GHG vs. state and U.S. projected SC GHG for the same time period:

Total SC-GHG ($K [In 2020 $])					
		CO2	**CH4**	**N2O**	**GHG**
2025-2037	State Total	$18,366,067.49	$2,780,110.82	$913,047.29	$22,059,225.60
2025-2037	U.S. Total	$857,787,847.89	$115,321,102.56	$90,042,458.16	$1,063,151,408.61

AIR CONFORMITY APPLICABILITY MODEL REPORT
GREENHOUSE GAS (GHG) EMISSIONS

2025-2037	Action	$22.94	$0.02	$0.08	$23.05
Percent of State Totals		0.00012491%	0.00000089%	0.00000927%	0.00010449%
Percent of U.S. Totals		0.00000267%	0.00000002%	0.00000009%	0.00000217%

From a global context, the action's total SC GHG percentage of total global SC GHG for the same time period is: 0.00000029%.*

* Global value based on the U.S. emits 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).

Caitlin Santinelli, Scientist — Apr 12 2024

Name, Title — **Date**

Appendix D. Waters of the U.S. Delineation Technical Memorandum

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Waters of the United States Delineation
Field Outfall Decommission and New Force Main and Sewer Pump Stations Construction, Maxwell Air Force Base, Montgomery County, Alabama

Date:	July 5, 2023
Project name:	Field Outfall Decommission and New Force Main and Sewer Pump Stations Construction at Maxwell Air Force Base
Project no:	D3577400
Attention:	Bo Sawyer/Maxwell Air Force Base
Client:	Montgomery Water Works and Sanitary Sewer Board
Prepared by:	Sarah Anderson
Reviewed by:	Melanie Wiggins and Richard Reaves
Copies to:	Eric Sharman/Department of the Air Force

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1. Project Background

1.1 Introduction

The Montgomery Water Works and Sanitary Sewer Board (MWWSSB) is proposing to decommission the existing Maxwell Field Outfall and construct a new force main and three sewer pump stations at the Maxwell Air Force Base (AFB) in Montgomery, Alabama (Figure 1). This project would address the aging and deteriorating wastewater infrastructure in the MWWSSB's Towassa Basin that serves the Maxwell AFB.

This report documents the environmental conditions at Maxwell AFB and within the proposed project areas. The project areas were assessed during site visits on May 23 and August 23, 2022. The Jacobs team performed Waters of the United States (WOTUS) delineations following guidance in the 1987 U.S. Army Corps of Engineers (USACE) Wetlands Delineation Manual (Environmental Laboratory 1987) and the 2010 Regional Supplement to the Wetland Delineation Manual (Regional Supplement; USACE 2010). In addition, the project site survey included an assessment of tree canopy and review of habitat types for the potential presence of habitat for federally protected species.

The WOTUS delineation was performed and mapped with a Trimble R1 Global Positioning System (GPS) receiver and iPad for electronic data collection. Soil auguring was not performed due to potential to disturb any underground infrastructure on the property. Site reference information was obtained from the U.S. Fish and Wildlife Service (USFWS) Information for Planning and Consultation (IPaC) system, U.S. Geological Survey (USGS) topographic maps, and National Wetlands Inventory (NWI) mapping. Site survey photographs and wetland data forms are included in Attachment 1 and Attachment 2, respectively.

1.2 Project Description

The MWWSSB's Preferred Alternative consists of the following major components:

- Installation of a new force main
- Construction of three pump stations
- Decommissioning of the existing Maxwell Field Outfall

1.2.1 Installation of a New Force Main

A new, common, 12-inch-diameter force main that increases to an 18-inch-diameter would be installed via open-cut trenching along most of the route, with jack-and-bore or horizontal directional drilling (HDD) planned for installation of the force main across two perennial streams. The length of the proposed force main would be approximately 10,000 feet. Up to 2,000 feet of new gravity piping would be constructed to connect the three proposed pump stations to existing outfalls and the interceptor.

1.2.2 Construction of Three Pump Stations

Pump stations are integral to the operation of the force main. The locations of the pump stations along the route were determined by hydraulic analyses of system operation and locations where existing retained or proposed new lateral gravity sewer conveyance connections would connect with the proposed force main. Existing lateral gravity sewer conveyances were part of a gravity flow system, and the pump stations are necessary to raise the sewer water to the elevation of the force main. Three duplex submersible pump stations would be constructed to discharge into the new force main to convey wastewater to MWWSSB's existing Pump Station 20. Pump Station 20 would convey water from the proposed force main to the Towassa Water Pollution Control Plant for treatment. The pump stations would be sized based on results from a 2021 Towassa Basin flow study and historical data.

The MWWSSB's existing Pump Station 21 and other portions of the Towassa Basin collection system east of Maxwell AFB would continue to operate as currently connected and will discharge to one of the proposed new pump stations.

1.2.3 Decommissioning of the Existing Maxwell Field Outfall

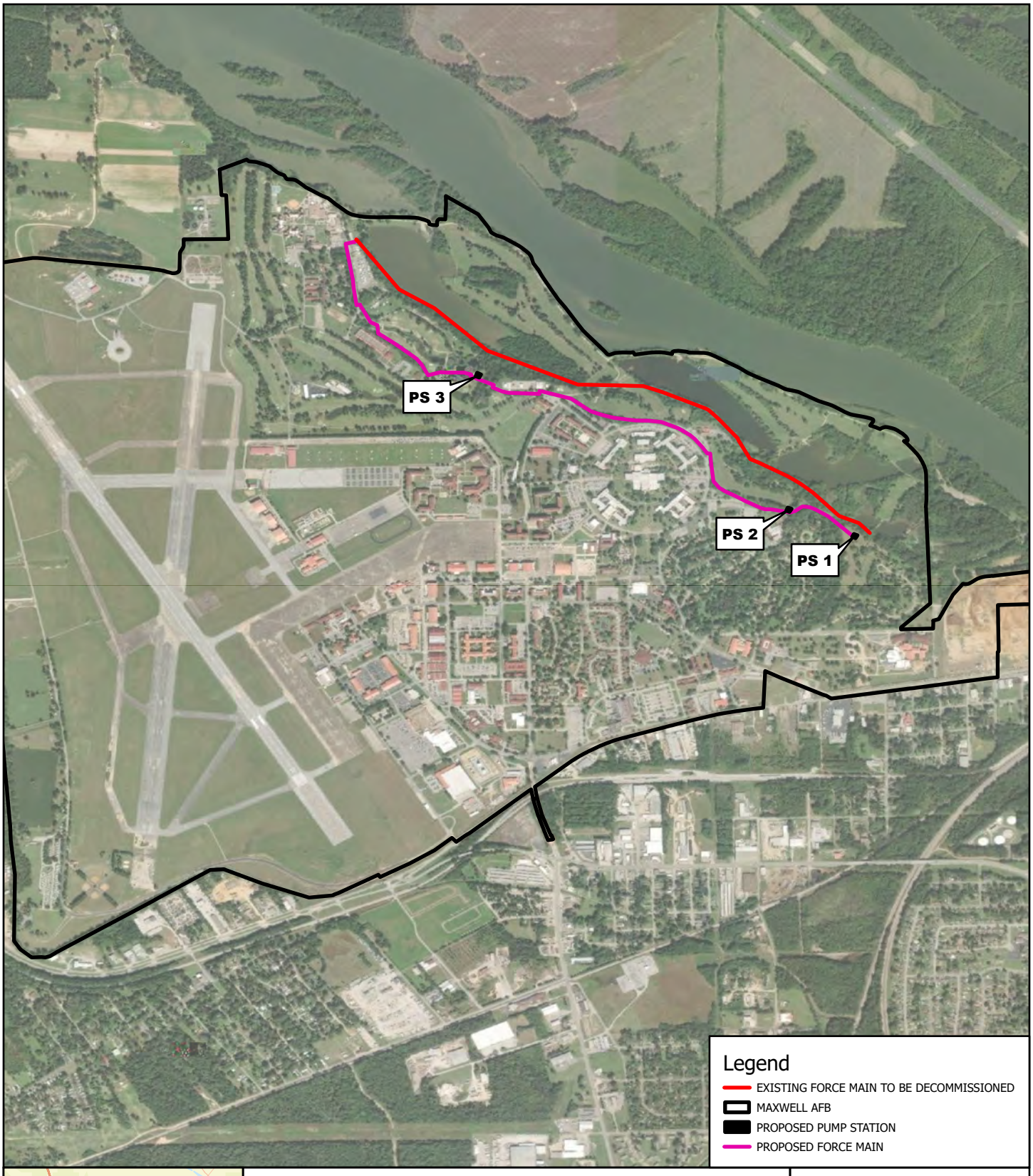
This component of the project would include the decommissioning of the existing gravity interceptor by removing the existing aerial portions of the pipeline. The existing pipe supports would remain in place. Portions of the pipeline that are buried would be capped where the pipe enters and exits the ground surfaces.

To access the pipeline, a 60-foot-wide area along the length of the pipe would be required. The location of the existing pipeline varies inside the 60-foot corridor, depending on whether the existing pipeline is over water or close to the water's edge. Clearing activities within the 60-foot corridor would be minimized and would only occur to the extent necessary to safely access the pipeline. For many areas, clearing activities would only require the removal of fallen trees and debris.

The majority of the pipeline would be removed from the water side using barges and boats. In areas where the pipe cannot be accessed by water, removal would be from land using the 60-foot corridor. Temporary timber mats would be installed for construction equipment and pipe transportation, as required. It is estimated that approximately 85 percent of the gravity sewer would be removed.

Laydown areas would be used for temporary storage of equipment and materials, including segments of pipe. Clearing is not expected to occur in these areas. Once pipeline removal operations are complete, the area would be returned to pre-existing conditions.

In some areas, temporary access roads may need to be constructed to provide access to the 60-foot corridor. This may require minimal tree clearing and the installation of clay fill material. Along the steeper slopes, installation of rock fill may be required to stabilize the access road. Once the existing pipe has been removed, all the fill material would be removed, and the disturbed area would be returned to pre-existing conditions.



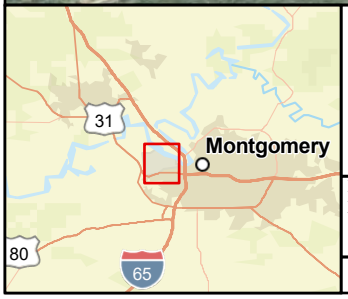


Figure 1-1

LOCATION ON MAXWELL AFB OF PROJECTS INCLUDED IN THE PROPOSED ACTION

Esri, HERE, Garmin, SafeGraph, FAO, METI/NASA, USGS, EPA, NPS, Maxar

2022

Coordinate System: GCS North American 1983

N

0 0.22 0.44 Mi

0 0.42 0.85 Km

To access the project work areas, the contractor would enter the Kelly Street entrance of the Maxwell AFB to Randolph Street and Maxwell Boulevard to enter the following areas:

- For beginning of project: Magnolia Drive to East Drive to River Road
- For center portion of project: Twining Street then Chennault Circle to West Hickory Street to Cottonwood Road
- For end of project: March Road to Mimosa Road to Beech Street to River Road

The contractor would be responsible for developing a detailed decommissioning/demolition plan for the proposed work.

1.3 Wetland Determination Methodology

1.3.1 Wetland Definition

Jacobs conducted delineations of wetlands and other jurisdictional waters on the project area using the *Corps of Engineers Wetland Delineation Manual* (Environmental Laboratory 1987) and the Regional Supplement (USACE 2010).

USACE and U.S. Environmental Protection Agency jointly define wetlands as, "Those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions" (Environmental Laboratory 1987). Wetlands within the project area were classified according to *Classification of Wetlands and Deepwater Habitats of the United States* (Federal Geographic Data Committee, 2013).

This definition identifies three essential characteristics possessed by wetlands: hydrophytic vegetation, hydric soils, and wetland hydrology. In 2010, USACE published regional supplements as part of a nationwide effort to address regional wetland characteristics and improve the accuracy and efficiency of wetland-delineation procedures. The *Eastern Mountains and Piedmont Regional Supplement* (USACE 2010) was used for the proposed alternative sites.

1.3.2 Waters of the United States

The term "waters of the United States" has broad meaning and incorporates both deepwater aquatic habitats and special aquatic sites, including wetlands, as follows (33 Code of Federal Regulations [CFR] Part 328.3(a)):

"1. All waters which are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide;

2. All interstate waters including interstate wetlands;

3. All other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds, the use, degradation or destruction of which could affect interstate or foreign commerce including any such waters:

Which are or could be used by interstate or foreign travelers for recreational or other purposes; or

From which fish or shellfish are or could be taken and sold in interstate or foreign commerce; or

Which are used or could be used for industrial purpose by industries in interstate commerce;

4. All impoundments of waters otherwise defined as waters of the United States under the definition;

5. Tributaries of waters identified in paragraphs (a)(1)-(4) of this section;

6. *The territorial seas;*
7. *Wetlands adjacent to waters, (other than waters that are themselves wetlands) identified in paragraphs (a)(1)-(6) of this section;*
8. *Waste treatment systems, including treatment ponds or lagoons designed to meet the requirements of the Clean Water Act (other than cooling ponds as defined in 40 CFR 123.11 (m) which also meet the criteria of this definition) are not waters of the United States.*
9. *Waters of the United States do not include prior converted cropland. Notwithstanding the determination of an area's status as prior converted cropland by any other federal agency, for the purposes of the Clean Water Act, the final authority regarding Clean Water Act jurisdiction remains with the EPA."*

The U.S. Supreme Court ruling in Sackett v. Environmental Protection Agency revised the definition of WOTUS in a manner that greatly reduced the amount of wetland subject to regulation under the Clean Water Act (CWA). Because of a permanent connection to the navigable in fact Alabama River, the wetlands identified in the project area are expected to remain subject to CWA regulation. However, the determination of CWA jurisdiction lies with the USACE.

For the purpose of this technical memorandum, discussion of "Waters of the United States" occurring within the project area will be separated into wetlands and non-wetland waters. Non-wetland waters refer to all waters that do not meet the wetland criteria (hydrophytic vegetation, hydric soils, and hydrology), as defined in the 1987 Manual. Lakes, ponds, impoundments, and permanent and intermittent streams outside of wetlands are commonly included as non-wetland waters.

1.3.3 Hydrophytic Vegetation

Hydrophytic (wetland) vegetation includes those plants typically adapted for life in saturated soil conditions. To determine if wetland vegetation is present, percent vegetative cover and plant indicator status for dominant species were identified. The percentages of cover for species in all vegetative layers (tree, sapling, shrub, herbaceous, and woody vine) were estimated to determine the dominant vegetation and characterize each plant community sampled. Dominant species within the sample area were classified using percentage of cover within the plot. Plant wetland indicator status was determined using the 2016 National Wetland Plant List (USACE 2020). The regional wetland indicator status and dominance of each individual plant species were used to determine if a predominance of wetland plants existed within the sample plot. Plant wetland indicator status categories are defined in Table 1. Under normal conditions, if more than 50 percent of the dominant species within a sample plot are Obligate (OBL), Facultative Wetland (FACW), or Facultative (FAC), the hydrophytic vegetation criterion is satisfied (USACE 2010). In Section 2 of this document, wetland indicator status is provided parenthetically for each species discussed.

Table 1. Plant Indicator Status Categories

Indicative Category	Indicator Symbol	Definition
Obligate Wetland Plants	OBL	Almost always is a hydrophyte, rarely in uplands
Facultative Wetland Plants	FACW	Usually is a hydrophyte, but occasionally found in uplands
Facultative Plants	FAC	Commonly occurs as either a hydrophyte or non-hydrophyte
Facultative Upland Plants	FACU	Occasionally is a hydrophyte but usually occurs in uplands
Obligate Upland Plants	UPL	Rarely is a hydrophyte, almost always in uplands

Source: USACE 2012.

1.3.4 Hydric Soils

Hydric soils formed under conditions with sufficient saturation, flooding, or ponding during the growing season to develop anaerobic conditions in the upper portion (between 0 and 12 inches, depending on percolation rates and soil depths) of the soil profile. Hydric soils were identified using field observations to determine hydric soil indicators, as defined in Regional Supplement (USACE 2010) and the *Field Indicators of Hydric Soils in the United States, Version 8.1* (NRCS 2017). Soil auguring was not performed due to potential to disturb any underground infrastructure on the property.

1.3.5 Wetland Hydrology

Wetland hydrology encompasses all hydrologic characteristics of areas that are periodically inundated or have soils saturated to the surface at some time during the growing season (Environmental Laboratory, 1987). Primary field indicators for wetland hydrology are described in the Regional Supplement (USACE, 2010). Jacobs identified whether positive indicators of wetland hydrology were present within all areas examined. In accordance with the protocols, Jacobs documented at least one primary wetland hydrology indicator or two secondary hydrology indicators to verify an area met the wetland hydrology criterion (Environmental Laboratory 1987; USACE 2010).

1.3.6 Wetland Classification

Following the determination of wetland vegetation, hydric soil conditions, and hydrologic regime, wetland communities were classified according to the USFWS Cowardin classification system (Federal Geographic Data Committee 2013). The palustrine system is defined as "nontidal wetlands dominated by trees, shrubs, persistent emergent, emergent mosses or lichens…" This system includes vegetated wetlands, such as marshes, swamps, bogs, fens, and prairies; it can be adjacent to lakes, streams, rivers, or estuaries. Palustrine emergent wetlands (PEM) are characterized by erect, rooted, herbaceous hydrophytes, excluding lichens and mosses; palustrine scrub-shrub (PSS) wetlands by woody vegetation less than 20 feet tall; and palustrine forested wetlands (PFO) by woody vegetation 20 feet tall or taller.

2. Results

2.1 Remote Data Analysis

Project Area for the New Force Main and Three Pump Stations

The 2021 USGS topographic map of Maxwell AFB in Montgomery, Alabama, as well as the USFWS NWI data and the National Hydrographic Dataset, indicate a wetland between Willow Street and Mimosa Road, a stream running perpendicular to Mimosa Road in a south to north direction, an open water and stream located north of Sequoia Drive in a north to south direction within the proposed project area for the new force main (USGS 2023; USFWS 2023; USGS 2019).

Project Area for the Decommissioning of the Maxwell Field Outfall

The 2021 USGS topographic map of Maxwell AFB in Montgomery, Alabama, as well as the USFWS NWI data and the National Hydrographic Dataset, indicate an open water north of Willow Street and south of River Road, a wetland east of the open water and west of Mimosa Road, an open water north of Chennault Circle, an open water east of Cottonwood Road, and an open water northeast of Sequoia Drive within the proposed project area for the decommissioning of the Maxwell Field Outfall (USGS 2023; USFWS 2023; USGS 2019).

2.2 Field Analysis

Project Area for the New Force Main and Three Pump Stations

The project area for the new force main and three pump stations parallels the existing conveyance to the south and parallels existing roadways for most of the proposed installation area. Figure 2 shows the location of surface waters and wetlands in relation to the project area for the new force main and pump stations.

Project Area for the Decommissioning of the Maxwell Field Outfall

The project area for the decommissioning of the Maxwell Field Outfall generally parallels the toe of a steep-wooded bluff carved by the Alabama River along the northern boundary of Maxwell AFB. Approximately half of the pipe footage is over standing water or in areas of seasonal water level fluctuations, and portions of the area are not accessible due to heavy accumulations of loose sediment and debris. Access to the Maxwell Field Outfall is through existing surface roads and golf course trails at Maxwell AFB. Figure 3 shows the location of surface waters and wetlands in relation to the project area for decommissioning of the Maxwell Field Outfall.

2.3 WOTUS Delineation

Project Area for the New Force Main and Three Pump Stations

The route for the new force main and three pump stations contains three streams, with a wetland abutting one of the streams (Figure 2). A new, common, 12-inch-diameter force main that increases to an 18-inch-diameter would be installed via open-cut trenching along most of the route, with jack-and-bore or HDD planned for installation of the force main beneath Stream 1 and Stream 3 (including the abutting wetland). The road berm has been built up more than 10 feet above Stream 2 with stream piped beneath the road. The force main crossing of Stream 2 will be in the constructed road berm above Stream 2 and will not impact the stream.

Stream 1 is a perennial stream (shown in Photographs 1 and 2 in Attachment 1) that runs through Wetland 1. The stream is approximately 25 feet wide and 3 feet deep at the ordinary high-water mark (OHWM). With the current design plans, there are no anticipated impacts to Stream 1 because of the planned jack-and-bore and/or HDD installation.

Wetland 1 is dominated by OBL and FACW vegetation and rice cutgrass (*Leersia oryzoides*; OBL), sensitive fern (*Onoclea sensibilis*; FACW), and arrowhead (*Sagittaria latifolia*; OBL) genus. The area met the minimum criteria for positive wetland hydrology indicators. The following hydric primary indicators were present: Saturation and sitting water. The following secondary hydric indicators were present: Geomorphic position and FAC-Neutral test. Because of the presence of more than 50 percent OBL-, FACW-, or FAC-dominant vegetation and hydrological indicators listed above, this is a wetland. The wetland and upland vegetation are listed in Table 2. A wetland determination form was completed for the upland and wetland areas (Attachment 2). Photographs of Wetland 1 can be found in Attachment 1 (Photographs 1 and 2).

Table 2. Wetland 1 Dominant Vegetation

	Scientific Name	Common Name	Wetland Indicator Status
Upland Area			
	Poaceae	Landscape grasses	UPL
	Solidago canadensis	Canada goldenrod	FACU
Wetland Area			
	Leersia oryzoides	Rice cutgrass	OBL
	Onoclea sensibilis	Sensitive fern	FACW
	Sagittaria latifolia	Arrowhead	OBL

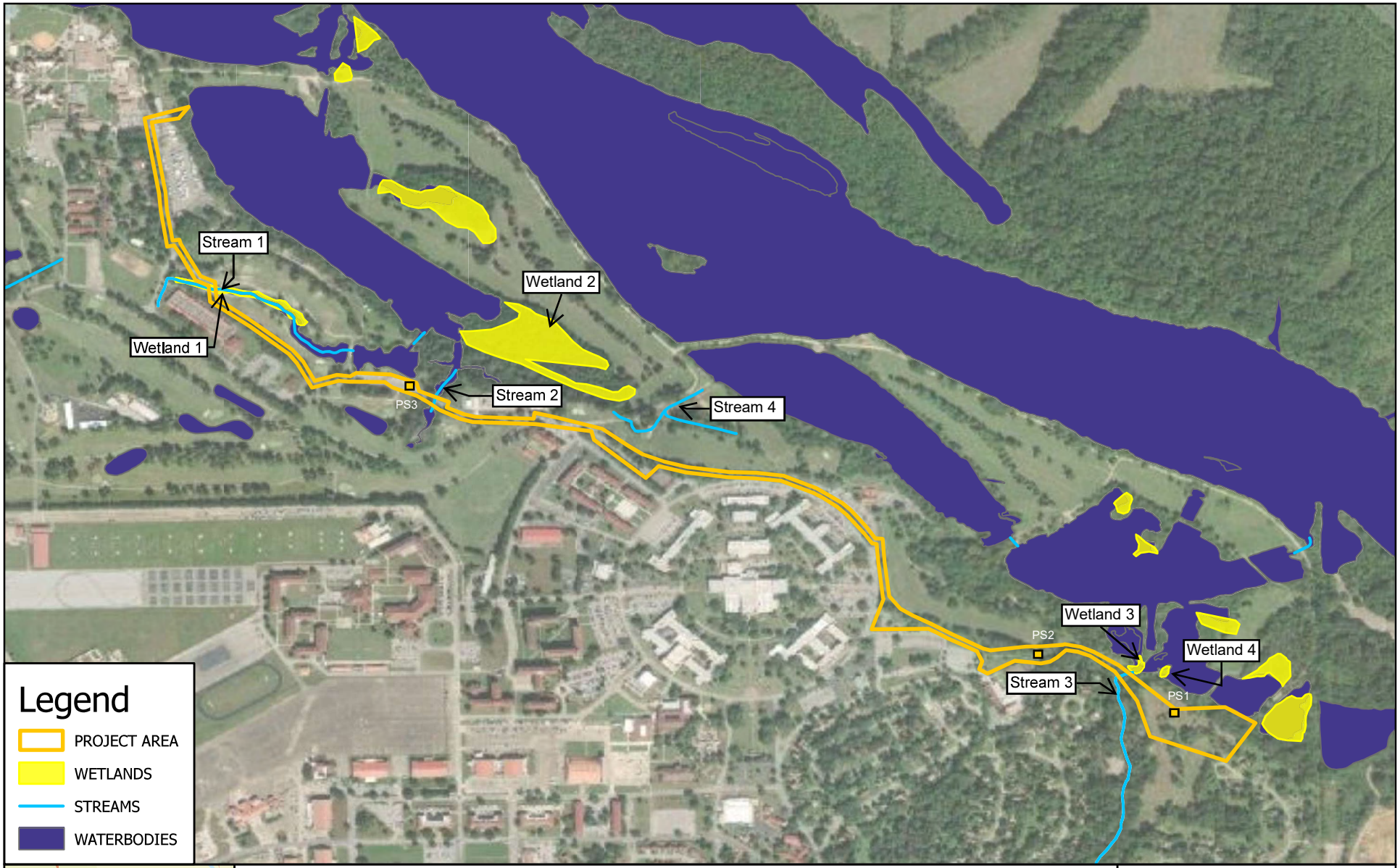


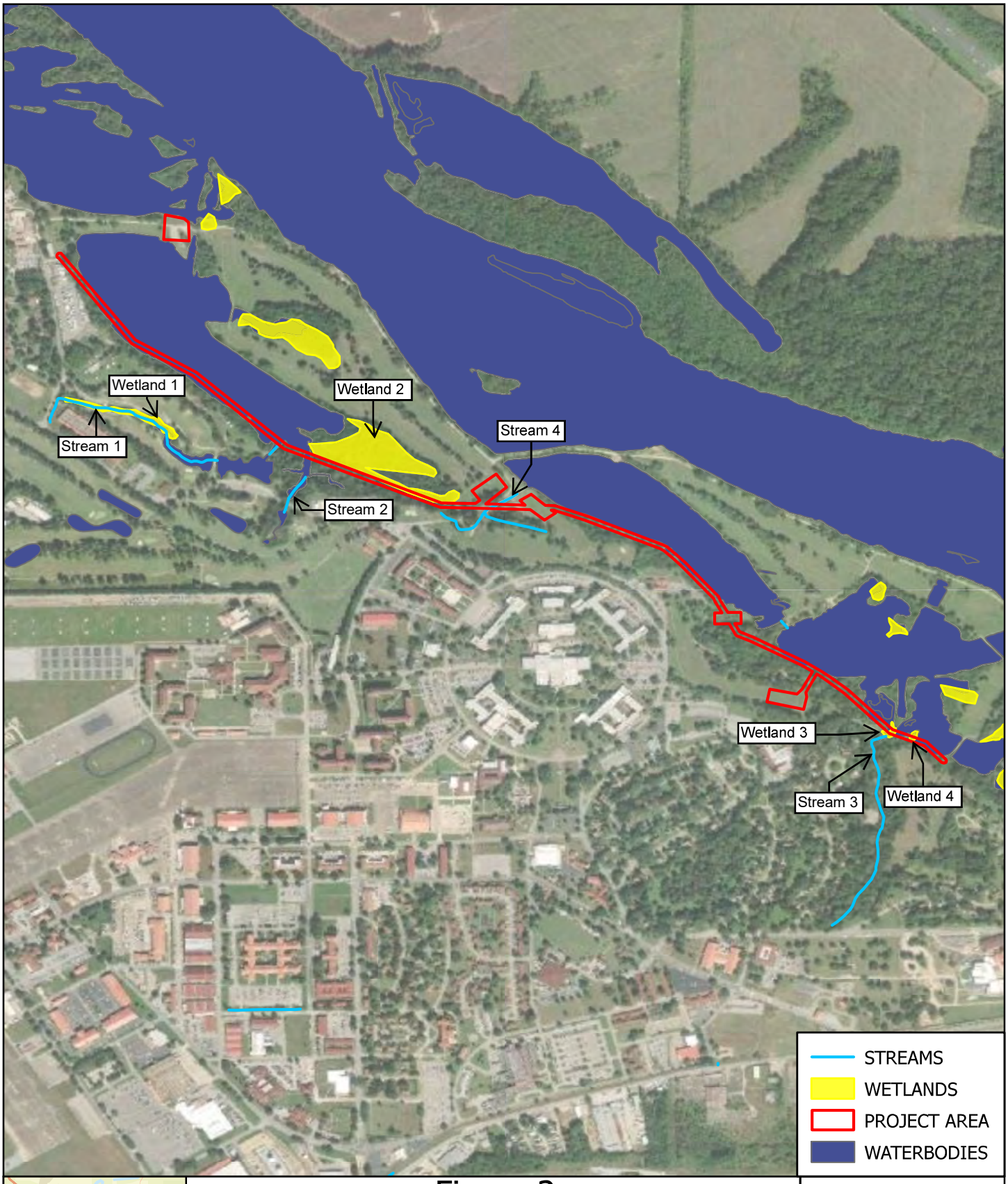
Figure 2

SURFACE WATERS AND WETLANDS WITHIN PROJECT AREAS FOR NEW FORCE MAIN, PUMP STATIONS, AND GRAVITY SEWER CONVEYANCE

Esri, HERE, Garmin, SafeGraph, FAO, METI/NASA, USGS, EPA, NPS, Maxar

2023

Coordinate System: GCS North American 1983



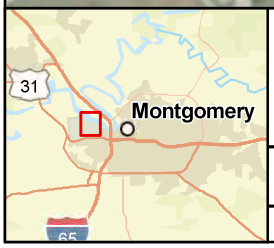


Figure 3

SURFACE WATERS AND WETLANDS WITHIN PROJECT AREAS FOR DECOMMISSIONING OF THE MAXWELL FIELD OUTFALL

Esri, HERE, Garmin, SafeGraph, FAO, METI/NASA, USGS, EPA, NPS, Maxar

2023

Coordinate System: GCS North American 1983

N

0 0.13 0.25 Mi

Stream 2 is a perennial stream that crosses the proposed new force main. The stream is approximately 3 feet wide and 2 feet deep at the OHWM. The banks are vegetated.

Stream 3 is a perennial stream, shown in Photographs 5 and 6 (Attachment 1), near the proposed Pump Station 3. The stream is approximately 20 feet wide and 2 feet deep at the OHWM and is reinforced with concrete and stone. The banks are stone and vegetated.

Project Area for the Decommissioning of the Maxwell Field Outfall

Three wetlands and one stream are along the route of the existing Maxwell Field Outfall will be decommissioned (Figure 3). Approximately half of the existing Maxwell Field Outfall is aboveground and suspended above aquatic habitats including wetlands and sloughs abutting the Alabama River and tributary streams that flow into sloughs along the Alabama River.

Wetland 2 is dominated by OBL, FACW, and FAC vegetation with black gum (*Nyssa sylvatica*; FAC), sweet gum (*Liquidambar styraciflua*; FAC), rice cut grass (*Leersia oryzoides*; OBL), sensitive fern (*Onoclea sensibilis*; FACW), and arrowhead (*Sagittaria latifolia*; OBL). Wetland 2 met the minimum criteria for positive wetland hydrology indicators. The following hydric primary indicators were present: Saturation and Oxidized Rhizospheres along Living Roots. The following secondary hydric indicators were present: Geomorphic position and FAC-Neutral test. Because of the presence of greater than 50 percent OBL, FACW, or FAC dominant vegetation and hydrological indicators listed above, this is a wetland. The wetland and upland vegetation are listed in Table 3. A wetland determination form was completed for the upland and wetland areas (Attachment 2). Wetland 2 is pictured in Photographs 3 and 4 (Attachment 1).

Table 3. Wetland 2 Dominant Vegetation

	Scientific Name	Common Name	Wetland Indicator Status
Upland Area			
	Acer negundo	Ash-leaf maple	FAC
	Pinus taeda	Loblolly pine	FAC
Wetland Area			
	Leersia oryzoides	Rice cutgrass	OBL
	Onoclea sensibilis	Sensitive fern	FACW
	Sagittaria latifolia	Arrowhead	OBL
	Nyssa sylvatica	Black gum	FAC
	Liquidambar styraciflua	Sweet gum	FAC

Stream 4 is a perennial stream, shown in Photograph 8, that crosses the existing Maxwell Field Outfall east of Wetland 2. The stream is approximately 4 feet wide and 2 feet deep at the OHWM.

Wetland 3 is dominated by OBL, FACW, and FAC vegetation with sweet gum (*Liquidambar styraciflua*; FAC), rice cut grass (*Leersia oryzoides*; OBL), alligator weed (*Alternanthera philoxeroides*; OBL), American sycamore (*Platanus occidentalis*, FACW), and Chinese tallowtree (*Triadica sebifera*; FAC). The area met the minimum criteria for positive wetland hydrology indicators. The following hydric primary indicators were present: Saturation and Oxidized Rhizospheres along Living Roots. The following secondary hydric indicators were present: Geomorphic position and FAC-Neutral test. Due to the presence of greater than 50 percent OBL, FACW, or FAC dominant vegetation and hydrological indicators listed above, this is a wetland. The wetland and upland vegetation are listed in Table 4. A wetland determination form was completed for the upland and wetland areas (Attachment 2). Wetland 3 is shown in Photograph 7 (Attachment 1).

Table 4. Wetland 3 Dominant Vegetation

	Scientific Name	Common Name	Wetland Indicator Status
Upland Area			
	Acer negundo	Ash-leaf maple	FAC
	Acer rubrum	Red maple	FAC
	Pinus taeda	Loblolly pine	FAC
	Ligustrum sinense	Chinese privet	FAC
Wetland Area			
	Triadica sebifera	Chinese tallowtree	FAC
	Platanus occidentalis	American sycamore	FACW
	Alternanthera philoxeroides	Alligator seed	OBL
	Leersia oryzoides	Rice cutgrass	OBL
	Liquidambar styraciflua	Sweet gum	FAC

Wetland 4 is dominated by OBL, FACW, and FAC vegetation with sweet gum (*Liquidambar styraciflua*; FAC), rice cut grass (*Leersia oryzoides*; OBL), alligator weed (Alternanthera philoxeroides; OBL), American sycamore (*Platanus occidentalis*, FACW), and Chinese tallowtree (*Triadica sebifera*; FAC). The area met the minimum criteria for positive wetland hydrology indicators. The following hydric primary indicators were present: Saturation and Oxidized Rhizospheres along Living Roots. The following secondary hydric indicators were present: Geomorphic position and FAC-Neutral test. Due to the presence of > 50 percent OBL, FACW, or FAC dominant vegetation and hydrological indicators listed above, this is a wetland. The wetland and upland vegetation are listed in Table 5. A wetland determination form was completed for the upland and wetland areas (Attachment 2).

Table 5. Wetland 4 Dominant Vegetation

	Scientific Name	Common Name	Wetland Indicator Status
Upland Area			
	Acer negundo	Ash-leaf maple	FAC
	Acer rubrum	Red maple	FAC
	Pinus taeda	Loblolly pine	FAC
	Ligustrum sinense	Chinese privet	FAC
Wetland Area			
	Triadica sebifera	Chinese tallowtree	FAC
	Platanus occidentalis	American sycamore	FACW
	Alternanthera philoxeroides	Alligator weed	OBL
	Leersia oryzoides	Rice cutgrass	OBL
	Liquidambar styraciflua	Sweet gum	FAC

2.4 Protected Species Habitat Evaluation

Jacobs reviewed the USFWS IPaC database for the potential for protected species to be within the project area. Table 6 lists those species potentially occurring within Maxwell AFB and the proposed project areas. No designated critical habitat occurs within or adjacent to the proposed project areas. While suitable habitat was reviewed for the potential presence of these species, detailed species-specific surveys were not conducted.

Table 6. Protected Species with Potential to Occur in Proposed Project Areas

Scientific Name	Common Name	Federal Status	Habitat
Perimyotis subflavus	Tricolored bat	Proposed Endangered	Forested landscapes, where they forage near trees and along waterways. Maternity and summer roosts are mainly in dead or live tree foliage, caves, mines, and rock crevices. Maternity colonies may also use human-made structures or tree cavities. Hibernation sites are in caves, mines, or cave-like tunnels.
Macrochelys temminckii	Alligator snapping turtle	Proposed Threatened	Slow-moving deep water of rivers and their tributaries. Canals, sloughs, swamps, bayous, and ponds near rivers may also be used. They often bury themselves in the mud at the bottom of waterbodies
Pleurobema decisum	Southern clubshell	Endangered	Clean, loose sand and gravel in medium to small rivers.
Danaus plexippus	Monarch butterfly	Candidate	Fields, roadside area, open area, wet area, or urban gardens. Milkweed and flowering plants are needed for monarch habitat. Adults feed on the nectar of many flowers, but milkweed is needed for breeding.
Arabis georgiana	Georgia rockcress	Threatened	Sunny and mostly sunny upland areas with circumneutral to slightly basic soils. The species has the potential to occur on rocky bluffs, gently sloping rock outcrops, outcrops along rivers, and sandy loam along eroding riverbanks.

Sources: USAF 2020; USFWS 2023.

During field surveys, no suitable habitat for southern clubshell, Alabama canebreak pitcher plant, or Georgia rockcress was observed within the proposed project areas. No milkweed species were observed within the proposed project area; therefore, it is assumed the monarch butterfly would not occur near the project area.

Alligator snapping turtle has not been previously detected during surveys of Maxwell AFB (USAF 2020); however, the sloughs in the project area are suitable habitat for this species.

Although tricolored bat is not listed in the IPaC report for the project areas, there are known occurrences on Maxwell AFB. Tricolored bat is a generalist species and, as such, has potential habitat to occur in the project area.

Fifteen bird species protected under the Migratory Bird Treaty Act are known to occur in the vicinity of the project area, including the following: bald eagle (*Haliaeetus leucocephalus*), American kestrel (*Falco sparverius paulus*), brown-headed nuthatch (*Sitta pusilla*), cerulean warbler (*Dendroica cerulea*), chimney swift (*Chaetura pelagica*), Kentucky warbler (*Oporornis formosus*), king rail (*Rallus elegans*), lesser yellowlegs (*Tringa flavipes*), painted bunting (*Passerina ciris*), prairie warbler (*Dendroica discolor*), prothonotary warbler (*Protonotaria citrea*), red-headed woodpecker (*Melanerpes erythrocephalus*), rusty blackbird (*Euphagus carolinus*), short-billed dowitcher (*Limnodromus griseus*), and the wood thrush (*Hylocichla mustelina*) (USFWS 2023). It is possible that these species could forage or nest in or near the project site.

3. References

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Attachment 1
Photographs



Photograph 1: Facing downstream toward Stream 1 and Wetland 1, which cross the route of the new force main. The new force main would be installed beneath these features via HDD to avoid impacts.



Photograph 2: Facing upstream toward Stream 1 and Wetland 1, which cross the route of the new force main. The new force main would be installed beneath these features via HDD to avoid impacts.



Photograph 3: Facing southwest towards Wetland 2.



Photograph 4: Facing southeast toward existing sewer main through Wetland 2.



Photograph 5: Facing downstream toward Stream 3.



Photograph 6: Facing upstream toward Stream 3, which is located near Pump Station 3.



Photograph 7: Facing Wetland 3 and existing sewer main.



Photograph 8: Existing main near Stream 4.



Photograph 9: Existing Maxwell Field Outfall across open water.



Photograph 10: Existing Maxwell Field Outfall across open water.

Attachment 2
Data Forms

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Maxwell Outfall City/County: Montgomery County Sampling Date: 08/23/2022

Applicant/Owner: Maxwell AFB State: AL Sampling Point: WL1

Investigator(s): Melanie Wiggins, Sarah Anderson Section, Township, Range: 3, 16N, 17E

Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): none Slope (%): 0

Subregion (LRR or MLRA): P, .133C Lat: 32.391356 Long: -86.356447 Datum: NAD83

Soil Map Unit Name: Consociations NWI classification: L1UBHh

Are climatic / hydrologic conditions on the site typical for this time of year? Yes [✔] No [ ] (If no, explain in Remarks.)

Are Vegetation [ ] Soil [ ] or Hydrology [ ] significantly disturbed? [ ] Are "Normal Circumstances" present? Yes [✔] No [ ]

Are Vegetation [ ] Soil [ ] or Hydrology [ ] naturally problematic? [ ] (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes [✔]	No [ ]	**Is the Sampled Area within a Wetland?** Yes [✔] No [ ]
Hydric Soil Present?	Yes [✔]	No [ ]	
Wetland Hydrology Present?	Yes [✔]	No [ ]	

Remarks:

Did not take sample of soil. Wetland with stream through center

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- [ ] Surface Water (A1)
- [ ] High Water Table (A2)
- [✔] Saturation (A3)
- [ ] Water Marks (B1)
- [ ] Sediment Deposits (B2)
- [ ] Drift Deposits (B3)
- [ ] Algal Mat or Crust (B4)
- [ ] Iron Deposits (B5)
- [ ] Inundation Visible on Aerial Imagery (B7)
- [✔] Water-Stained Leaves (B9)
- [ ] Aquatic Fauna (B13)
- [ ] Marl Deposits (B15) **(LRR U)**
- [ ] Hydrogen Sulfide Odor (C1)
- [✔] Oxidized Rhizospheres along Living Roots (C3)
- [ ] Presence of Reduced Iron (C4)
- [ ] Recent Iron Reduction in Tilled Soils (C6)
- [ ] Thin Muck Surface (C7)
- [ ] Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- [ ] Surface Soil Cracks (B6)
- [ ] Sparsely Vegetated Concave Surface (B8)
- [ ] Drainage Patterns (B10)
- [ ] Moss Trim Lines (B16)
- [ ] Dry-Season Water Table (C2)
- [ ] Crayfish Burrows (C8)
- [ ] Saturation Visible on Aerial Imagery (C9)
- [✔] Geomorphic Position (D2)
- [ ] Shallow Aquitard (D3)
- [✔] FAC-Neutral Test (D5)
- [ ] Sphagnum moss (D8) **(LRR T, U)**

Field Observations:

Surface Water Present?	Yes [ ]	No [✔]	Depth (inches):
Water Table Present?	Yes [ ]	No [✔]	Depth (inches):
Saturation Present? (includes capillary fringe)	Yes [✔]	No [ ]	Depth (inches): 4

Wetland Hydrology Present? Yes [✔] No [ ]

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Five Strata) – Use scientific names of plants.

Sampling Point: WL1

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
	= Total Cover		
50% of total cover:	20% of total cover:		
Sapling Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
6.			
	= Total Cover		
50% of total cover:	20% of total cover:		
Shrub Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
6.			
	= Total Cover		
50% of total cover:	20% of total cover:		
Herb Stratum (Plot size:)			
1. Leersia oryzoides (Rice Cut grass)	70	Y	OBL
2. Onoclea sensibilis (Sensitive Fern)	10	N	FACW
3. Saggitaria latifolia (Arrowhead)	20	Y	OBL
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	100 = Total Cover		
50% of total cover: 50	20% of total cover: 20		
Woody Vine Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
50% of total cover:	20% of total cover:		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	10	x 1 =	10
FACW species	90	x 2 =	180
FAC species		x 3 =	
FACU species		x 4 =	
UPL species		x 5 =	
Column Totals:	100 (A)		190 (B)

Prevalence Index = B/A = 1.9

Hydrophytic Vegetation Indicators:

- ☐ 1 - Rapid Test for Hydrophytic Vegetation
- ☑ 2 - Dominance Test is >50%
- ☑ 3 - Prevalence Index is ≤3.0[1]
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Five Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes ☑ No ☐

Remarks: (If observed, list morphological adaptations below).

SOIL

Sampling Point: WL1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

[2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Organic Bodies (A6) **(LRR P, T, U)**
- ☐ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
- ☐ Muck Presence (A8) **(LRR U)**
- ☐ 1 cm Muck (A9) **(LRR P, T)**
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Coast Prairie Redox (A16) **(MLRA 150A)**
- ☐ Sandy Mucky Mineral (S1) **(LRR O, S)**
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) **(LRR P, S, T, U)**
- ☐ Polyvalue Below Surface (S8) **(LRR S, T, U)**
- ☐ Thin Dark Surface (S9) **(LRR S, T, U)**
- ☐ Loamy Mucky Mineral (F1) **(LRR O)**
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Marl (F10) **(LRR U)**
- ☐ Depleted Ochric (F11) **(MLRA 151)**
- ☐ Iron-Manganese Masses (F12) **(LRR O, P, T)**
- ☐ Umbric Surface (F13) **(LRR P, T, U)**
- ☐ Delta Ochric (F17) **(MLRA 151)**
- ☐ Reduced Vertic (F18) **(MLRA 150A, 150B)**
- ☐ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
- ☐ Anomalous Bright Loamy Soils (F20) **(MLRA 149A, 153C, 153D)**

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) **(LRR O)**
- ☐ 2 cm Muck (A10) **(LRR S)**
- ☐ Reduced Vertic (F18) **(outside MLRA 150A,B)**
- ☐ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
- ☐ Anomalous Bright Loamy Soils (F20) **(MLRA 153B)**
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** ☐ **No** ☐

Remarks:

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Maxwell Outfall City/County: Montgomery County Sampling Date: 08/23/2022

Applicant/Owner: Maxwell AFB State: AL Sampling Point: UPL1

Investigator(s): MW, SB Section, Township, Range: 3, 16N, 17E

Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): none Slope (%): 10

Subregion (LRR or MLRA): Southern Coastal Plair Lat: 32.391356 Long: -86.356447 Datum: NAD83

Soil Map Unit Name: Wehadkee Silt Loam (Wb) NWI classification: L1UBHh

Are climatic / hydrologic conditions on the site typical for this time of year? Yes [✓] No [ ] (If no, explain in Remarks.)

Are Vegetation [ ] Soil [ ] or Hydrology [ ] significantly disturbed? [ ] Are "Normal Circumstances" present? Yes [✓] No [ ]

Are Vegetation [ ] Soil [ ] or Hydrology [ ] naturally problematic? [ ] (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes [ ]	No [✓]	**Is the Sampled Area within a Wetland?** Yes [ ] No [✓]
Hydric Soil Present?	Yes [ ]	No [✓]	
Wetland Hydrology Present?	Yes [ ]	No [✓]	

Remarks:

upland is grassed area

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- [ ] Surface Water (A1)
- [ ] High Water Table (A2)
- [ ] Saturation (A3)
- [ ] Water Marks (B1)
- [ ] Sediment Deposits (B2)
- [ ] Drift Deposits (B3)
- [ ] Algal Mat or Crust (B4)
- [ ] Iron Deposits (B5)
- [ ] Inundation Visible on Aerial Imagery (B7)
- [ ] Water-Stained Leaves (B9)
- [ ] Aquatic Fauna (B13)
- [ ] Marl Deposits (B15) **(LRR U)**
- [ ] Hydrogen Sulfide Odor (C1)
- [ ] Oxidized Rhizospheres along Living Roots (C3)
- [ ] Presence of Reduced Iron (C4)
- [ ] Recent Iron Reduction in Tilled Soils (C6)
- [ ] Thin Muck Surface (C7)
- [ ] Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- [ ] Surface Soil Cracks (B6)
- [ ] Sparsely Vegetated Concave Surface (B8)
- [ ] Drainage Patterns (B10)
- [ ] Moss Trim Lines (B16)
- [ ] Dry-Season Water Table (C2)
- [ ] Crayfish Burrows (C8)
- [ ] Saturation Visible on Aerial Imagery (C9)
- [ ] Geomorphic Position (D2)
- [ ] Shallow Aquitard (D3)
- [ ] FAC-Neutral Test (D5)
- [ ] Sphagnum moss (D8) **(LRR T, U)**

Field Observations:

Surface Water Present?	Yes [ ]	No [✓]	Depth (inches):
Water Table Present?	Yes [ ]	No [✓]	Depth (inches):
Saturation Present? (includes capillary fringe)	Yes [ ]	No [✓]	Depth (inches):

Wetland Hydrology Present? Yes [ ] No [✓]

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

no hydrology present in upland

VEGETATION (Five Strata) – Use scientific names of plants.

Sampling Point: UPL1

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
	= Total Cover		
50% of total cover:	20% of total cover:		
Sapling Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
6.			
	= Total Cover		
50% of total cover:	20% of total cover:		
Shrub Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
6.			
	= Total Cover		
50% of total cover:	20% of total cover:		
Herb Stratum (Plot size:)			
1. Poaceae	90	Y	UPL
2. Solidago canadensis	10	N	FACU
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	100 = Total Cover		
50% of total cover: 50	20% of total cover: 20		
Woody Vine Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
50% of total cover:	20% of total cover:		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	0	x 3 =	0
FACU species	10	x 4 =	40
UPL species	90	x 5 =	450
Column Totals:	100 (A)		490 (B)

Prevalence Index = B/A = 4.9

Hydrophytic Vegetation Indicators:

- ☐ 1 - Rapid Test for Hydrophytic Vegetation
- ☐ 2 - Dominance Test is >50%
- ☐ 3 - Prevalence Index is ≤3.0[1]
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Five Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes ☐ No ☑

Remarks: (If observed, list morphological adaptations below).

hydrophytic vegetation not present

SOIL

Sampling Point: UPL1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

[2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Organic Bodies (A6) **(LRR P, T, U)**
- ☐ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
- ☐ Muck Presence (A8) **(LRR U)**
- ☐ 1 cm Muck (A9) **(LRR P, T)**
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Coast Prairie Redox (A16) **(MLRA 150A)**
- ☐ Sandy Mucky Mineral (S1) **(LRR O, S)**
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) **(LRR P, S, T, U)**
- ☐ Polyvalue Below Surface (S8) **(LRR S, T, U)**
- ☐ Thin Dark Surface (S9) **(LRR S, T, U)**
- ☐ Loamy Mucky Mineral (F1) **(LRR O)**
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Marl (F10) **(LRR U)**
- ☐ Depleted Ochric (F11) **(MLRA 151)**
- ☐ Iron-Manganese Masses (F12) **(LRR O, P, T)**
- ☐ Umbric Surface (F13) **(LRR P, T, U)**
- ☐ Delta Ochric (F17) **(MLRA 151)**
- ☐ Reduced Vertic (F18) **(MLRA 150A, 150B)**
- ☐ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
- ☐ Anomalous Bright Loamy Soils (F20) **(MLRA 149A, 153C, 153D)**

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) **(LRR O)**
- ☐ 2 cm Muck (A10) **(LRR S)**
- ☐ Reduced Vertic (F18) **(outside MLRA 150A,B)**
- ☐ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
- ☐ Anomalous Bright Loamy Soils (F20) **(MLRA 153B)**
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☐ No ☑

Remarks:

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Maxwell Outfall City/County: Montgomery County Sampling Date: 08/23/2022

Applicant/Owner: Maxwell AFB State: AL Sampling Point: WL2

Investigator(s): Melanie Wiggins, Sarah Anderson Section, Township, Range: 3, 16N, 17E

Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): none Slope (%): 0

Subregion (LRR or MLRA): P, .133C Lat: 32.372717 Long: -86.349417 Datum: NAD83

Soil Map Unit Name: Consociations NWI classification: L1UBHh

Are climatic / hydrologic conditions on the site typical for this time of year? Yes [✔] No [ ] (If no, explain in Remarks.)

Are Vegetation [ ] Soil [ ] or Hydrology [ ] significantly disturbed? [ ] Are "Normal Circumstances" present? Yes [✔] No [ ]

Are Vegetation [ ] Soil [ ] or Hydrology [ ] naturally problematic? [ ] (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes [✔]	No [ ]	**Is the Sampled Area within a Wetland?** Yes [✔] No [ ]
Hydric Soil Present?	Yes [✔]	No [ ]	
Wetland Hydrology Present?	Yes [✔]	No [ ]	

Remarks:

Did not take sample of soil. I am in a saturated zone with prolonged high water table.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- [ ] Surface Water (A1)
- [ ] High Water Table (A2)
- [✔] Saturation (A3)
- [ ] Water Marks (B1)
- [ ] Sediment Deposits (B2)
- [ ] Drift Deposits (B3)
- [ ] Algal Mat or Crust (B4)
- [ ] Iron Deposits (B5)
- [ ] Inundation Visible on Aerial Imagery (B7)
- [✔] Water-Stained Leaves (B9)
- [ ] Aquatic Fauna (B13)
- [ ] Marl Deposits (B15) **(LRR U)**
- [ ] Hydrogen Sulfide Odor (C1)
- [✔] Oxidized Rhizospheres along Living Roots (C3)
- [ ] Presence of Reduced Iron (C4)
- [ ] Recent Iron Reduction in Tilled Soils (C6)
- [ ] Thin Muck Surface (C7)
- [ ] Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- [ ] Surface Soil Cracks (B6)
- [ ] Sparsely Vegetated Concave Surface (B8)
- [ ] Drainage Patterns (B10)
- [ ] Moss Trim Lines (B16)
- [ ] Dry-Season Water Table (C2)
- [✔] Crayfish Burrows (C8)
- [ ] Saturation Visible on Aerial Imagery (C9)
- [✔] Geomorphic Position (D2)
- [ ] Shallow Aquitard (D3)
- [✔] FAC-Neutral Test (D5)
- [ ] Sphagnum moss (D8) **(LRR T, U)**

Field Observations:

Surface Water Present? Yes [ ] No [✔] Depth (inches): _____

Water Table Present? Yes [ ] No [✔] Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes [✔] No [ ] Depth (inches): 4

Wetland Hydrology Present? Yes [✔] No [ ]

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Five Strata) – Use scientific names of plants.

Sampling Point: WL2

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1. Nyssa sylvatica (Black Gum)	80	Y	FAC
2.			
3.			
4.			
5.			
6.			
	80 = Total Cover		
50% of total cover: 40	20% of total cover: 16		
Sapling Stratum (Plot size:)			
1. Liquidambar styraciflua (Sweet Gum)	20	Y	FAC
2. Nyssa sylvatica (Black Gum)	20	Y	FAC
3.			
4.			
5.			
6.			
	40 = Total Cover		
50% of total cover: 20	20% of total cover: 8		
Shrub Stratum (Plot size:)			
1. Liquidambar styraciflua (Sweet Gum)	10	Y	FAC
2.			
3.			
4.			
5.			
6.			
	10 = Total Cover		
50% of total cover: 5	20% of total cover: 2		
Herb Stratum (Plot size:)			
1. Leersia oryzoides (Rice Cut grass)	70	Y	OBL
2. Onoclea sensibilis (Sensitive Fern)	10	N	FACW
3. Saggitaria latifolia (Arrowhead)	20	Y	OBL
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	100 = Total Cover		
50% of total cover: 50	20% of total cover: 20		
Woody Vine Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
50% of total cover:	20% of total cover:		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 6 (A)

Total Number of Dominant Species Across All Strata: 7 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 86 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species	x 1 =
FACW species	x 2 =
FAC species	x 3 =
FACU species	x 4 =
UPL species	x 5 =
Column Totals: (A)	(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

- ☐ 1 - Rapid Test for Hydrophytic Vegetation
- ☑ 2 - Dominance Test is >50%
- ☑ 3 - Prevalence Index is ≤3.0[1]
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Five Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes ☑ No ☐

Remarks: (If observed, list morphological adaptations below).

SOIL

Sampling Point: WL2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

[2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Organic Bodies (A6) **(LRR P, T, U)**
- ☐ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
- ☐ Muck Presence (A8) **(LRR U)**
- ☐ 1 cm Muck (A9) **(LRR P, T)**
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Coast Prairie Redox (A16) **(MLRA 150A)**
- ☐ Sandy Mucky Mineral (S1) **(LRR O, S)**
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) **(LRR P, S, T, U)**
- ☐ Polyvalue Below Surface (S8) **(LRR S, T, U)**
- ☐ Thin Dark Surface (S9) **(LRR S, T, U)**
- ☐ Loamy Mucky Mineral (F1) **(LRR O)**
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Marl (F10) **(LRR U)**
- ☐ Depleted Ochric (F11) **(MLRA 151)**
- ☐ Iron-Manganese Masses (F12) **(LRR O, P, T)**
- ☐ Umbric Surface (F13) **(LRR P, T, U)**
- ☐ Delta Ochric (F17) **(MLRA 151)**
- ☐ Reduced Vertic (F18) **(MLRA 150A, 150B)**
- ☐ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
- ☐ Anomalous Bright Loamy Soils (F20) **(MLRA 149A, 153C, 153D)**

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) **(LRR O)**
- ☐ 2 cm Muck (A10) **(LRR S)**
- ☐ Reduced Vertic (F18) **(outside MLRA 150A,B)**
- ☐ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
- ☐ Anomalous Bright Loamy Soils (F20) **(MLRA 153B)**
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** ☐ **No** ☐

Remarks:

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Maxwell Outfall City/County: Montgomery County Sampling Date: 08/23/2022

Applicant/Owner: Maxwell AFB State: AL Sampling Point: UPL2

Investigator(s): MW, SB Section, Township, Range: 3, 16N, 17E

Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): none Slope (%): 5

Subregion (LRR or MLRA): Southern Coastal Plair Lat: 32.372717 Long: -86.349417 Datum: NAD83

Soil Map Unit Name: Wehadkee Silt Loam (Wb) NWI classification: L1UBHh

Are climatic / hydrologic conditions on the site typical for this time of year? Yes [✔] No [ ] (If no, explain in Remarks.)

Are Vegetation [ ] Soil [ ] or Hydrology [ ] significantly disturbed? [ ] Are "Normal Circumstances" present? Yes [✔] No [ ]

Are Vegetation [ ] Soil [ ] or Hydrology [ ] naturally problematic? [ ] (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes [ ]	No [✔]	**Is the Sampled Area within a Wetland?** Yes [✔] No [ ]
Hydric Soil Present?	Yes [ ]	No [✔]	
Wetland Hydrology Present?	Yes [ ]	No [✔]	

Remarks:

upland is grassed area

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- [ ] Surface Water (A1)
- [ ] High Water Table (A2)
- [ ] Saturation (A3)
- [ ] Water Marks (B1)
- [ ] Sediment Deposits (B2)
- [ ] Drift Deposits (B3)
- [ ] Algal Mat or Crust (B4)
- [ ] Iron Deposits (B5)
- [ ] Inundation Visible on Aerial Imagery (B7)
- [ ] Water-Stained Leaves (B9)
- [ ] Aquatic Fauna (B13)
- [ ] Marl Deposits (B15) **(LRR U)**
- [ ] Hydrogen Sulfide Odor (C1)
- [ ] Oxidized Rhizospheres along Living Roots (C3)
- [ ] Presence of Reduced Iron (C4)
- [ ] Recent Iron Reduction in Tilled Soils (C6)
- [ ] Thin Muck Surface (C7)
- [ ] Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- [ ] Surface Soil Cracks (B6)
- [ ] Sparsely Vegetated Concave Surface (B8)
- [ ] Drainage Patterns (B10)
- [ ] Moss Trim Lines (B16)
- [ ] Dry-Season Water Table (C2)
- [ ] Crayfish Burrows (C8)
- [ ] Saturation Visible on Aerial Imagery (C9)
- [ ] Geomorphic Position (D2)
- [ ] Shallow Aquitard (D3)
- [ ] FAC-Neutral Test (D5)
- [ ] Sphagnum moss (D8) **(LRR T, U)**

Field Observations:

Surface Water Present?	Yes [ ]	No [✔]	Depth (inches): _____
Water Table Present?	Yes [ ]	No [✔]	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes [ ]	No [✔]	Depth (inches): _____

Wetland Hydrology Present? Yes [ ] No [✔]

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

no hydrology present in upland

VEGETATION (Five Strata) – Use scientific names of plants.

Sampling Point: UPL2

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1. Acer megundo	40	Y	FAC
2. Pinus taeda	20	N	FAC
3.			
4.			
5.			
6.			
	60 = Total Cover		
50% of total cover: 30	20% of total cover: 12		
Sapling Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
6.			
	= Total Cover		
50% of total cover:	20% of total cover:		
Shrub Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
6.			
	= Total Cover		
50% of total cover:	20% of total cover:		
Herb Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	= Total Cover		
50% of total cover:	20% of total cover:		
Woody Vine Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
50% of total cover:	20% of total cover:		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	60	x 3 =	180
FACU species	0	x 4 =	0
UPL species		x 5 =	
Column Totals:	60 (A)		180 (B)

Prevalence Index = B/A = 3

Hydrophytic Vegetation Indicators:

- ☐ 1 - Rapid Test for Hydrophytic Vegetation
- ☐ 2 - Dominance Test is >50%
- ☐ 3 - Prevalence Index is ≤3.0[1]
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Five Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes ☐ No ☑

Remarks: (If observed, list morphological adaptations below).

hydrophytic vegetation not present

SOIL

Sampling Point: UPL2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

[2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Organic Bodies (A6) **(LRR P, T, U)**
- ☐ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
- ☐ Muck Presence (A8) **(LRR U)**
- ☐ 1 cm Muck (A9) **(LRR P, T)**
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Coast Prairie Redox (A16) **(MLRA 150A)**
- ☐ Sandy Mucky Mineral (S1) **(LRR O, S)**
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) **(LRR P, S, T, U)**
- ☐ Polyvalue Below Surface (S8) **(LRR S, T, U)**
- ☐ Thin Dark Surface (S9) **(LRR S, T, U)**
- ☐ Loamy Mucky Mineral (F1) **(LRR O)**
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Marl (F10) **(LRR U)**
- ☐ Depleted Ochric (F11) **(MLRA 151)**
- ☐ Iron-Manganese Masses (F12) **(LRR O, P, T)**
- ☐ Umbric Surface (F13) **(LRR P, T, U)**
- ☐ Delta Ochric (F17) **(MLRA 151)**
- ☐ Reduced Vertic (F18) **(MLRA 150A, 150B)**
- ☐ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
- ☐ Anomalous Bright Loamy Soils (F20) **(MLRA 149A, 153C, 153D)**

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) **(LRR O)**
- ☐ 2 cm Muck (A10) **(LRR S)**
- ☐ Reduced Vertic (F18) **(outside MLRA 150A,B)**
- ☐ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
- ☐ Anomalous Bright Loamy Soils (F20) **(MLRA 153B)**
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☐ No ☑

Remarks:

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Maxwell Outfall City/County: Montgomery County Sampling Date: 08/23/2022

Applicant/Owner: Maxwell AFB State: AL Sampling Point: WL3

Investigator(s): Melanie Wiggins, Sarah Anderson Section, Township, Range: 3, 16N, 17E

Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): none Slope (%): 0

Subregion (LRR or MLRA): P, .133C Lat: 32.383569 Long: -86.337242 Datum: NAD83

Soil Map Unit Name: Consociations NWI classification: L1UBHh

Are climatic / hydrologic conditions on the site typical for this time of year? Yes [✔] No [ ] (If no, explain in Remarks.)

Are Vegetation [ ] Soil [ ] or Hydrology [ ] significantly disturbed? [ ] Are "Normal Circumstances" present? Yes [✔] No [ ]

Are Vegetation [ ] Soil [ ] or Hydrology [ ] naturally problematic? [ ] (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes [✔]	No [ ]	**Is the Sampled Area within a Wetland?** Yes [✔] No [ ]
Hydric Soil Present?	Yes [✔]	No [ ]	
Wetland Hydrology Present?	Yes [✔]	No [ ]	

Remarks:

Did not take sample of soil. In saturated area with prolonged high water table.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- [ ] Surface Water (A1)
- [ ] High Water Table (A2)
- [✔] Saturation (A3)
- [ ] Water Marks (B1)
- [ ] Sediment Deposits (B2)
- [ ] Drift Deposits (B3)
- [ ] Algal Mat or Crust (B4)
- [ ] Iron Deposits (B5)
- [ ] Inundation Visible on Aerial Imagery (B7)
- [✔] Water-Stained Leaves (B9)
- [ ] Aquatic Fauna (B13)
- [ ] Marl Deposits (B15) **(LRR U)**
- [ ] Hydrogen Sulfide Odor (C1)
- [✔] Oxidized Rhizospheres along Living Roots (C3)
- [ ] Presence of Reduced Iron (C4)
- [ ] Recent Iron Reduction in Tilled Soils (C6)
- [ ] Thin Muck Surface (C7)
- [ ] Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- [ ] Surface Soil Cracks (B6)
- [ ] Sparsely Vegetated Concave Surface (B8)
- [ ] Drainage Patterns (B10)
- [ ] Moss Trim Lines (B16)
- [ ] Dry-Season Water Table (C2)
- [✔] Crayfish Burrows (C8)
- [ ] Saturation Visible on Aerial Imagery (C9)
- [✔] Geomorphic Position (D2)
- [ ] Shallow Aquitard (D3)
- [✔] FAC-Neutral Test (D5)
- [ ] Sphagnum moss (D8) **(LRR T, U)**

Field Observations:

Surface Water Present? Yes [ ] No [✔] Depth (inches): _____

Water Table Present? Yes [ ] No [✔] Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes [✔] No [ ] Depth (inches): 4

Wetland Hydrology Present? Yes [✔] No [ ]

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Five Strata) – Use scientific names of plants.

Sampling Point: WL3

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1. Triadica sebifera	20	Y	FAC
2. American Sycamore	20	Y	FACW
3.			
4.			
5.			
6.			
	= Total Cover		

50% of total cover: 20 20% of total cover: 8

Sapling Stratum (Plot size:)			
1. Liquidambar styraciflua (Sweet Gum)	10	Y	FAC
2.			
3.			
4.			
5.			
6.			
	10 = Total Cover		

50% of total cover: 5 20% of total cover: 2

Shrub Stratum (Plot size:)			
1. Liquidambar styraciflua (Sweet Gum)	10	Y	FAC
2.			
3.			
4.			
5.			
6.			
	10 = Total Cover		

50% of total cover: 5 20% of total cover: 2

Herb Stratum (Plot size:)			
1. Leersia oryzoides (Rice Cut grass)	70	Y	OBL
2. Alternanthera philoxeroides	10	N	OBL
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	80 = Total Cover		

50% of total cover: 40 20% of total cover: 16

Woody Vine Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		

50% of total cover: 20% of total cover:

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	80	x 1 =	80
FACW species	20	x 2 =	40
FAC species	40	x 3 =	120
FACU species		x 4 =	
UPL species		x 5 =	
Column Totals:	140 (A)		240 (B)

Prevalence Index = B/A = 1.74

Hydrophytic Vegetation Indicators:

- ☐ 1 - Rapid Test for Hydrophytic Vegetation
- ☑ 2 - Dominance Test is >50%
- ☑ 3 - Prevalence Index is ≤3.0[1]
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Five Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes ☑ No ☐

Remarks: (If observed, list morphological adaptations below).

SOIL

Sampling Point: WL3

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

[2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Organic Bodies (A6) **(LRR P, T, U)**
- ☐ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
- ☐ Muck Presence (A8) **(LRR U)**
- ☐ 1 cm Muck (A9) **(LRR P, T)**
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Coast Prairie Redox (A16) **(MLRA 150A)**
- ☐ Sandy Mucky Mineral (S1) **(LRR O, S)**
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) **(LRR P, S, T, U)**
- ☐ Polyvalue Below Surface (S8) **(LRR S, T, U)**
- ☐ Thin Dark Surface (S9) **(LRR S, T, U)**
- ☐ Loamy Mucky Mineral (F1) **(LRR O)**
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Marl (F10) **(LRR U)**
- ☐ Depleted Ochric (F11) **(MLRA 151)**
- ☐ Iron-Manganese Masses (F12) **(LRR O, P, T)**
- ☐ Umbric Surface (F13) **(LRR P, T, U)**
- ☐ Delta Ochric (F17) **(MLRA 151)**
- ☐ Reduced Vertic (F18) **(MLRA 150A, 150B)**
- ☐ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
- ☐ Anomalous Bright Loamy Soils (F20) **(MLRA 149A, 153C, 153D)**

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) **(LRR O)**
- ☐ 2 cm Muck (A10) **(LRR S)**
- ☐ Reduced Vertic (F18) **(outside MLRA 150A,B)**
- ☐ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
- ☐ Anomalous Bright Loamy Soils (F20) **(MLRA 153B)**
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** ☐ **No** ☐

Remarks:

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Maxwell Outfall City/County: Montgomery County Sampling Date: 08/23/2022

Applicant/Owner: Maxwell AFB State: AL Sampling Point: UPL3

Investigator(s): MW, SB Section, Township, Range: 3, 16N, 17E

Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): none Slope (%): 5

Subregion (LRR or MLRA): Southern Coastal Plair Lat: 32.383569 Long: -86.337242 Datum: NAD83

Soil Map Unit Name: Wehadkee Silt Loam (Wb) NWI classification: L1UBHh

Are climatic / hydrologic conditions on the site typical for this time of year? Yes [✔] No [ ] (If no, explain in Remarks.)

Are Vegetation [ ] Soil [ ] or Hydrology [ ] significantly disturbed? [ ] Are "Normal Circumstances" present? Yes [✔] No [ ]

Are Vegetation [ ] Soil [ ] or Hydrology [ ] naturally problematic? [ ] (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes [ ]	No [✔]	**Is the Sampled Area within a Wetland?** Yes [✔] No [ ]
Hydric Soil Present?	Yes [ ]	No [✔]	
Wetland Hydrology Present?	Yes [ ]	No [✔]	

Remarks:

upland wooded area

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- [ ] Surface Water (A1)
- [ ] High Water Table (A2)
- [ ] Saturation (A3)
- [ ] Water Marks (B1)
- [ ] Sediment Deposits (B2)
- [ ] Drift Deposits (B3)
- [ ] Algal Mat or Crust (B4)
- [ ] Iron Deposits (B5)
- [ ] Inundation Visible on Aerial Imagery (B7)
- [ ] Water-Stained Leaves (B9)
- [ ] Aquatic Fauna (B13)
- [ ] Marl Deposits (B15) **(LRR U)**
- [ ] Hydrogen Sulfide Odor (C1)
- [ ] Oxidized Rhizospheres along Living Roots (C3)
- [ ] Presence of Reduced Iron (C4)
- [ ] Recent Iron Reduction in Tilled Soils (C6)
- [ ] Thin Muck Surface (C7)
- [ ] Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- [ ] Surface Soil Cracks (B6)
- [ ] Sparsely Vegetated Concave Surface (B8)
- [ ] Drainage Patterns (B10)
- [ ] Moss Trim Lines (B16)
- [ ] Dry-Season Water Table (C2)
- [ ] Crayfish Burrows (C8)
- [ ] Saturation Visible on Aerial Imagery (C9)
- [ ] Geomorphic Position (D2)
- [ ] Shallow Aquitard (D3)
- [ ] FAC-Neutral Test (D5)
- [ ] Sphagnum moss (D8) **(LRR T, U)**

Field Observations:

Surface Water Present?	Yes [ ]	No [✔]	Depth (inches): _____
Water Table Present?	Yes [ ]	No [✔]	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes [ ]	No [✔]	Depth (inches): _____

Wetland Hydrology Present? Yes [ ] No [✔]

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

no hydrology present in upland

VEGETATION (Five Strata) – Use scientific names of plants.

Sampling Point: UPL3

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1. Acer negundo	40	Y	FAC
2. Pinus taeda	20	N	FAC
3. acer rubrum	10	N	FAC
4. Ligustrum sinense	10	N	FAC
5.			
6.			
	80 = Total Cover		
50% of total cover: 40	20% of total cover: 16		
Sapling Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
6.			
	= Total Cover		
50% of total cover:	20% of total cover:		
Shrub Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
6.			
	= Total Cover		
50% of total cover:	20% of total cover:		
Herb Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	= Total Cover		
50% of total cover:	20% of total cover:		
Woody Vine Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
50% of total cover:	20% of total cover:		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	80	x 3 =	240
FACU species	0	x 4 =	0
UPL species		x 5 =	
Column Totals:	80 (A)		240 (B)

Prevalence Index = B/A = 3

Hydrophytic Vegetation Indicators:

- ☐ 1 - Rapid Test for Hydrophytic Vegetation
- ☐ 2 - Dominance Test is >50%
- ☐ 3 - Prevalence Index is ≤3.0[1]
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Five Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes ☐ No ☑

Remarks: (If observed, list morphological adaptations below).

hydrophytic vegetation not present

SOIL

Sampling Point: UPL3

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

[2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Organic Bodies (A6) **(LRR P, T, U)**
- ☐ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
- ☐ Muck Presence (A8) **(LRR U)**
- ☐ 1 cm Muck (A9) **(LRR P, T)**
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Coast Prairie Redox (A16) **(MLRA 150A)**
- ☐ Sandy Mucky Mineral (S1) **(LRR O, S)**
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) **(LRR P, S, T, U)**
- ☐ Polyvalue Below Surface (S8) **(LRR S, T, U)**
- ☐ Thin Dark Surface (S9) **(LRR S, T, U)**
- ☐ Loamy Mucky Mineral (F1) **(LRR O)**
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Marl (F10) **(LRR U)**
- ☐ Depleted Ochric (F11) **(MLRA 151)**
- ☐ Iron-Manganese Masses (F12) **(LRR O, P, T)**
- ☐ Umbric Surface (F13) **(LRR P, T, U)**
- ☐ Delta Ochric (F17) **(MLRA 151)**
- ☐ Reduced Vertic (F18) **(MLRA 150A, 150B)**
- ☐ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
- ☐ Anomalous Bright Loamy Soils (F20) **(MLRA 149A, 153C, 153D)**

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) **(LRR O)**
- ☐ 2 cm Muck (A10) **(LRR S)**
- ☐ Reduced Vertic (F18) **(outside MLRA 150A,B)**
- ☐ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
- ☐ Anomalous Bright Loamy Soils (F20) **(MLRA 153B)**
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☐ No ☑

Remarks:

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Maxwell Outfall City/County: Montgomery County Sampling Date: 08/23/2022

Applicant/Owner: Maxwell AFB State: AL Sampling Point: WL4

Investigator(s): Melanie Wiggins, Sarah Anderson Section, Township, Range: 3, 16N, 17E

Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): none Slope (%): 0

Subregion (LRR or MLRA): P, .133C Lat: 32.383628 Long: -86.337561 Datum: NAD83

Soil Map Unit Name: Consociations NWI classification: L1UBHh

Are climatic / hydrologic conditions on the site typical for this time of year? Yes [✔] No [ ] (If no, explain in Remarks.)

Are Vegetation [ ] Soil [ ] or Hydrology [ ] significantly disturbed? [ ] Are "Normal Circumstances" present? Yes [✔] No [ ]

Are Vegetation [ ] Soil [ ] or Hydrology [ ] naturally problematic? [ ] (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes [✔]	No [ ]	**Is the Sampled Area within a Wetland?** Yes [✔] No [ ]
Hydric Soil Present?	Yes [✔]	No [ ]	
Wetland Hydrology Present?	Yes [✔]	No [ ]	

Remarks:

Did not take sample of soil. In saturated area with prolonged high water table.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- [ ] Surface Water (A1)
- [ ] High Water Table (A2)
- [✔] Saturation (A3)
- [ ] Water Marks (B1)
- [ ] Sediment Deposits (B2)
- [ ] Drift Deposits (B3)
- [ ] Algal Mat or Crust (B4)
- [ ] Iron Deposits (B5)
- [ ] Inundation Visible on Aerial Imagery (B7)
- [✔] Water-Stained Leaves (B9)
- [ ] Aquatic Fauna (B13)
- [ ] Marl Deposits (B15) **(LRR U)**
- [ ] Hydrogen Sulfide Odor (C1)
- [✔] Oxidized Rhizospheres along Living Roots (C3)
- [ ] Presence of Reduced Iron (C4)
- [ ] Recent Iron Reduction in Tilled Soils (C6)
- [ ] Thin Muck Surface (C7)
- [ ] Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- [ ] Surface Soil Cracks (B6)
- [ ] Sparsely Vegetated Concave Surface (B8)
- [ ] Drainage Patterns (B10)
- [ ] Moss Trim Lines (B16)
- [ ] Dry-Season Water Table (C2)
- [✔] Crayfish Burrows (C8)
- [ ] Saturation Visible on Aerial Imagery (C9)
- [✔] Geomorphic Position (D2)
- [ ] Shallow Aquitard (D3)
- [✔] FAC-Neutral Test (D5)
- [ ] Sphagnum moss (D8) **(LRR T, U)**

Field Observations:

Surface Water Present? Yes [ ] No [✔] Depth (inches): _____

Water Table Present? Yes [ ] No [✔] Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes [✔] No [ ] Depth (inches): 4

Wetland Hydrology Present? Yes [✔] No [ ]

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Five Strata) – Use scientific names of plants.

Sampling Point: WL4

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1. Triadica sebifera	20	Y	FAC
2. American Sycamore	20	Y	FACW
3.			
4.			
5.			
6.			
	= Total Cover		

50% of total cover: 20 20% of total cover: 8

Sapling Stratum (Plot size:)			
1. Liquidambar styraciflua (Sweet Gum)	10	Y	FAC
2.			
3.			
4.			
5.			
6.			
	10 = Total Cover		

50% of total cover: 5 20% of total cover: 2

Shrub Stratum (Plot size:)			
1. Liquidambar styraciflua (Sweet Gum)	10	Y	FAC
2.			
3.			
4.			
5.			
6.			
	10 = Total Cover		

50% of total cover: 5 20% of total cover: 2

Herb Stratum (Plot size:)			
1. Leersia oryzoides (Rice Cut grass)	70	Y	OBL
2. Alternanthera philoxeroides	10	N	OBL
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	80 = Total Cover		

50% of total cover: 40 20% of total cover: 16

Woody Vine Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		

50% of total cover: 20% of total cover:

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	80	x 1 =	80
FACW species	20	x 2 =	40
FAC species	40	x 3 =	120
FACU species		x 4 =	
UPL species		x 5 =	
Column Totals:	140 (A)		240 (B)

Prevalence Index = B/A = 1.74

Hydrophytic Vegetation Indicators:

- ☐ 1 - Rapid Test for Hydrophytic Vegetation
- ☑ 2 - Dominance Test is >50%
- ☑ 3 - Prevalence Index is ≤3.0[1]
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Five Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes ☑ No ☐

Remarks: (If observed, list morphological adaptations below).

SOIL

Sampling Point: WL4

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

[2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Organic Bodies (A6) **(LRR P, T, U)**
- ☐ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
- ☐ Muck Presence (A8) **(LRR U)**
- ☐ 1 cm Muck (A9) **(LRR P, T)**
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Coast Prairie Redox (A16) **(MLRA 150A)**
- ☐ Sandy Mucky Mineral (S1) **(LRR O, S)**
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) **(LRR P, S, T, U)**
- ☐ Polyvalue Below Surface (S8) **(LRR S, T, U)**
- ☐ Thin Dark Surface (S9) **(LRR S, T, U)**
- ☐ Loamy Mucky Mineral (F1) **(LRR O)**
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Marl (F10) **(LRR U)**
- ☐ Depleted Ochric (F11) **(MLRA 151)**
- ☐ Iron-Manganese Masses (F12) **(LRR O, P, T)**
- ☐ Umbric Surface (F13) **(LRR P, T, U)**
- ☐ Delta Ochric (F17) **(MLRA 151)**
- ☐ Reduced Vertic (F18) **(MLRA 150A, 150B)**
- ☐ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
- ☐ Anomalous Bright Loamy Soils (F20) **(MLRA 149A, 153C, 153D)**

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) **(LRR O)**
- ☐ 2 cm Muck (A10) **(LRR S)**
- ☐ Reduced Vertic (F18) **(outside MLRA 150A,B)**
- ☐ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
- ☐ Anomalous Bright Loamy Soils (F20) **(MLRA 153B)**
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** ☐ **No** ☐

Remarks:

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Maxwell Outfall City/County: Montgomery County Sampling Date: 08/23/2022

Applicant/Owner: Maxwell AFB State: AL Sampling Point: UPL4

Investigator(s): MW, SB Section, Township, Range: 3, 16N, 17E

Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): none Slope (%): 5

Subregion (LRR or MLRA): Southern Coastal Plair Lat: 32.383628 Long: -86.337561 Datum: NAD83

Soil Map Unit Name: Wehadkee Silt Loam (Wb) NWI classification: L1UBHh

Are climatic / hydrologic conditions on the site typical for this time of year? Yes [✔] No [ ] (If no, explain in Remarks.)

Are Vegetation [ ] Soil [ ] or Hydrology [ ] significantly disturbed? [ ] Are "Normal Circumstances" present? Yes [✔] No [ ]

Are Vegetation [ ] Soil [ ] or Hydrology [ ] naturally problematic? [ ] (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes [ ]	No [✔]	**Is the Sampled Area within a Wetland?** Yes [✔] No [ ]
Hydric Soil Present?	Yes [ ]	No [✔]	
Wetland Hydrology Present?	Yes [ ]	No [✔]	

Remarks:

upland wooded area

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- [ ] Surface Water (A1)
- [ ] High Water Table (A2)
- [ ] Saturation (A3)
- [ ] Water Marks (B1)
- [ ] Sediment Deposits (B2)
- [ ] Drift Deposits (B3)
- [ ] Algal Mat or Crust (B4)
- [ ] Iron Deposits (B5)
- [ ] Inundation Visible on Aerial Imagery (B7)
- [ ] Water-Stained Leaves (B9)
- [ ] Aquatic Fauna (B13)
- [ ] Marl Deposits (B15) **(LRR U)**
- [ ] Hydrogen Sulfide Odor (C1)
- [ ] Oxidized Rhizospheres along Living Roots (C3)
- [ ] Presence of Reduced Iron (C4)
- [ ] Recent Iron Reduction in Tilled Soils (C6)
- [ ] Thin Muck Surface (C7)
- [ ] Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- [ ] Surface Soil Cracks (B6)
- [ ] Sparsely Vegetated Concave Surface (B8)
- [ ] Drainage Patterns (B10)
- [ ] Moss Trim Lines (B16)
- [ ] Dry-Season Water Table (C2)
- [ ] Crayfish Burrows (C8)
- [ ] Saturation Visible on Aerial Imagery (C9)
- [ ] Geomorphic Position (D2)
- [ ] Shallow Aquitard (D3)
- [ ] FAC-Neutral Test (D5)
- [ ] Sphagnum moss (D8) **(LRR T, U)**

Field Observations:

Surface Water Present?	Yes [ ]	No [✔]	Depth (inches):
Water Table Present?	Yes [ ]	No [✔]	Depth (inches):
Saturation Present? (includes capillary fringe)	Yes [ ]	No [✔]	Depth (inches):

Wetland Hydrology Present? Yes [ ] No [✔]

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

no hydrology present in upland

VEGETATION (Five Strata) – Use scientific names of plants.

Sampling Point: UPL4

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1. Acer negundo	40	Y	FAC
2. Pinus taeda	20	N	FAC
3. acer rubrum	10	N	FAC
4. Ligustrum sinense	10	N	FAC
5.			
6.			
	80 = Total Cover		
50% of total cover: 40	20% of total cover: 16		

Sapling Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
6.			
	= Total Cover		
50% of total cover:	20% of total cover:		

Shrub Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
6.			
	= Total Cover		
50% of total cover:	20% of total cover:		

Herb Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	= Total Cover		
50% of total cover:	20% of total cover:		

Woody Vine Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
50% of total cover:	20% of total cover:		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	80	x 3 =	240
FACU species	0	x 4 =	0
UPL species		x 5 =	
Column Totals:	80 (A)		240 (B)

Prevalence Index = B/A = 3

Hydrophytic Vegetation Indicators:

- ☐ 1 - Rapid Test for Hydrophytic Vegetation
- ☐ 2 - Dominance Test is >50%
- ☐ 3 - Prevalence Index is ≤3.0[1]
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Five Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes ☐ No ☑

Remarks: (If observed, list morphological adaptations below).

hydrophytic vegetation not present

SOIL

Sampling Point: UPL4

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

[2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Organic Bodies (A6) **(LRR P, T, U)**
- ☐ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
- ☐ Muck Presence (A8) **(LRR U)**
- ☐ 1 cm Muck (A9) **(LRR P, T)**
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Coast Prairie Redox (A16) **(MLRA 150A)**
- ☐ Sandy Mucky Mineral (S1) **(LRR O, S)**
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) **(LRR P, S, T, U)**
- ☐ Polyvalue Below Surface (S8) **(LRR S, T, U)**
- ☐ Thin Dark Surface (S9) **(LRR S, T, U)**
- ☐ Loamy Mucky Mineral (F1) **(LRR O)**
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Marl (F10) **(LRR U)**
- ☐ Depleted Ochric (F11) **(MLRA 151)**
- ☐ Iron-Manganese Masses (F12) **(LRR O, P, T)**
- ☐ Umbric Surface (F13) **(LRR P, T, U)**
- ☐ Delta Ochric (F17) **(MLRA 151)**
- ☐ Reduced Vertic (F18) **(MLRA 150A, 150B)**
- ☐ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
- ☐ Anomalous Bright Loamy Soils (F20) **(MLRA 149A, 153C, 153D)**

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) **(LRR O)**
- ☐ 2 cm Muck (A10) **(LRR S)**
- ☐ Reduced Vertic (F18) **(outside MLRA 150A,B)**
- ☐ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
- ☐ Anomalous Bright Loamy Soils (F20) **(MLRA 153B)**
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☐ No ☑

Remarks:

Appendix E. USFWS IPaC Report

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United States Department of the Interior

FISH AND WILDLIFE SERVICE
Alabama Ecological Services Field Office
1208 B Main Street
Daphne, AL 36526-4419
Phone: (251) 441-5181 Fax: (251) 441-6222
Email Address: alabama@fws.gov

In Reply Refer To: 08/15/2024 13:26:26 UTC
Project Code: 2023-0027070
Project Name: Maxwell AFB - New Force Main and Decommissioning of Maxwell Field Outfall

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

Project consultation requests may be submitted by mail or email (Alabama@fws.gov). **Ensure that the Project Code in the header of this letter is clearly referenced in any request for consultation or correspondence submitted to our office.**

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered

species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

https://www.fws.gov/sites/default/files/documents/endangered-species-consultation-handbook.pdf

Migratory Birds: In addition to responsibilities to protect threatened and endangered species under the Endangered Species Act (ESA), there are additional responsibilities under the Migratory Bird Treaty Act (MBTA) and the Bald and Golden Eagle Protection Act (BGEPA) to protect native birds from project-related impacts. Any activity, intentional or unintentional, resulting in take of migratory birds, including eagles, is prohibited unless otherwise permitted by the U.S. Fish and Wildlife Service (50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)). For more information regarding these Acts see https://www.fws.gov/program/migratory-bird-permit/what-we-do.

The MBTA has no provision for allowing take of migratory birds that may be unintentionally killed or injured by otherwise lawful activities. It is the responsibility of the project proponent to comply with these Acts by identifying potential impacts to migratory birds and eagles within applicable NEPA documents (when there is a federal nexus) or a Bird/Eagle Conservation Plan (when there is no federal nexus). Proponents should implement conservation measures to avoid or minimize the production of project-related stressors or minimize the exposure of birds and their resources to the project-related stressors. For more information on avian stressors and recommended conservation measures see https://www.fws.gov/library/collections/threats-birds.

In addition to MBTA and BGEPA, Executive Order 13186: *Responsibilities of Federal Agencies to Protect Migratory Birds*, obligates all Federal agencies that engage in or authorize activities that might affect migratory birds, to minimize those effects and encourage conservation measures that will improve bird populations. Executive Order 13186 provides for the protection of both migratory birds and migratory bird habitat. For information regarding the implementation of Executive Order 13186, please visit https://www.fws.gov/partner/council-conservation-migratory-birds.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. **Ensure that the Project Code in the header of this letter is clearly referenced with any request for consultation or correspondence about your project that you submit to our office.**

Attachment(s):

- Official Species List

OFFICIAL SPECIES LIST

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

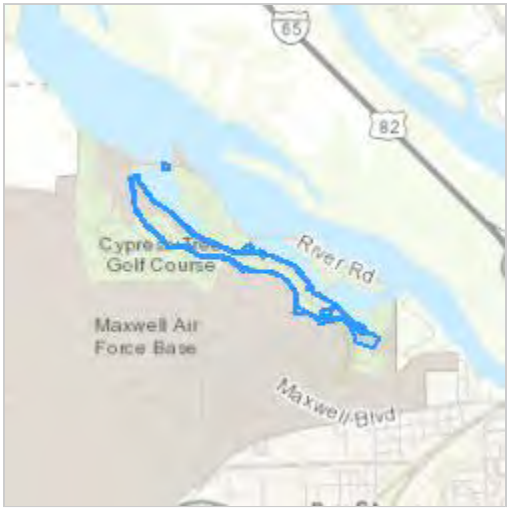
This species list is provided by:

Alabama Ecological Services Field Office
1208 B Main Street
Daphne, AL 36526-4419
(251) 441-5181

PROJECT SUMMARY

Project Code: 2023-0027070
Project Name: Maxwell AFB - New Force Main and Decommissioning of Maxwell Field Outfall
Project Type: Utility Infrastructure Maintenance
Project Description: Infrastructure projects
Project Location:

The approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@32.3956216,-86.35453846688247,14z



Counties: Montgomery County, Alabama

ENDANGERED SPECIES ACT SPECIES

There is a total of 5 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

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1. 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.

MAMMALS

NAME	STATUS
Tricolored Bat *Perimyotis subflavus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/10515	Proposed Endangered

REPTILES

NAME	STATUS
Alligator Snapping Turtle *Macrochelys temminckii* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/4658	Proposed Threatened

CLAMS

NAME	STATUS
Southern Clubshell *Pleurobema decisum* There is **final** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/6113	Endangered

INSECTS

NAME	STATUS
Monarch Butterfly *Danaus plexippus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9743	Candidate

FLOWERING PLANTS

NAME	STATUS
Georgia Rockcress *Arabis georgiana* There is **final** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/4535	Threatened

CRITICAL HABITATS

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

YOU ARE STILL REQUIRED TO DETERMINE IF YOUR PROJECT(S) MAY HAVE EFFECTS ON ALL ABOVE LISTED SPECIES.