



ISSUE SUMMARY AND APPROVAL PAGE

Project No. A13766.119
Transmittal No. SL-XEN-2024-135
August 20, 2024

X-energy LLC
Proposed Long Mott Ecological Resources Technical Report
August 2024

This Project Long Mott Ecological Resources Technical Report, Rev. 1 for the proposed site at the Union Carbide Corporation Seadrift Operations site (the Dow Chemical Corporation Facility) in Seadrift, Calhoun County, Texas has been reviewed for compliance with applicable technical and contractual documents and is approved for use.

The report was prepared by WSP USA Environment and Infrastructure, Inc. (WSP) under WSP project number 325223319.

Document No.	Rev.	Purpose	Date	Sections Affected
TC#: 009793 WSPDC#: WSP-XES-09	1	Updated with Spring 2024 aquatics survey data	08/05/2024	All

Reviewed by **Julianna Crumlish**  Digitally signed by Julianna Crumlish
Date: 2024.08.20 11:51:31 -05'00'

Julianna Crumlish
Senior Environmental Associate

Approved by  Digitally signed by Greg Boswell
Date: 2024.08.20 13:26:06 -04'00'

Greg Boswell
Consultant I

Project Long Mott Ecological Resources Technical Report

Revision 1

Prepared for:



X-energy, LLC

Submitted to:



Sargent & Lundy, LLC

Prepared by:



WSP USA Environment & Infrastructure Inc.
15933 Clayton Road
Suite 110
Ballwin, Missouri 63011

[WSPDC# WSP-XES-09](#)

August 2024



REPORT APPROVAL

Project Name: Project Long Mott Licensing Project
Project Number: 325223319
Site: Long Mott
Site Location: Calhoun County, Texas

We have reviewed and approve of the Ecological Resources Technical Report for the above referenced project. Changes to this technical memorandum shall be documented in writing and approved.

WSP Subject
Matter Technical
Lead


Matthew Basler

Date: 8/5/2024

WSP ER Project
Manager


William Elzinga

Date: 8/5/2024



REVISION LOG

Project Name: Project Long Mott Licensing Project

Project Number: 325223319

Site: Long Mott

Site Location: Calhoun County, Texas

Revision Number	Revision Date	Nature of Revision	Approved by
0	3/25/2024	Issued for use	W. Elzinga
1	8/5/2024	Inclusion of spring 2024 aquatics survey data and updated 2024 IPac/TPWD lists	W. Elzinga



TABLE OF CONTENTS

REVISION LOG ii

Abbreviations and Acronyms viii

1 Introduction 9

1.1 Project Site 9

1.2 Purpose 10

1.3 Regulatory Basis 10

1.4 Scope 10

2 Methods and Technical Approach 12

2.1 Desktop Analysis 12

2.2 Terrestrial Resources 12

2.2.1 Vegetation Assessment 12

2.2.2 Terrestrial Wildlife Assessment 12

2.3 Aquatic Resources 14

2.3.1 Fish Sampling 14

2.3.2 Macroinvertebrate Sampling 14

2.4 Important Species and Habitats 14

3 Results 16

3.1 Terrestrial Resources 16

3.1.1 Vegetation 16

3.1.2 Wildlife 28

3.2 Aquatic Resources 41

3.2.1 Fish 41

3.3 Important Species and Habitats 51

3.3.1 State and Federally Listed Species 51

3.3.2 Additional Important Species and Habitats 56



4	Summary	59
5	References	61



T A B L E S

Table 3-1 Land Cover within the Project Long Mott Project Site and Vicinity	16
Table 3-2 Vascular Plant Species of the Project Long Mott Project Site	18
Table 3-3 Avifaunal Species Observed in or near the Project Long Mott Project Site, Winter 2023	31
Table 3-4 Avifaunal Species Observed in or near the Project Long Mott Project Site, Spring 2023	33
Table 3-5 Avifaunal Species Observed in or near the Project Long Mott Project Site, Summer 2023	35
Table 3-6 Avifaunal Species Observed in or near the Project Long Mott Project Site, Fall 2023	37
Table 3-7 Mammal Species Observed in or near the Project Long Mott Project Site, Winter 2023	39
Table 3-8 Mammal Species Observed in or near the Project Long Mott Project Site, Spring 2023	39
Table 3-9 Mammal Species Observed in or near the Project Long Mott Project Site, Summer 2023	39
Table 3-10 Mammal Species Observed in or near the Project Long Mott Project Site, Fall 2023	40
Table 3-11 Herpetofauna Species Observed in or near the Project Long Mott Project Site, Spring 2023	40
Table 3-12 Herpetofauna Species Observed in or near the Project Long Mott Project Site, Summer 2023	41
Table 3-13 Herpetofauna Species Observed in or near the Project Long Mott Project Site, Fall 2023.....	41
Table 3-14 Fish Species Observed in or near the Project Long Mott Project Site, Summer 2023	42
Table 3-15 Fish Species Observed in or near the Project Long Mott Project Site, Fall 2023	43
Table 3-16 Fish Species Observed in or near the Long Mott Project Site, Winter 2024.....	44
Table 3-17 Fish Species Observed in or near the Long Mott Project Site, Spring 2024.....	46
Table 3-18 Macroinvertebrates Encountered in the Vicinity of the Long Mott Project Site by Water Body, Fall 2023	47
Table 3-19 Macroinvertebrates Encountered in the Vicinity of the Long Mott Project Site by Water Body, Spring 2024.....	49
Table 3-20 Shellfish Species Encountered in Aquatic Ecology Sampling	51



Table 3-21 Protected Species Potentially Occurring within or near the Project Long Mott Project Site	51
Table 3-22: Species for which Essential Fish Habitat Exists in Guadalupe Bay within the Vicinity of the Long Mott Project Site	56



FIGURES

Figure 1-1 Project Site

Figure 2-1 Land Cover within the Project Area

Figure 2-2 Ecological Resources Survey Routes

Figure 2-3 Aquatic Ecology Resource Survey Locations

Figure 3-1 Land Cover within the Project Vicinity

Figure 3-2 Delineated WOTUS Features within the Project Area

APPENDICES

Appendix A Figures

Appendix B Photographic Log



ABBREVIATIONS AND ACRONYMS

CFR	Code of Federal Regulations
EFH	Essential Fish Habitat
EIS	Environmental Impact Statement
ER	Environmental Report
ESA	Endangered Species Act
GBRA	Guadalupe-Blanco River Authority
IPaC	Information for Planning and Conservation
NEPA	National Environmental Policy Act
NLCD	National Landcover Database
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
NRC	U.S Nuclear Regulatory Commission
Project Site	Project Long Mott Site
QAPD	Quality Assurance Project Document
RPCT	Rare Plant Communities of Texas
SDO	Dow Seadrift Operations
SOP	Standard Operating Procedure
TPWD	Texas Parks and Wildlife Department
TCEQ	Texas Commission on Environmental Quality
µm	micrometer
USFWS	U.S. Fish and Wildlife Service
WOTUS	Waters of the U.S.
WSP	WSP USA Environment & Infrastructure Inc.
X-energy	X energy, LLC

1 Introduction

WSP USA Environment & Infrastructure Inc. (WSP), was contracted by X-energy, LLC (X-energy) to perform a series of studies in support of the Environmental Report (ER) for the Proposed Project Long Mott. Project Long Mott is applying for a construction permit under Title 10 of the Code of Federal Regulations (CFR) Part 50 to construct a 4-unit Xe-100 plant configured for cogeneration of steam and electricity. The U.S Nuclear Regulatory Commission (NRC) is expected to prepare an Environmental Impact Statement (EIS) in support of the NRC's decision to issue a license for the proposed facility.

The technical analyses summarized in this report were conducted in support of the preparation of the ER for Project Long Mott. This report summarizes analyses and measurements to document terrestrial and aquatic vegetation and wildlife at the proposed facility. Field investigations conducted within the Project Site were performed in accordance with the requirements of the following guiding documents:

Project Long Mott Environmental Report, Standard Operating Procedures for Field Data Collection Revision 2 (WSP 2023a).

Project Long Mott Environmental Report, Quality Assurance Project Document Revision 2. (WSP 2023b).

WSP field studies included in the ER standard operating procedures intend to sufficiently characterize baseline conditions for certain resources to allow for a complete and thorough environmental review relevant to the proposed action, as outlined in NUREG-1555 and Regulatory Guide 4.2, Revision 3 - "Preparation of Environmental Reports for Nuclear Power Stations".

1.1 Project Site

The Project Long Mott Site (Project Site) consists of approximately 1,548 acres in Calhoun County, Texas and is adjacent to the existing Dow Seadrift Operations (SDO) site (Figure 1-1). The Project Site is located within the Northern Humid Gulf Coastal Prairies Ecoregion within the Western Gulf Coastal Plain of southeast Texas. Northern Humid Gulf Coastal Prairies include gently sloping coastal plain underlain by quaternary-aged deltaic clays, silts, and sands. Originally, dominant vegetation consisted of maritime woodlands and grasslands supporting switchgrass, brownseed paspalum, little bluestem, yellow Indiangrass, and gulf muhly. However, much of the area is currently dominated by farmland (Griffith *et al.*, 2007).

Much of the Project Site was in corn production at the time of the field review. The western portion of the Project Site included areas within the existing Dow SDO site, and the eastern portion of the Project Site consists of cultivated crops.

NUREG-1555 defines "vicinity" as a radius of 6 miles from the site, and "Region" as a 50-mile radius of the site, excluding the "the site and vicinity." For the purposes of the field ecology investigations and the resulting ER, the vicinity constitutes the area within a 6-mile radius from

the site center point, and the region will consist of the area within a 50-mile radius from the site center point.

1.2 Purpose

The purpose of this report is to summarize the methodologies and results of the studies undertaken in the Project Site and Project Vicinity in conjunction with the preparation of the ER for Project Long Mott. Specifically, surveys were conducted to document terrestrial vegetation and wildlife, including threatened and endangered species and the potential occurrence of their preferred habitats, resident plant communities, and wildlife populations (including important species and their habitats).

1.3 Regulatory Basis

The National Environmental Policy Act (NEPA) requires federal agencies to integrate environmental values into their decision-making processes by considering the environmental impacts of their proposed actions and reasonable alternatives to those actions. The NRC Staff is required by portions of 10 CFR 51 (Environmental Protection Regulations for Domestic Licensing and Related Regulatory Functions) Subpart A (NEPA – Regulations Implementing Section) to assess project environmental impacts.

Project Long Mott is applying for a Construction Permit from the NRC for construction and operation of the proposed commercial Xe-100 small Modular Reactor Regulatory Guide 4.2 Revision 3. Revision 3 provides guidance to applicants for the format and content of ERs that are submitted as part of an application for a permit, license, or other authorization to site, construct, and/or operate a new nuclear power plant. NUREG-1555, “Environmental Standard Review Plan: Standard Review Plans for Environmental Reviews for Nuclear Power Plants”, is used by applicants to further inform the content of the ER and provides the criteria used by the NRC staff for reviewing ERs submitted with nuclear power plant license applications. Pursuant to the NRC’s review of the ER, NRC may prepare an EIS in support of the agency’s decision to issue a permit for the proposed facility.

1.4 Scope

Ecological work elements performed are required to satisfy regulatory requirements for documenting and characterizing environmental conditions of the Project Area and Project Vicinity, and in evaluating potential construction, operational, and decommissioning phase effects.

Work conducted consisted of the collection of seasonal ecological field data descriptive of threatened and endangered species and the potential occurrence of their preferred habitats, resident plant communities and wildlife populations (including important species and habitats as defined in NUREG-1555 Section 2.4). The results of the field surveys will be used to characterize terrestrial and aquatic wildlife and terrestrial vegetative communities in the Project Site and Project Vicinity to provide a basis for evaluating potential project impacts due to construction and operation of Project Long Mott.



This report presents the findings of terrestrial field surveys from winter, spring, summer, and fall 2023. To support the timely submittal of the ER, aquatic ecology field surveys included in Revision 0 of this report were findings from summer 2023 and a portion of fall 2023. This version, Revision 1, includes the remaining results from fall 2023, winter 2024, and spring 2024 aquatic ecology surveys.

2 Methods and Technical Approach

2.1 Desktop Analysis

Prior to the terrestrial ecological field surveys, biologists reviewed existing literature including the Victoria Early Site Permit ER, and information from the U.S. Fish and Wildlife Service (USFWS) Information for Planning and Conservation (IPaC) system, Texas Parks and Wildlife Department (TPWD) Calhoun County rare species list, USFWS National Wetland Inventory, National Oceanic and Atmospheric Administration (NOAA), and National Landcover Database (NLCD).

2.2 Terrestrial Resources

2.2.1 Vegetation Assessment

The vegetation assessment included pedestrian surveys to record plant species encountered in the Project Site, characterize plant communities present, and verify land cover. To account for seasonal variability of the vegetation within the site, surveys were conducted in the spring (May 22-25, 2023), summer (August 15-17, 2023), and fall (November 7-8, 2023). No vegetation surveys were conducted during the dormant winter months.

In order to effectively characterize plant communities in the Project Site, the relative abundance of each species occurring within each distinctive NLCD landcover type was assessed. Within individual landcover types, each unique plant community observed was described. Plant community descriptions were based on dominant and characteristic species observed. Landcover types and parcels assessed as part of the vegetation assessment are illustrated in Figure 2-1. Relative abundance of each species recorded through a terrestrial meandering approach within the Project Site was assessed qualitatively. The terrestrial meandering approach provided characterization of plant communities within available on-site habitats. Plant species abundance was visually scored for each vegetation layer (overstory, midstory, herbaceous, woody vine) based on the professional judgement of the field biology team using the following commonly used relative abundance:

- A: abundant (the dominant plants throughout the study area)
- C: common (locally abundant or frequently encountered)
- O: occasional (occasionally encountered, or locally common but absent or infrequent across much of the study area)
- U: uncommon (infrequently encountered)
- R: rare (very few plants encountered)

Qualitative characteristics of habitats near the Project Site and their associated flora were also recorded opportunistically via windshield surveys where accessible. Particular attention was given to identifying important species and habitats as defined in NUREG-1555 Section 2.4.

2.2.2 Terrestrial Wildlife Assessment

Seasonal wildlife surveys are prescribed herein to document bird, mammal, and herpetofauna use of the Project Site to satisfy NUREG-1555 and NRC Regulatory Guide 4.2 requirements.

The desktop analysis conducted prior to field investigations identified twenty-two migratory birds of conservation concern that have the potential to occur within the Project Site: American golden plover (*Pluvialis dominica*), bald eagle (*Haliaeetus leucocephalus*), black skimmer (*Rynchops niger*), chimney swift (*Chaetura pelagica*), dickcissel (*Spiza americana*), Forster's tern (*Sterna forsteri*), gull-billed tern (*Gelochelidon nilotica*), king rail (*Rallus elegans*), least tern (*Sternula antillarum antillarum*), lesser yellowlegs (*Tringa flabipes*), long-billed curlew (*Numenius americanus*), marbled godwit (*Limosa fedoa*), painted bunting (*Passerina ciris*), pectoral sandpiper (*Calidris melanotos*), prairie loggerhead shrike (*Lanius ludovicianus excubitorides*), prothonotary warbler (*Protonotaria citrea*), reddish egret (*Egretta rufescens*), sandwich tern (*Thalasseus sandvicensis*), swallow-tailed kite (*Elanoides forficatus*), short-billed dowitcher (*Limnodromus griseus*), whimbrel (*Numenius phaeopus hudsonicus*), and willet (*Tringa semipalmata*) (USFWS, 2024). Of these migratory birds of conservation concern, bald eagle, chimney swift, dickcissel, lesser yellowlegs, painted bunting, prothonotary warbler, and short-billed dowitcher were previously documented in the vicinity as part of the Victoria Early Site Permit ER (Exelon, 2012) and are likely to inhabit or use nearby habitats of the Project Site during migration and/or the breeding season. As such, these species and their habitat requirements have been given special consideration during the implementation of seasonal field surveys in the Project Site.

To document seasonal wildlife use of the Project Site and the immediate Project Vicinity, seasonal pedestrian surveys were conducted during winter (February 13-15, 2023), spring (May 22-25, 2023), summer (August 15-17, 2023), and fall (November 6-9, 2023). Pedestrian surveys were conducted using a semi-quantitative meandering approach along an established walking route to record encountered terrestrial faunal species presence (visual, audible, or other signs such as tracks, scat, nests) within each of the on-site habitats (Figure 2-2). The established walking route was selected to document wildlife use across the site within each of the on-site habitats near proposed construction activities. A general pedestrian site reconnaissance was also conducted each season for other portions of the Project Site outside of the established walking routes. The field studies for wildlife included surveys for avifauna, mammals, and herpetofauna.

Additionally, a semi-quantitative roadside survey approach was used to make observations of terrestrial faunal species along prescribed stops of existing roads within the Project Vicinity (Figure 2-2). At each of the 41 stops, field biologists recorded birds observed (visible and audible cues) during a 3-minute period for two mornings per seasonal survey period with observations initiated within one hour of sunrise each day. The distances between prescribed stops were generally 0.5 miles with some stopping points focused on potential habitat features (i.e., vegetation changes, stream corridors, waterbodies) and ranged from 1,701 to 4,108 feet. Notable wildlife travel corridors (if any) were also documented.

Incidental observations of wildlife species and habitats outside the Project Site were also recorded opportunistically through general reconnaissance within the vicinity. Climatic conditions for each survey event were recorded, such as estimated wind intensity (no wind, slight, gusty, strong wind), temperature (degrees Fahrenheit), and cloud cover.

2.3 Aquatic Resources

Seasonal aquatic surveys were conducted to document aquatic resources and associated ecological communities at the Project Site and in the Project Vicinity. Fish surveys were conducted during summer (August 15 to 17) and fall (November 6 to 10) 2023 as well as winter (January 9 to 11) and spring (May 21 to 23) 2024. Macroinvertebrate surveys were conducted during fall (November 6 to 10) 2023 and spring (May 21 to 23) 2024. Sampling was conducted at locations identified in Figure 2-3.

2.3.1 Fish Sampling

Fish sampling occurred at nine aquatic ecology sampling locations indicated in Figure 2-3. Semi-qualitative seining or backpack electrofishing techniques were employed for fish sampling in wadable streams. In those locations that are non-wadable or in which seining or backpack electrofishing was not possible, boat electrofishing methodology was employed.

2.3.2 Macroinvertebrate Sampling

Qualitative macroinvertebrate samples were collected at the nine aquatic ecology sampling locations using a D-frame kicknet with 500 micrometer (μm) mesh or an Ekman or petite ponar dredge, as determined by field conditions. Samples were field sieved through a 500 μm mesh and preserved for laboratory identification. Macroinvertebrate sampling was conducted in fall 2023 and spring 2024.

2.4 Important Species and Habitats

NUREG-1555 defines important species as:

- Species listed as threatened or endangered in 50 CFR 17.11 (fish and wildlife) and 50 CFR 17.12 (plants) by the USFWS.
- Species proposed for listing as threatened or endangered or is a candidate for listing in the most current list of such species as published in the *Federal Register*.
- Species listed as threatened, endangered, or other species of concern by the State in which the proposed facility is located.
- Commercially or recreationally valuable species.
- Species essential to the maintenance and survival of rare or commercially or recreationally valuable species.
- Species critical to the structure and function of local terrestrial ecosystems.
- Species that could serve as biological indicators to monitor the effects of the facilities on the terrestrial environment.

NUREG-1555 defines important habitats as:

- Wildlife sanctuaries, refuges, or preserves.
- Habitats identified by State or Federal agencies as unique, rare, or of priority for protection.
- Wetlands (Executive Order 11990), floodplains (Executive Order 11988), or other resources specifically protected by Federal regulations or Executive Orders.



-
- Land areas identified as “critical habitat” for species listed as threatened or endangered by the USFWS.

Based on these definitions, these species can include those that are popular for hunting and fishing, the main predators and prey of those species, and other species that are sensitive to changes in the environment. During the pedestrian surveys, any observations of such plant or wildlife species considered important and the habitat that supports them were noted.

A desktop analysis (see Section 2.1.2) was performed prior to field surveys to identify important species and habitats that may be present in the Project Site. These include state and federal listed species and critical habitats in addition to the NUREG-1555 defined important species and habitats identified above.



3 Results

3.1 Terrestrial Resources

3.1.1 Vegetation

Results of supplemental field studies are used in part to characterize the assemblage of terrestrial plant species and to aid in the identification of federally listed threatened or endangered species or Texas-listed threatened, endangered, or special concern species potentially occurring within and in proximity to the Project Site.

The land cover in the approximately 1,548-acre Project Site is characterized predominantly by cultivated crops (730 acres), which is the most prevalent land cover type, followed by herbaceous (428 acres), developed, medium intensity land (192 acres), and shrub-scrub (91 acres) (Table 3-1 and Figure 2-1). As depicted on Figure 3-1 and Table 3-1, the NLCD indicates that the most prevalent land cover type found within the Project Vicinity is cultivated crops (34,863 acres), followed by hay/pasture (19,496 acres), open water (11,567 acres), and emergent herbaceous wetlands (9,716 acres). The NLCD mapped landcover within the 6-mile Project Vicinity, as identified in Figure 3-1, was ground-verified utilizing drive-by and selected pedestrian surveys.

The dominant land cover type within the Project Site is cultivated crops (regularly planted in corn), which comprise the majority of lands within the interior of the site. These areas lack natural vegetation, except for agricultural weeds with some resistance to herbicides and an affinity for disturbance which are typically only found along the field margins. Herbaceous lands, which are the next most prevalent landcover, are a mix of pasture lands, infrequently maintained old fields, and maintained turfgrass found around the developed SDO Property, roadsides, and along canal levees. Vegetation within on-site herbaceous lands is dominated by non-native old world bluestem species (*Dichanthium* spp. and *Bothriochloa ischaemum*) and Bermuda grass (*Cynodon dactylon*). Developed, medium intensity lands are found within the SDO Property and are largely unvegetated except for small patches of maintained Bermuda grass turf. Shrub-scrub is typically found along fencelines or in heavily grazed cattle and goat pastures and includes species typical of Texas-Louisiana Coastal Prairie (NatureServe 2022b) systems where natural disturbance regimes have been disrupted and non-native species have invaded.

Table 3-1
Land Cover within the Project Long Mott Project Site and Vicinity

Land Cover Class	Project Site ^(a) (acres)	6-mile Vicinity ^(b) (acres)
Barren Land		123.0
Deciduous Forest	0.5	281.3
Herbaceous	428.1	352.5
Evergreen Forest	0.7	426.6
Developed, High Intensity		430.8



Land Cover Class	Project Site^(a) (acres)	6-mile Vicinity^(b) (acres)
Woody Wetlands	3.3	479.0
Developed, Medium Intensity ^(c)	192.1	572.4
Mixed Forest		754.8
Developed, Low Intensity		1,159.8
Developed, Open Space		1,832.5
Shrub/Scrub	91.1	2,886.2
Emergent Herbaceous Wetlands	23.5	9,715.7
Open Water	78.5	11,566.7
Hay/Pasture		19,496.2
Cultivated Crops	730.3	34,862.7
Total	1,548.1	84,940.2

- a) Source: NLCD data (Dewitz, 2021) modified based on field observations.
- b) Source: NLCD data (Dewitz, 2021).
- c) Medium Intensity Developed land cover types occur in the Project Area but have no associated vegetation.

The plant communities found throughout the Project Site are common and well represented throughout the local region. These communities contain substantial populations of non-native plant species and successional communities, which indicate significant past anthropogenic disturbance, non-native species invasion, and a disruption to natural disturbance patterns (i.e., fire). Vegetation in the Project Site is contained within the Texas-Louisiana Coastal Prairie (CES203.550) (NatureServe 2022b) ecological system concept. This system is typical of the Pleistocene aged Beaumont Formation which underlies the local region, and in its natural state, is tall grass prairie. While remnant indicator species of intact coastal prairie structure remain in some cases within the Project Site to a very limited extent, existing vegetation reflects significant human-driven land use change and habitat degradation. While significantly disturbed and invaded by non-native species, the rectangular pasture south of the railyard in the east portion of the Project Site represents the most intact natural vegetation community on-site (Figure 2-1).

Vegetation descriptions are contextualized within NLCD land cover types of the Project Site modified based on field observations (Table 3-1). Representative photographs of vegetation communities are included in Appendix B. Species observed during the pedestrian surveys are summarized in Table 3-2. Qualitative descriptions of plant communities are included below, including dominant (abundant or common relative abundance) species occurring in any of the strata (tree, shrub, and herb layers).



**Table 3-2
Vascular Plant Species of the Project Long Mott Project Site**

Scientific Name	Common Name	Relative Abundance ^(a) within Landcover Types ^(b)							Project Site Overall
		1	2	3	4	5	6	7	
Tree Layer									
<i>Celtis laevigata</i>	sugarberry	C			R	C	U		O
<i>Fraxinus berlandieriana</i>	Mexican ash						R		R
<i>Gleditsia triacanthos</i>	honey locust					U			R
<i>Melia azerbach</i>	Chinaberry				U	R			R
<i>Prosopis glandulosa</i>	honey mesquite			U		U			U
<i>Quercus fusiformis</i>	live oak							U	U
<i>Salix interior</i>	sandbar willow						U		R
<i>Salix nigra</i>	black willow						U		U
<i>Triadica sebifera</i>	Chinese tallow								R
<i>Vachellia famesiana</i>	huisache				O				U
Shrub Layer									
<i>Baccharis halimifolia</i>	groundseltree				U	O	U	U	O
<i>Broussonetia papyrifera</i>	paper mulberry						U		R
<i>Callicarpa americana</i>	beautyberry					R			R
<i>Celtis ehrenbergia</i>	spiny hackberry					R			R
<i>Celtis laevigata</i>	sugarberry	C			R	C	U		O
<i>Cephalanthus occidentalis</i>	buttonbush						R		R
<i>Forestiera angustifolia</i>	Texas swamp privet					U	U		R
<i>Gleditsia triacanthos</i>	honey locust					U			R
<i>Ilex decidua</i>	possumhaw						R		R
<i>Ilex vomitoria</i>	yaupon					C			C
<i>Melia azerbach</i>	Chinaberry				R				R
<i>Morus alba</i>	white mulberry						U		R
<i>Prosopis glandulosa</i>	honey mesquite				U				U
<i>Quercus fusiformis</i>	live oak								O
<i>Rosa bracteata</i>	McCartney rose	C	O	O	A		U	C	A
<i>Salix interior</i>	sandbar willow						U		R
<i>Salix nigra</i>	black willow						U		U
<i>Sideroxylon lanuginosum</i>	gum bumelia				U				R
<i>Smilax bona-nox</i>	saw greenbriar	U							U
<i>Smilax rotundifolia</i>	common greenbriar	U	O						U



Scientific Name	Common Name	Relative Abundance ^(a) within Landcover Types ^(b)							Project Site Overall
		1	2	3	4	5	6	7	
<i>Toxicodendron radicans</i>	poison ivy					U			R
<i>Triadica sebifera</i>	Chinese tallow			R		O			U
<i>Ulmus crassifolia</i>	cedar elm				R				R
<i>Vachellia farnesiana</i>	huisache			O	O	R		U	O
<i>Zanthoxylum clava-herculis</i>	Hercules' club			R	R				R
<i>Zanthoxylum fagara</i>	lime prickly ash			R					R
Herbaceous Layer									
<i>Agalinis heterophylla</i>	prairie false foxglove				U				U
<i>Agalinis strictifolia</i>	stiffleaf false foxglove			R					R
<i>Amaranthus palmeri</i>	Palmer amaranth			R					R
<i>Ambrosia psilostachya</i>	western ragweed	O		O	U		O		O
<i>Ampelopsis arborea</i>	peppervine					A			U
<i>Amphichayris dracunculoides</i>	prairie broomweed			R					R
<i>Anagallis arvensis</i>	false pimpernell			U					R
<i>Andropogon glomeratus</i>	bushy bluestem			U		U		U	U
<i>Aristida oligantha</i>	prairie three awn			U					R
<i>Asclepias viridis</i>	green antelopehorn			U					R
<i>Baccharis halimifolia</i>	groundseltree	O			O		C		O
<i>Bacopa monnieri</i>	water hyssop					C		U	O
<i>Borrchia frutescens</i>	sea oxeye					U			U
<i>Bothriochloa bladhii</i>	Caucasian bluestem			R					U
<i>Bothriochloa ischaemum</i>	yellow bluestem			O	R				U
<i>Bothriochloa laguroides</i>	silver bluestem			U	U				U
<i>Bothriochloa longipaniculata</i>	longspike beardgrass			O	R			U	U
<i>Bouteloua rigidiseta</i>	Texas grama			U					U
<i>Bromus catharticus</i>	rescuegrass			O					U
<i>Callicarpa americana</i>	beautyberry				R				R
<i>Callirhoe involucrata</i>	winecup			U					U
<i>Calyptocarpus vialis</i>	straggler daisy			U					U
<i>Caperonia palustris</i>	Texasweed			R		U			U
<i>Cardiospermum halicacabum</i>	balloon vine			U		O			U
<i>Carex tetrastachya</i>	Britton's sedge			U					R
<i>Chenopodium album</i>	lambsquarters			R					R
<i>Chloris canterae</i>	Paraguayan windmill grass				U				U
<i>Chloris cucullata</i>	hooded windmill grass	O		U					U



Scientific Name	Common Name	Relative Abundance ^(a) within Landcover Types ^(b)							Project Site Overall
		1	2	3	4	5	6	7	
<i>Chromolaena odorata</i>	blue mistflower			U					R
<i>Cirsium horridulum</i>	yellow thistle				R				R
<i>Cooperia</i> sp.					R				R
<i>Coreopsis tinctoria</i>	plains coreopsis	C							O
<i>Croton lindheimeri</i>	Woolly croton	O		C					O
<i>Croton monanthogynus</i>	prairie tea				U	O			U
<i>Cucumis melo</i>	musk melon						R		U
<i>Cyclosporum leptophyllum</i>	marsh parsley				R				R
<i>Cynanchum racemosum</i>	talayote				R				U
<i>Cynodon dactylon</i>	scutch				R		C	C	C
<i>Cyperus articulatus</i>	jointed flatsedge				U				U
<i>Cyperus entrerianus</i>	deeprooted sedge				U		O		U
<i>Cyperus retrorsus</i>	pine barren flatsedge				U		U		U
<i>Cyperus rotundus</i>	purple nutsedge				R				R
<i>Cyperus virens</i>	green flatsedge				U		U		U
<i>Diaperia verna</i>	spring pygmy cudweed					R			R
<i>Dichanthium annulatum</i>	Kleberg's bluestem		C		A	A			A
<i>Dichanthium aristatum</i>	angleton grass		U		C	C		O	C
<i>Dichanthium sericeum</i>	Queensland bluegrass				R				R
<i>Dichondra</i> sp.					R				R
<i>Dinebra nealleyi</i>	Nealley's sprangletop						R		R
<i>Dinebra panicea</i>	mucronate sprangletop						R		R
<i>Distichlis spicata</i>	inland saltgrass				U		O	U	U
<i>Dysphania pumilo</i>	clammy goosefoot				R				R
<i>Eleocharis cellulosa</i>	Gulf Coast spikerush						O		U
<i>Eleocharis montevidensis</i>	sand spikerush				U		O		O
<i>Elymus virginicus</i>	Virginia wildrye				R			A	R
<i>Eriochloa punctata</i>	Louisiana cupgrass				R		R		R
<i>Eryngium hookeri</i>	Hooker's eyngo				U		U		U
<i>Eupatorium serotinum</i>	late thoroughwort		U		U				U
<i>Euthamia gymnospermoides</i>	Texas goldenrod								R
<i>Evolvulus sericeus</i>	dwarf silver morning glory			R	R				R
<i>Fimbristylis puberula</i>	hairy fimbry				R				R
<i>Fraxinus berlandieriana</i>	Mexican ash						R		U
<i>Galium tinctorium</i>	stiff marsh bedstraw				R				R
<i>Gomphrena nealleyi</i>	Nealley's globe amaranth				U				R



Relative Abundance^(a) within Landcover Types^(b)

Scientific Name	Common Name	1	2	3	4	5	6	7	Project Site Overall
<i>Helenium amarum</i>	bitterweed	U							O
<i>Helianthus annuus</i>	annual sunflower				U	U			U
<i>Heliotropium curassavicum</i>	salt heliotrope				O		R		R
<i>Herbertia lahue</i>	prairie nymph								U
<i>Hibiscus laevis</i>	halberleaf rosemallow				R	U	U		U
<i>Hordeum pusillum</i>	little barley						R		R
<i>Ipomoea heptaphylla</i>	Wright's morning glory					R	U		U
<i>Iva angustifolia</i>	narrowleaf marshelder				R	U	O		O
<i>Iva annua</i>	sumpweed				U	U			R
<i>Juncus interior</i>	inland rush				U	U			U
<i>Juncus marginatus</i>	grassleaf rush				U	U			U
<i>Kyllinga odorata</i>	fragrant spikeweed				U	U			R
<i>Lantana x strigocamara</i>	common lantana				R	U	R		U
<i>Leersia monandra</i>	bunch cutgrass					R			R
<i>Lepidium virginicum</i>	Virginia pepperweed				U	U			U
<i>Limnoscadium pumilum</i>	prairie dogshade				U	U			R
<i>Linum berlandieri</i>	Berlandier's yellow flax				U	U			U
<i>Ludwigia peploides</i>	floating primrose willow				U	U			R
<i>Lycium carolinianum</i>	Carolina wolfberry				U	U	R		R
<i>Lythrum alatum</i>	winged loosestrife				U	U	O		O
<i>Lythrum californicum</i>	California loosestrife				R				R
<i>Malachra capitata</i>	yellow leafbract						U	U	U
<i>Malviscus drummondii</i>	Turk's cap								R
<i>Marsilea sp.</i>					U				R
<i>Mecardonia procumbens</i>	baby jump-up				R				R
<i>Melochia pyramidata</i>	pyramidflower				U	U			R
<i>Mimosa strigilosa</i>	powderpuff				R				R
<i>Monarda punctata</i>	spotted beebalm				U	U			U
<i>Nassella leucotricha</i>	Texas wintergrass				O	U			U
<i>Neptunia lutea</i>	yellow sensitive flower				U	U			U
<i>Neptunia pubescens</i>	tropical puff						U		R
<i>Nothoscordum bivalve</i>	crow poison				U				U
<i>Oenothera curtiflora</i>	velvety gaura				R				R
<i>Oenothera laciniata</i>	cutleaf evening primrose	C							U
<i>Oenothera speciosa</i>	pink ladies				U	U			R
<i>Oxalis corniculata</i>	creeping woodsorell	C			U	U			U



Scientific Name	Common Name	Relative Abundance ^(a) within Landcover Types ^(b)							Project Site Overall
		1	2	3	4	5	6	7	
<i>Panicum dichotomiflorum</i>	fall witchgrass				U				U
<i>Panicum hallii</i>	Hall's panicgrass			R	U				U
<i>Panicum virgatum</i>	switchgrass			U					U
<i>Parkinsonia aculeata</i>	Jerusalem thorn				R				R
<i>Parthenium hysterophorus</i>	Santa Maria feverfew			U	U				U
<i>Paspalum geminatum</i>	Egyptian panicgrass					U			U
<i>Paspalum denticulatum</i>	longtom			O		C	O		O
<i>Paspalum dilatatum</i>	dallisgrass				O				U
<i>Paspalum langei</i>	rustyseed paspalum			U					R
<i>Paspalum notatum</i>	bahia grass			U	U				U
<i>Paspalum pubiflorum</i>	hairyseed paspalum			U	R				U
<i>Paspalum setaceum</i>	hairy beadgrass			R	R				R
<i>Paspalum urvillei</i>	Vaseygrass			R					R
<i>Passiflora foetida</i>	stinking passionflower			U					R
<i>Pediomelum rhombifolium</i>	gulf indian breadroot			U					R
<i>Phalaris caroliniana</i>	Carolina canarygrass			U	U				U
<i>Phoradendron leucocarpum</i>	American mistletoe				R				R
<i>Phragmites australis</i>	common reed					U			U
<i>Phyla nodiflora</i>	Texas frogfruit			O		U			O
<i>Phyllanthus evenescens</i>	birdseed leaf					R			R
<i>Phytolacca pauciflorus</i>	smallflower desert chicory			O					O
<i>Phytolacca americana</i>	pokeweed			R					R
<i>Plantago aristata</i>	bracted plantain			R					R
<i>Pluchea odorata</i>	marsh fleabane					U			R
<i>Polypernum procumbens</i>	juniper leaf								R
<i>Polytaenia texana</i>	Texas prairie parsley								R
<i>Ratibida columnifera</i>	Mexican hat								R
<i>Rhynchosia minima</i>	least snoutbean								R
<i>Rhynchospora cauduca</i>	anglestem beaksedge					R			U
<i>Rhynchospora indianolensis*</i>	Indianola beaksedge			R	U				R
<i>Rivina humilis</i>	pigeonberry			R					R
<i>Rosa bracteata</i>	McCartney rose	O							O
<i>Rubus trivialis</i>	southern dewberry					O			O
<i>Rudbeckia hirta</i>	black eyed Susan	O							U
<i>Ruellia nudiflora</i>	violet ruellia			U					U
<i>Rumex chrysocarpus</i>	amamastia			U					R



Scientific Name	Common Name	Relative Abundance ^(a) within Landcover Types ^(b)							Project Site Overall	
		1	2	3	4	5	6	7		
<i>Rumex pulcher</i>	fiddle dock	O			R	U				U
<i>Sabal minor</i>	dwarf palmetto	R					R			R
<i>Sabatia campestris</i>	Texas star				O	U				O
<i>Sagittaria longiloba</i>	longbarb arrowhead				R	R				R
<i>Schizachyrium scoparium</i>	little bluestem				R	U				U
<i>Schoenoplectus tabernaemontani</i>	softstem bulrush				R					R
<i>Sesbania drummondii</i>	rattlebox	U			U	U				O
<i>Sesbania herbacea</i>	coffeeweed				U	U	O		O	O
<i>Setaria magna</i>	giant bristlegass				O		R			R
<i>Setaria parviflora</i>	marsh bristlegass				O		R			O
<i>Sida ciliaris</i>	bracted fanpetals				R					R
<i>Solanum elaeagnifolium</i>	silverleaf nightshade				U					U
<i>Solanum ptycanthum</i>	eastern black nightshade				R					R
<i>Solanum triquetrum</i>	Texas nightshade				R					R
<i>Solidago altissima</i>	tall goldenrod				O	U	R		O	O
<i>Solidago sempervirens</i>	seaside goldenrod				O		O	U		U
<i>Sorghum halepense</i>	Johnsongrass	O			O	U				O
<i>Spartina spartinae</i>	Gulf cordgrass				R	U				U
<i>Sporobolus indicus</i>	smutgrass				U					U
<i>Stachys crenata</i>	mouseear				R					R
<i>Steinchisma hians</i>	gaping grass	U			O					O
<i>Symphotrichum divaricatum</i>	southern annual saltmarsh aster				O		C		O	O
<i>Teucrium cubense</i>	small coastal germander				R					R
<i>Torilis nodosa</i>	knotted hedgeparsley				R					R
<i>Toxicodendron radicans</i>	poison ivy									R
<i>Triadica sebifera</i>	Chinese tallow								R	R
<i>Tridens strictus</i>	longspike tridens					R				R
<i>Typha domingensis</i>	Southern cattail							C	O	O
<i>Urochloa fusca</i>	browntop signalgrass	O			U					U
<i>Urochloa platyphylla</i>	broadleaf signalgrass	A			U					O
<i>Vachellia famesiana</i>	huisache				O				U	U
<i>Verbena brasiliensis</i>	Brazilian vervain	U			U	U				O
<i>Verbena halei</i>	Texas vervain	A			O					O
<i>Vigna luteola</i>	hairy cowpea							R		R
<i>Xanthium strumarium</i>	cocklebur				R					R
<i>Zea mays</i>	corn	A								A



Scientific Name	Common Name	Relative Abundance ^(a) within Landcover Types ^(b)							Project Site Overall
		1	2	3	4	5	6	7	
Woody Vine Layer									
<i>Ampelopsis arborea</i>	peppervine				U	U	A	U	C
<i>Smilax bona-nox</i>	saw greenbriar			U	O	O			O
<i>Smilax rotundifolia</i>	common greenbriar			U					U
<i>Vitis mustangensis</i>	mustang grape				U	U	O		U

a) Relative abundance (qualitative) for occurrence in the Project Site:

A = Abundant; C = Common; O = Occasional; U = Uncommon; R = Rare

b) Landcover Types: 1 = Cultivated Crops; 2 = Deciduous Forest; 3 = Evergreen Forest; 4 = Herbaceous; 5 = Shrub/Scrub; 6 = Emergent Herbaceous Wetlands; 7 = Woody Wetlands

* State Vulnerable (S3) (TPWD 2011)

The key characteristics of landcover types and the diversity of plant associations found within each type identified within the site are described in the following:

Cultivated Crops:

Cropland (730.3 acres) is the most extensive landcover type found with the Project Site and is generally positioned within large open upland plains within the interior of the site. Row crops of corn occur as a monoculture within actively cropped areas of agricultural fields. However, along the fringes of cropped corn fields, a frequently disturbed ruderal herbaceous community can be sporadically found. Within these naturally vegetated areas, weedy species like Brazilian vervain (*Verbena brasiliensis*), broadleaf signalgrass (*Urochloa platyphylla*), browntop signalgrass (*Urochloa fusca*), Johnsongrass (*Sorghum halepense*), creeping woodsorrel (*Oxalis corniculata*), cutleaf evening primrose (*Oenothera laciniata*), and plains coreopsis (*Coreopsis tinctoria*) dominate.

Evergreen Forest:

Evergreen forest (0.7 acres) is present within portions of the southeastern corner of the Project Site where scattered patches of live oak (*Quercus fusiformis*) mottes are found within a scrub-shrub dominated matrix of cattle- and goat-grazed lands. This vegetation community is positioned along a low swale at the toe of West Coloma Creek's east flanking levee within a naturally vegetated scrub-scrub community. Live oak dominates the overstory and sugarberry (*Celtis laevigata*) can be found to a lesser extent, while the shrub layer is occupied by yaupon (*Ilex vomitoria*), beautyberry (*Callicarpa americana*), and McCartney rose (*Rosa bracteata*). The herb layer is sparsely occupied by angleton grass (*Dichanthium aristatum*), blue mistflower (*Chromolaena odorata*), Texas goldentop (*Euthamia gymnospermoides*), and rustyseed paspalum (*Paspalum langei*). Scrambling vines are found growing up into the mid-story, including saw greenbriar (*Smilax bona-nox*), common greenbriar (*Smilax rotundifolia*) and poison ivy (*Toxicodendron radicans*). This vegetation community seems to be associated with less disturbed, slightly wetter upland conditions underlain by Dacosta-Contee complex soils.

Deciduous Forest:

A small fringe of deciduous forest totaling 0.5 acres was identified along a hedgerow bordering the west levee of West Coloma Creek at the eastern edge of an actively cultivated crop field. The tree canopy is dominated by sugarberry, which grows over shrubs of McCartney rose, yaupon, saw greenbriar, and common greenbriar. The herb layer is influenced by vegetation found on the nearby levee and includes Kleberg's bluestem (*Dichanthium annulatum*) and angleton grass (*Dichanthium aristatum*).

Shrub-Scrub and Woody Wetlands:

NLCD shrub-scrub and woody wetland landcovers (94.4 acres) are found throughout the Project Site and are represented by several different vegetation types, varying by local disturbance, water availability, and soil conditions. Shrub-scrub (upland) (91.1 acres) is the most extensive type found within the site although woody wetland (3.3 acres) is also represented. Shrubs are evident in the woody wetlands of the Project Site. WOTUS-delineated wetlands and features are described below with emergent wetlands and in the project WOTUS report (WSP, 2023c).

Within actively or formerly grazed pasture in dry sites located within the hydric soil map series, Dacosta-Contee complex (NRCS 2023), shrub-scrub patches form around thickets of McCartney rose, sugarberry, yaupon, or huisache (*Vachellia farnesiana*). The herb layer can be crowded out by thickets of shrub-scrub, as seen north of the rail yard in the northeastern corner of the Project Site, but in areas still heavily grazed, it is typically dense where it grows between scrub thickets and is dominated by species that include Kleberg's bluestem, angleton grass, Bermuda grass, bitterweed (*Helenium amarum*), fiddle dock (*Rumex pulcher*), Santa Maria feverfew (*Parthenium hysterophorus*), and plains coreopsis. Within heavily grazed pasture in slightly wetter upland sites of the same soil map series, the same shrub species are found; however, huisache falls out to a large extent and is replaced by live oak. In the herb layer, dominant species found in dry shrub-scrub sites are also found, in addition to dallisgrass (*Paspalum dilatatum*), marsh bristlegrass (*Setaria parviflora*), gaping grass (*Steinchisma hians*), gulf cordgrass (*Spartina spartinae*), and the state sensitive S3 species, Indianola beaksedge (*Rhynchospora indianolensis*).

Shrub-scrub wetland and wetter upland sites found north of the two wetland basins (SD-WET-03 and SD-WET-04) between the wetland ditch (SD-WET-05) and crop fields along the southwestern edge of the Project Site represent another community assemblage found on-site. Hydric soils of Laewest clay, 0 to 1 percent slope (NRCS 2023) underlie low scrub thickets of groundsel tree (*Baccharis halimifolia*) and McCartney rose that are interspersed by herbaceous vegetation dominated by Bermuda grass, winged loosestrife (*Lythrum alatum*), and groundsel tree. Wetland basin and ditch features referenced above can be found in Figure 3-2 and the project WOTUS report (WSP, 2023c).

Bordered by crop field to the south and east, within a naturally vegetated parcel along the eastern edge, in the central part of the Project Site, a final shrub-scrub vegetation association is found within the hydric, Edna Loam, 0 to 1 percent slopes soil map series (NRCS 2023). A small pocket of honey locust (*Gleditsia triacanthos*) trees is found in the corner of the parcel, while the rest of the area is dominated by impenetrable thickets of shrub-scrub, except for a few paths created by cattle, deer, and brush-hogging which allow ingress. Thickets of McCartney rose, groundsel tree, yaupon, and huisache grow over an herbaceous layer dominated by prairie agalinis (*Agalinis heterophylla*), western ragweed (*Ambrosia psilostachya*), Kleberg's bluestem, fall panicum (*Panicum dichotomiflorum*), coffeeweed (*Sesbania herbacea*), and Brazilian vervain. This vegetation community seems to be partially influenced by its proximity to agricultural fields, as several weedy species found along crop field margins were also found here.

Herbaceous:

Herbaceous landcover (428.1 acres) found throughout the Project Site can be classified as maintained turf, pasture, or ruderal old field.

Herbaceous landcover in the western part of the Project Site located around the Dow plant consists entirely of maintained turf dominated by Bermuda grass. Elsewhere, along the mowed or grazed canal and irrigation ditch berms, Bermuda grass can be found along the low slopes and longtom (*Paspalum denticulatum*) in dewatered portions of the channels, while Kleberg's bluestem, angleton grass, and broadleaf signalgrass dominate the upper slopes.

Overgrazed herbaceous pasture lands found in the southeastern portion of Project Site mixed with shrub-scrub and are dominated by mowed grasses including Kleberg's bluestem, angleton grass, Bermuda grass, Texas grama (*Bouteloua rigidisetata*), and hooded windmill grass (*Chloris cucullata*). Forbs are present to a lesser extent; plains coreopsis, prairie tea (*Croton monanthogynus*), Berlandier's yellow flax (*Linum berlandieri*), and Texas star (*Sabatia campestris*) were most commonly observed. A few stems of the state sensitive (S3) Indianola beaksedge were recorded here (TPWD 2011).

Herbaceous landcover found in the northeast portion of the Project Site north of the railyard is no longer grazed or maintained by mowing and has become overgrown, especially by weedy forbs. Within this ruderal, old field community, grasses including Bermuda grass, Kleberg's bluestem, and hairyseed paspalum (*Paspalum pubiflorum*) are still found but are often overtopped and shaded out by luxuriant growth of forbs and woody species including Santa Maria feverfew, Brazilian vervain, southern dewberry (*Rubus trivialis*), western ragweed (*Ambrosia psilostachya*), talayote (*Cynanchum racemosum*), balloonvine (*Cardiospermum halicacabum*), and rattlebox (*Sesbania drummondii*). Bermuda grass is dominant within lands underlain by Edna loam, while herbaceous vegetation growing in soils Contee-Dacosta and Dacosta-Contee complexes (NRCS 2023) is more diverse and possesses greater affinity here to upland conditions.

A large rectangular pasture south of the railyard, in the northeast portion of the Project Site represents the most diverse herbaceous community found within the Project Site (Figure 2-1). Although the presence of non-native species is abundant, partially intact short-grassland structure and some native coastal prairie species diversity here is likely maintained by occasional cattle grazing, at an intensity and periodicity that perhaps mimics the natural disturbance patterns historically maintained by native ungulate herbivory in the region. Common grass and forb species include bahia grass (*Paspalum notatum*), Kleberg's bluestem, angleton grass, Bermuda grass, rescuegrass (*Bromus catharticus*), Texas wintergrass (*Nassella leucotricha*), marsh bristlegrass, blackeyed Susan (*Rudbeckia hirta*), Texas star, western ragweed, green antelopehorn (*Asclepias viridis*), winecup (*Callirhoe involucrata*), pine barren flatsedge (*Cyperus retrorsus*), creeping woodsorell, Hooker's eryngo (*Eryngium hookeri*), prairie nymph (*Hebertia lahue*), fragrant spikesedge (*Kyllinga odorata*), and spotted beebalm (*Monarda punctata*). Scattered shrubs of McCartney rose, huisache, and honey mesquite (*Prosopis glandulosa*) are interspersed throughout.

Emergent Wetlands:

A total of 23.5 acres of emergent wetlands was identified during Waters of the United States (WOTUS) delineations in the spring and summer surveys (WSP, 2023c). WOTUS delineated features can be found in Figure 3-2.

Twin basin wetlands (SD-WET-03 and SD-WET-04) located in southwest corner of the Project Site include seasonally saturated/inundated wetlands around more permanently inundated areas that hold standing water for much of the year (WSP, 2023c). In the seasonally wet flats, Bermuda grass, longtom, desert saltgrass (*Distichlis spicata*), tropical puff (*Neptunia pubescens*), sand spikerush (*Eleocharis montevidensis*), jointed flatsedge (*Cyperus articulatus*), and Gulf Coast spikerush (*Eleocharis cellulosa*) are dominant. In or around the more

permanently inundated features, water hyssop (*Bacopa monnieri*) was found growing as a submerged aquatic and southern cattail (*Typha domingensis*) was found fringing the features as an emergent.

To the north of the SDO operating basins in the northwest corner of the Project Site, the emergent wetland SD-WET-11 is a depressional feature bordering the edge of an active crop field (Figure 3-2, WSP, 2023c). Small trees and shrubs including black willow, sandbar willow, Chinese tallow (*Triadica sebifera*), and Mexican ash (*Fraxinus berlandieriana*) are scattered throughout the depressional basin which is largely vegetated by ruderal herbaceous vegetation. Egyptian panicgrass (*Paspalidium geminatum*), yellow leafbract (*Malachra capitata*), Texasweed (*Caperonia palustris*), and winged loosestrife (*Lythrum alatum*) are found in the herbaceous layer along with scrambling and vining forbs and woody species including balloon vine (*Cardiospermum halicacabum*), peppervine (*Ampelopsis arborea*), and southern dewberry.

SD-WET-07 is a depressional emergent wetland that is supported by a low area located in the southwestern corner of the Project Site (Figure 3-2, WSP, 2023c). Common herbaceous species recorded within the wetland included sandspike rush, annual marsh elder (*Iva annua*), and bermudagrass. SD-WET-09 is another depressional emergent wetland that is supported by a depressional area which drains adjacent cropland (Figure 3-2, WSP, 2023c). Common herbaceous species recorded within the wetland included sandspike rush, winged loosestrife, and southern cattail. Both wetlands contained low plant diversity.

Emergent wetlands associated with ditch features were found throughout the site (Figure 3-2, WSP, 2023c). Ditches which hold water semi-permanently include hydrophytic species like southern cattail and water hyssop along with other hydrophytic terrestrial species, including black willow (*Salix nigra*), sandbar willow (*Salix interior*), common reed (*Phragmites australis*), possumhaw (*Ilex decidua*), halberdleaf rosemallow (*Hibiscus laevis*), winged loosestrife, dwarf palmetto, buttonbush (*Cephalanthus occidentalis*), and Chinese tallow. Ditches which remain dry for much of the year were typically less diverse and were largely dominated by longtom.

3.1.2 Wildlife

The terrestrial ecology of the Project Site and vicinity were characterized in a series of seasonal field studies. Seasonal surveys were conducted in the winter (February 13-15, 2023), spring (May 22-25, 2023), summer (August 15-17, 2023), and fall (November 6-9, 2023). The field studies for wildlife included surveys for avifauna, mammals and herpetofauna. In general, study methods within the Project Site included a review of available mapping and databases, information from the USFWS IPaC system, and TPWD Calhoun County rare species list. A map of the site with the ecological survey locations is provided in Figure 2-2. The subsections below summarize relevant information obtained from each of these surveys and provide other data and descriptions of the terrestrial ecology in the area.

3.1.2.1 Avifauna

Field studies for avian species included pedestrian meandering and general field reconnaissance and roadside survey methods. Figure 2-2 depicts the ecological survey locations during the seasonal surveys. Detailed methodology can be found in Section 2.2.2.

A total of 56 species were observed during the winter 2023 surveys, including 17 species as part of the surveys within the Project Site, 46 species observed along vicinity driving routes, and 27 species as part of the vicinity general reconnaissance (Table 3-3). Abundant and common bird species observed during the winter 2023 Project Site field surveys included red-winged blackbird (*Agelaius phoeniceus*) and turkey vulture (*Cathartes aura*).

A total of 72 bird species were observed during the spring 2023 surveys, including 36 species as part of the surveys within the Project Site, 58 species observed along vicinity driving routes, and 30 species as part of the vicinity general reconnaissance (Table 3-4). Abundant and common bird species observed during spring 2023 Project Site field surveys included red-winged blackbird, Northern cardinal (*Cardinalis cardinalis*), turkey vulture, Northern mockingbird (*Mimus polyglottos*), brown-headed cowbird (*Molothrus ater*), and cave swallow (*Petrochelidon fulva*).

A total of 60 species were observed during the summer 2023 surveys, including 33 species as part of the surveys within the Project Site, 42 species observed along vicinity driving routes, and 37 species as part of the vicinity general reconnaissance (Table 3-5). Abundant and common bird species observed during summer 2023 Project Site field surveys included red-winged blackbird, turkey vulture, and mourning dove (*Zenaida macroura*).

A total of 57 bird species were observed during the fall 2023 surveys, including 20 species as part of the surveys within the Project Site, 46 species observed along vicinity driving routes, and 43 species as part of the vicinity general reconnaissance (Table 3-6). Abundant and common bird species observed during fall 2023 Project Site field surveys included red-winged blackbird, Northern cardinal, killdeer (*Charadrius vociferus*), black vulture (*Coragyps atratus*), brown-headed cowbird, savannah sparrow (*Passerculus sandwichensis*), great-tailed grackle (*Quiscalus mexicanus*), northern rough-winged swallow (*Stelgidopteryx serripennis*), European starling (*Sturnus vulgaris*), and mourning dove.

Large trees typically used for raptor nesting are limited within the Project Site; as such, no raptor nests were observed within the Project Site during seasonal ecology field surveys. Waterfowl and water dependent bird species were observed in close association with the vicinity wetland complexes near Green Lake and Mission Lake.

The complete list of birds observed within the Project Site and Project Vicinity for each seasonal survey are recorded in Tables 3-3, 3-4, 3-5, and 3-6. The white-tailed hawk (*Buteo albicaudatus*), state listed as threatened by TPWD, was observed on-site and within the vicinity during spring 2023 surveys and in the vicinity during summer and fall 2023. Since the white-tailed hawk was only observed perched on a transmission line tower and as a flyover to these areas and no raptor nests were observed, the white-tailed hawk likely uses the site and vicinity to forage. The wood stork (*Mycteria americana*), state listed as threatened by TPWD, was observed in the vicinity during summer 2023. The wood stork was not observed on-site. Bald eagle, identified by USFWS as a migratory bird of conservation concern and protected under the Bald and Golden Eagle Protection Act, was observed within the Project Vicinity during winter 2023, but no raptor nests were observed.

No federally listed bird species under the Endangered Species Act (ESA) were observed during field surveys in the Project Site or Project Vicinity. Northern bobwhite (*Colinus virginianus*), and mourning dove (*Zenaida macroura*) were species observed within the Project Site that are recreationally valuable since they are game species as listed by TPWD hunting regulations (2023a). Species observed in the Project Vicinity that are recreationally valuable as game species by TPWD hunting regulations (2023) include Northern pintail (*Anas acuta*), green-winged teal (*Anas crecca*), sandhill crane (*Antigone canadensis*), Northern bobwhite, black-bellied whistling-duck (*Dendrocygna autumnalis*), American coot (*Fulica americana*), Wilson's snipe (*Gallinago delicata*), common gallinule (*Gallinula galeata*), gadwall (*Mareca strepera*), wild turkey (*Meleagris gallopavo*), red-breasted merganser (*Mergus serrator*), Northern shoveler (*Spatula clypeata*), blue-winged teal (*Spatula discors*), and mourning dove.

Table 3-3
Avifaunal Species Observed in or near the Project Long Mott Project Site, Winter 2023

Scientific Name	Common Name	On-site Surveys Abundance ¹	Driving Route Abundance ²	Vicinity General Reconnaissance ³
<i>Agelaius phoeniceus</i>	Red-winged blackbird	A	A	X
<i>Anas acuta</i>	Northern pintail			X
<i>Anas crecca</i>	Green-winged teal			X
<i>Antigone canadensis</i>	Sandhill crane		U	
<i>Ardea alba</i>	Great egret	R	O	X
<i>Ardea herodias</i>	Great blue heron	U	U	
<i>Buteo jamaicensis</i>	Red-tailed hawk	U	O	
<i>Buteo lineatus</i>	Red-shouldered hawk		R	
<i>Butorides virescens</i>	Green heron		R	
<i>Caracara cheriway</i>	Crested caracara	U	O	X
<i>Cardinalis cardinalis</i>	Northern cardinal		C	X
<i>Cathartes aura</i>	Turkey vulture	C	C	X
<i>Charadrius vociferus</i>	Killdeer		O	
<i>Circus hudsonius</i>	Northern harrier	R	U	X
<i>Columba livia</i>	Rock pigeon		R	
<i>Coragyps atratus</i>	Black vulture		C	X
<i>Dumetella carolinensis</i>	Gray catbird		R	
<i>Egretta thula</i>	Snowy egret		R	
<i>Egretta tricolor</i>	Tricolored heron		R	
<i>Eudocimus albus</i>	White ibis		C	
<i>Falco sparverius</i>	American kestrel	R	C	X
<i>Fulica americana</i>	American coot		A	X
<i>Gallinago delicata</i>	Wilson's snipe		R	
<i>Gallinula galeata</i>	Common gallinule		R	
<i>Haemorhous mexicanus</i>	House finch	R		
<i>Haliaeetus leucocephalus</i>	Bald eagle		R	
<i>Himantopus mexicanus</i>	Black-necked stilt			X
<i>Hydroprogne caspia</i>	Caspian tern		R	
<i>Lanius ludovicianus</i>	Loggerhead shrike		U	X
<i>Leucophaeus atricilla</i>	Laughing gull		R	X
<i>Limnodromus griseus</i>	Short-billed dowitcher			X
<i>Mareca strepera</i>	Gadwall			X



Scientific Name	Common Name	On-site Surveys Abundance ¹	Driving Route Abundance ²	Vicinity General Reconnaissance ³
<i>Megaceryle alcyon</i>	Belted kingfisher		R	
<i>Melospiza melodia</i>	Song sparrow	O	O	
<i>Mimus polyglottos</i>	Northern mockingbird	O	O	X
<i>Molothrus ater</i>	Brown-headed cowbird		R	
<i>Nannopterum auritum</i>	Double-crested cormorant		R	
<i>Parkesia noveboracensis</i>	Northern waterthrush		R	
<i>Passerculus sandwichensis</i>	Savannah sparrow	O		
<i>Pelecanus occidentalis</i>	Brown pelican		R	X
<i>Pipilo erythrophthalmus</i>	Eastern towhee		R	
<i>Platalea ajaja</i>	Roseate spoonbill		R	
<i>Plegadis falcinellus</i>	Glossy ibis		R	X
<i>Podilymbus podiceps</i>	Pied-billed grebe		R	X
<i>Quiscalus mexicanus</i>	Great-tailed grackle	R	A	X
<i>Sayornis phoebe</i>	Eastern phoebe	R	R	
<i>Setophaga coronata</i>	Yellow-rumped warbler	R	R	
<i>Spatula clypeata</i>	Northern shoveler			X
<i>Spatula discors</i>	Blue-winged teal			X
<i>Streptopelia decaocto</i>	Eurasian collared-dove	O	A	X
<i>Sturnella magna</i>	Eastern meadowlark		C	
<i>Sturnus vulgaris</i>	European starling		U	X
<i>Tringa flavipes</i>	Lesser yellowlegs			X
<i>Vireo griseus</i>	White-eyed vireo		U	
<i>Zenaida macroura</i>	Mourning dove		R	X
<i>Zonotrichia albicollis</i>	White-throated sparrow	R	U	
Species Richness		17	46	27

¹Species identified during on-site pedestrian surveys.

²Species identified along the bird transect routes at designated vicinity stopping points.

³X = Observed during opportunistic field reconnaissance.

Abundance Categories: A=abundant; C=common; O=occasional; U=uncommon; R=rare



**Table 3-4
Avifaunal Species Observed in or near the Project Long Mott Project Site, Spring 2023**

Scientific Name	Common Name	On-site Surveys Abundance¹	Driving Route Abundance²	Vicinity General Reconnaissance³
<i>Agelaius phoeniceus</i>	Red-winged blackbird	A	A	X
<i>Ardea alba</i>	Great egret	U	O	X
<i>Bubulcus ibis</i>	Cattle egret		U	
<i>Buteo jamaicensis</i>	Red-tailed hawk		R	X
<i>Butorides virescens</i>	Green heron		U	
<i>Calidris minutilla</i>	Least sandpiper	R	U	
<i>Caracara cheriway</i>	Crested caracara	U	U	
<i>Cardinalis cardinalis</i>	Northern cardinal	C	C	X
<i>Cathartes aura</i>	Turkey vulture	C	C	
<i>Charadrius vociferus</i>	Killdeer	O	C	X
<i>Chlidonias niger</i>	Black tern		U	
<i>Chordeiles minor</i>	Common nighthawk		R	X
<i>Coccyzus americanus</i>	Yellow-billed cuckoo	U	O	
<i>Colinus virginianus</i>	Northern bobwhite	U	O	
<i>Columba livia</i>	Rock pigeon	R	R	
<i>Contopus virens</i>	Eastern wood-pewee	U	R	
<i>Coragyps atratus</i>	Black vulture	R	C	
<i>Cyanocitta cristata</i>	Blue jay		U	
<i>Dendrocygna autumnalis</i>	Black-bellied whistling-duck		C	
<i>Egretta caerulea</i>	Little blue heron	U	U	X
<i>Egretta thula</i>	Snowy egret	U	A	
<i>Egretta tricolor</i>	Tricolored heron		U	X
<i>Eudocimus albus</i>	White ibis			X
<i>Fulica americana</i>	American coot		U	
<i>Gallinula galeata</i>	Common gallinule		U	
<i>Geothlypis trichas</i>	Common yellowthroat		U	
<i>Geranoaetus albicaudatus</i>	White-tailed hawk	R	U	
<i>Himantopus mexicanus</i>	Black-necked stilt			X
<i>Hirundo rustica</i>	Barn swallow			X
<i>Icteria virens</i>	Yellow-breasted chat	R		
<i>Lanius ludovicianus</i>	Loggerhead shrike	R	U	X
<i>Leucophaeus atricilla</i>	Laughing gull		U	X
<i>Melanerpes carolinus</i>	Red-bellied woodpecker		U	
<i>Meleagris gallopavo</i>	Wild turkey			X
<i>Mergus serrator</i>	Red-breasted merganser		C	X
<i>Mimus polyglottos</i>	Northern mockingbird	A	A	X
<i>Molothrus aeneus</i>	Bronzed cowbird		U	
<i>Molothrus ater</i>	Brown-headed cowbird	A	A	



Scientific Name	Common Name	On-site Surveys Abundance ¹	Driving Route Abundance ²	Vicinity General Reconnaissance ³
<i>Myiarchus crinitus</i>	Great crested flycatcher	U	U	X
<i>Myiarchus tyrannulus</i>	Brown-crested flycatcher		R	
<i>Nannopterum auritum</i>	Double-crested cormorant	R	U	X
<i>Nyctanassa violacea</i>	Yellow-crowned night-heron	R	U	
<i>Passer domesticus</i>	House sparrow	U		
<i>Passerina caerulea</i>	Blue grosbeak	R		
<i>Passerina ciris</i>	Painted bunting		U	
<i>Pelecanus occidentalis</i>	Brown pelican			X
<i>Petrochelidon fulva</i>	Cave swallow	A	A	X
<i>Petrochelidon pyrrhonota</i>	Cliff swallow			X
<i>Phalaropus tricolor</i>	Wilson's phalarope	R		
<i>Platalea ajaja</i>	Roseate spoonbill			X
<i>Plegadis falcinellus</i>	Glossy ibis		U	
<i>Podilymbus podiceps</i>	Pied-billed grebe	R		
<i>Poecile carolinensis</i>	Carolina chickadee		U	
<i>Progne subis</i>	Purple martin		R	
<i>Quiscalus mexicanus</i>	Great-tailed grackle	U	A	X
<i>Quiscalus quiscula</i>	Common grackle		R	
<i>Setophaga coronata</i>	Yellow-rumped warbler		R	
<i>Spinus tristis</i>	American goldfinch		U	
<i>Spiza americana</i>	Dickcissel	U	C	
<i>Sterna forsteri</i>	Forster's tern	R	R	
<i>Sterna hirundo</i>	Common tern	R	U	X
<i>Streptopelia decaocto</i>	Eurasian collared-dove	O	U	X
<i>Sturnella magna</i>	Eastern meadowlark	U	O	
<i>Sturnus vulgaris</i>	European starling	O	U	X
<i>Thalasseus maximus</i>	Royal tern			X
<i>Thryothorus ludovicianus</i>	Carolina wren		U	
<i>Tringa flavipes</i>	Lesser yellowlegs			X
<i>Tringa semipalmata</i>	Willet		R	X
<i>Tyrannus forficatus</i>	Scissor-tailed flycatcher	U	U	X
<i>Vireo griseus</i>	White-eyed vireo		U	
<i>Vireo olivaceus</i>	Red-eyed vireo		U	
<i>Zenaida macroura</i>	Mourning dove	U	A	
Species Richness		36	58	30

¹Species identified during on-site pedestrian surveys.

²Species identified along the bird transect routes at designated vicinity stopping points.

³X = Observed during field reconnaissance.

Abundance Categories: A=abundant; C=common; O=occasional; U=uncommon; R=rare



Table 3-5
Avifaunal Species Observed in or near the Project Long Mott Project Site, Summer 2023

Scientific Name	Common Name	On-site Surveys Abundance¹	Driving Route Abundance²	Vicinity General Reconnaissance³
<i>Agelaius phoeniceus</i>	Red-winged blackbird	A	A	X
<i>Ammodramus savannarum</i>	Grasshopper sparrow	R		
<i>Anhinga anhinga</i>	Anhinga		R	X
<i>Ardea alba</i>	Great egret	R	A	X
<i>Ardea herodias</i>	Great blue heron		C	X
<i>Bubulcus ibis</i>	Cattle egret	O	A	X
<i>Buteo jamaicensis</i>	Red-tailed hawk	R	R	
<i>Butorides virescens</i>	Green heron		R	X
<i>Caracara cheriway</i>	Crested caracara	U	U	X
<i>Cardinalis cardinalis</i>	Northern cardinal	O	C	
<i>Cathartes aura</i>	Turkey vulture	C	A	X
<i>Charadrius vociferus</i>	Killdeer	U	R	X
<i>Chlidonias niger</i>	Black tern		A	X
<i>Chordeiles minor</i>	Common nighthawk		O	X
<i>Circus hudsonius</i>	Northern harrier	R	R	
<i>Columba livia</i>	Rock pigeon	R		X
<i>Contopus virens</i>	Eastern wood-pewee		R	
<i>Coragyps atratus</i>	Black vulture	O	O	X
<i>Dendrocygna autumnalis</i>	Black-bellied whistling duck		C	X
<i>Dumetella carolinensis</i>	Gray catbird	U		
<i>Egretta caerulea</i>	Little blue heron		C	X
<i>Egretta thula</i>	Snowy egret	R	A	X
<i>Egretta tricolor</i>	Tricolored heron	U	U	X
<i>Eudocimus albus</i>	White ibis	U	A	X
<i>Fulica americana</i>	American coot		A	X
<i>Gallinula galeata</i>	Common gallinule		U	X
<i>Geranoaetus albicaudatus</i>	White-tailed hawk		R	
<i>Himantopus mexicanus</i>	Black-necked stilt	U	A	X
<i>Lanius ludovicianus</i>	Loggerhead shrike	R	O	X
<i>Leucophaeus atricilla</i>	Laughing gull			X
<i>Limnodromus griseus</i>	Short-billed dowitcher			X
<i>Megaceryle alcyon</i>	Belted kingfisher			X
<i>Melanerpes carolinus</i>	Red-bellied woodpecker	R		
<i>Mimus polyglottos</i>	Northern mockingbird	O	C	X
<i>Molothrus ater</i>	Brown-headed cowbird	R	C	X
<i>Mycteria americana</i>	Wood stork		U	
<i>Myiarchus crinitus</i>	Great crested flycatcher	R		
<i>Nannopterum auritum</i>	Double-crested cormorant	R	U	X



Scientific Name	Common Name	On-site Surveys Abundance ¹	Driving Route Abundance ²	Vicinity General Reconnaissance ³
<i>Pelecanus occidentalis</i>	Brown pelican			X
<i>Petrochelidon fulva</i>	Cave swallow		A	
<i>Petrochelidon pyrrhonota</i>	Cliff swallow	U	U	
<i>Piranga rubra</i>	Summer tanager		R	
<i>Platalea ajaja</i>	Roseate spoonbill		U	
<i>Plegadis falcinellus</i>	Glossy ibis		U	
<i>Podilymbus podiceps</i>	Pied-billed grebe			X
<i>Quiscalus mexicanus</i>	Great-tailed grackle	A	A	X
<i>Sayornis phoebe</i>	Eastern phoebe		R	
<i>Setophaga petechia</i>	Yellow warbler	R		
<i>Spinus tristis</i>	American goldfinch	U	O	
<i>Spiza americana</i>	Dickcissel	U		
<i>Spizelloides arborea</i>	American tree sparrow	U		
<i>Stelgidopteryx serripennis</i>	Northern rough-winged swallow	R		X
<i>Sterna forsteri</i>	Forster's tern			X
<i>Streptopelia decaocto</i>	Eurasian collared-dove	U	O	
<i>Sturnus vulgaris</i>	European starling	O		
<i>Thalasseus maximus</i>	Royal tern			X
<i>Thalasseus sandvicensis</i>	Sandwich tern		R	X
<i>Tringa semipalmata</i>	Willet			X
<i>Vireo griseus</i>	White-eyed vireo		U	
<i>Zenaida macroura</i>	Mourning dove	A	A	X
Species Richness		33	42	37

¹Species identified during on-site pedestrian surveys.

²Species identified along the bird transect routes at designated vicinity stopping points.

³X = Observed during field reconnaissance.

Abundance Categories: A=abundant; C=common; O=occasional; U=uncommon; R=rare



Table 3-6
Avifaunal Species Observed in or near the Project Long Mott Project Site, Fall 2023

Scientific Name	Common Name	On-site Surveys Abundance¹	Driving Route Abundance²	Vicinity General Reconnaissance³
<i>Agelaius phoeniceus</i>	Red-winged blackbird	A	A	X
<i>Anas acuta</i>	Northern pintail		R	
<i>Anhinga anhinga</i>	Anhinga		R	X
<i>Antigone canadensis</i>	Sandhill crane		O	
<i>Ardea alba</i>	Great egret	R	O	X
<i>Ardea herodias</i>	Great blue heron		O	
<i>Botaurus lentiginosus</i>	American bittern			X
<i>Bubulcus ibis</i>	Cattle egret		C	
<i>Buteo jamaicensis</i>	Red-tailed hawk	R	C	X
<i>Buteo lineatus</i>	Red-shouldered hawk		R	
<i>Calidris minutilla</i>	Least sandpiper			X
<i>Caracara cheriway</i>	Crested caracara		U	X
<i>Cardinalis cardinalis</i>	Northern cardinal	C	U	X
<i>Cathartes aura</i>	Turkey vulture	U	A	X
<i>Charadrius vociferus</i>	Killdeer	C	C	X
<i>Chordeiles minor</i>	Common nighthawk		R	
<i>Circus hudsonius</i>	Northern harrier		R	X
<i>Coragyps atratus</i>	Black vulture	A	A	X
<i>Dumetella carolinensis</i>	Gray catbird		R	
<i>Egretta caerulea</i>	Little blue heron			X
<i>Egretta thula</i>	Snowy egret		C	X
<i>Egretta tricolor</i>	Tricolored heron		R	X
<i>Eudocimus albus</i>	White ibis		R	X
<i>Falco sparverius</i>	American kestrel		U	X
<i>Fulica americana</i>	American coot		A	X
<i>Geranoaetus albicaudatus</i>	White-tailed hawk		U	
<i>Hirundo rustica</i>	Barn swallow		R	
<i>Lanius ludovicianus</i>	Loggerhead shrike	U	C	X
<i>Leucophaeus atricilla</i>	Laughing gull			X
<i>Megaceryle alcyon</i>	Belted kingfisher		U	X
<i>Melanerpes carolinus</i>	Red-bellied woodpecker		R	
<i>Melospiza melodia</i>	Song sparrow	U		X
<i>Mimus polyglottos</i>	Northern mockingbird	U	U	X
<i>Molothrus ater</i>	Brown-headed cowbird	C	A	X
<i>Nannopterum auritum</i>	Double-crested cormorant	R	U	X
<i>Pandion haliaetus</i>	Osprey		R	X
<i>Passerculus sandwichensis</i>	Savannah sparrow	C	C	X
<i>Pelecanus occidentalis</i>	Brown pelican			X



Scientific Name	Common Name	On-site Surveys Abundance ¹	Driving Route Abundance ²	Vicinity General Reconnaissance ³
<i>Plegadis falcinellus</i>	Glossy ibis			X
<i>Podilymbus podiceps</i>	Pied-billed grebe			X
<i>Poliophtila caerulea</i>	Blue-gray gnatcatcher		R	X
<i>Quiscalus mexicanus</i>	Great-tailed grackle	A	A	X
<i>Sayornis phoebe</i>	Eastern phoebe	U	U	X
<i>Sialia sialis</i>	Eastern bluebird		R	
<i>Spatula clypeata</i>	Northern shoveler			X
<i>Spinus tristis</i>	American goldfinch		R	
<i>Stelgidopteryx serripennis</i>	Northern rough-winged swallow	A	A	
<i>Sterna forsteri</i>	Forster's tern	U	U	X
<i>Streptopelia decaocto</i>	Eurasian collared-dove		C	X
<i>Sturnella magna</i>	Eastern meadowlark		C	X
<i>Sturnella neglecta</i>	Western meadowlark			X
<i>Sturnus vulgaris</i>	European starling	C	A	X
<i>Tringa semipalmata</i>	Willet			X
<i>Troglodytes aedon</i>	House wren	U	O	X
<i>Tyrannus forficatus</i>	Scissor-tailed flycatcher		R	X
<i>Vireo griseus</i>	White-eyed Vireo		R	
<i>Zenaida macroura</i>	Mourning dove	C	A	X
Species Richness		20	46	43

¹Species identified during on-site pedestrian surveys.

²Species identified along the bird transect routes at designated vicinity stopping points.

³X = Observed during field reconnaissance.

Abundance Categories: A=abundant; C=common; O=occasional; U=uncommon; R=rare

3.1.2.2 Mammals

Field studies for mammal species included general field reconnaissance and incidental observations during pedestrian surveys. Figure 2-2 depicts the ecological survey locations during the seasonal surveys. Detailed methodology can be found in Section 2.2.2.

Mammal species observed in the Project Site included coyote (*Canis latrans*), opossum (*Didelphis virginiana*), white-tailed deer (*Odocoileus virginianus*), raccoon (*Procyon lotor*), feral hog (*Sus scrofa*), eastern cottontail (*Sylvilagus floridanus*), groundhog (*Marmota monax*), and striped skunk (*Mephitis mephitis*). Mammal occurrence in the Project Site is likely driven by various habitats (developed lands, cultivated crops, herbaceous, scrub/shrub, open water, and fragmented forest) and previous disturbance within and surrounding the Project Site. Within the Project Vicinity, additional mammal species of beaver (*Castor canadensis*), armadillo (*Dasypus novemcinctus*), and nutria (*Myocastor coypus*), were observed. The list of mammals observed within and near the Project Site is recorded in Table 3-7 (winter 2023) Table 3-8 (spring 2023), Table 3-9 (summer 2023), and Table 3-10 (fall 2023). White-tailed deer are recreationally



valuable as game species, while coyotes and eastern cottontails are nongame species in Texas. Opossum, nutria, raccoon, and striped skunk are recreationally valuable as furbearers as listed by TPWD hunting regulations. Feral hogs and coyotes are also hunted in Texas (TPWD 2023a).

Tracks of wildlife species, such as white-tailed deer, raccoon, opossum, and coyote, were observed throughout much of the Project Site habitats during the seasonal field surveys. These common species do not appear to be impacted by the current level of human and industrial activities occurring near the site. These mobile species along with others observed on-site, such as eastern cottontail, groundhog, striped skunk, and feral hog and other terrestrial mammals not observed but likely to occur such as rodents, collectively create and use travel corridors across various biotic communities on the site and to and from adjacent properties. The longest and most complex travel corridors are typically established by white-tailed deer. Other species may use portions of these regularly traveled trails.

Table 3-7
Mammal Species Observed in or near the Project Long Mott Project Site, Winter 2023

Scientific Name	Common Name	On-site	Vicinity
<i>Canis latrans</i>	Coyote	X	
<i>Didelphis virginiana</i>	Opossum	X	
<i>Odocoileus virginianus</i>	White-tailed deer	X	X
<i>Procyon lotor</i>	Raccoon	X	X
<i>Sylvilagus floridanus</i>	Eastern cottontail		X
<i>Marmota monax</i>	Groundhog	X	X
<i>Mephitis mephitis</i>	Striped skunk	X	

Table 3-8
Mammal Species Observed in or near the Project Long Mott Project Site, Spring 2023

Scientific Name	Common Name	On-site	Vicinity
<i>Canis latrans</i>	Coyote	X	
<i>Castor canadensis</i>	Beaver		X
<i>Dasyurus novemcinctus</i>	Armadillo		X
<i>Marmota monax</i>	Groundhog	X	
<i>Mephitis mephitis</i>	Striped skunk		X
<i>Odocoileus virginianus</i>	White-tailed deer	X	X
<i>Procyon lotor</i>	Raccoon	X	X
<i>Sus scrofa</i>	Feral hog	X	X
<i>Sylvilagus floridanus</i>	Eastern cottontail	X	X

Table 3-9
Mammal Species Observed in or near the Project Long Mott Project Site, Summer 2023

Scientific Name	Common Name	On-site	Vicinity
<i>Dasyurus novemcinctus</i>	Armadillo		X



<i>Myocastor coypus</i>	Nutria		X
<i>Odocoileus virginianus</i>	White-tailed deer	X	X
<i>Procyon lotor</i>	Raccoon	X	X
<i>Sylvilagus floridanus</i>	Eastern cottontail	X	

Table 3-10
Mammal Species Observed in or near the Project Long Mott Project Site, Fall 2023

Scientific Name	Common Name	On-site	Vicinity
<i>Canis latrans</i>	Coyote	X	
<i>Didelphis virginiana</i>	Opossum		X
<i>Odocoileus virginianus</i>	White-tailed deer	X	X
<i>Procyon lotor</i>	Raccoon	X	X
<i>Sylvilagus floridanus</i>	Eastern cottontail	X	

3.1.2.3 Herpetofauna

Herpetofauna were recorded based on general field reconnaissance and incidental observations during the ecological surveys. Figure 2-2 depicts the ecological survey locations during the seasonal surveys. Detailed methodology can be found in Section 2.2.2.

Herpetofauna species encountered on the Project Site included American alligator (*Alligator mississippiensis*), gulf coast toad (*Incilius nebulifer*), American bullfrog (*Lithobates catesbeianus*), diamondback watersnake (*Nerodia rhombifer*), five-lined skink (*Plestiodon fasciatus*), Gulf Coast ribbon snake (*Thamnophis proximus orarius*), garter snake (*Thamnophis sirtalis*), and red-eared slider (*Trachemys scripta elegans*). Within the Project Vicinity, additional herpetofaunal species of water moccasin (*Agkistrodon piscivorus*), spiny softshell turtle (*Apalone spinifera*), Texas spiny lizard (*Sceloporus olivaceus*), and common snapping turtle (*Chelydra serpentina*) were observed. The list of herpetofauna observed within and near the Project Site is recorded in Table 3-11 (spring 2023), Table 3-12 (summer 2023), and Table 3-13 (fall 2023). Alligators, freshwater turtles (snapping turtles), and frogs (bullfrogs) are nongame species hunted and/or trapped in Texas (TPWD 2023a).

Table 3-11
Herpetofauna Species Observed in or near the Project Long Mott Project Site, Spring 2023

Scientific Name	Common Name	On-site	Vicinity
<i>Alligator mississippiensis</i>	American alligator	X	X
<i>Apalone spinifera</i>	Spiny softshell turtle		X
<i>Incilius nebulifer</i>	Gulf coast toad	X	
<i>Lithobates catesbeianus</i>	American bullfrog	X	X
<i>Nerodia rhombifer</i>	Diamondback watersnake	X	
<i>Plestiodon fasciatus</i>	Five-lined skink	X	
<i>Sceloporus olivaceus</i>	Texas spiny lizard		X
<i>Thamnophis sirtalis</i>	Garter snake	X	



<i>Trachemys scripta elegans</i>	Red-eared slider	X	X
----------------------------------	------------------	---	---

Table 3-12
Herpetofauna Species Observed in or near the Project Long Mott Project Site, Summer 2023

Scientific Name	Common Name	On-site	Vicinity
<i>Alligator mississippiensis</i>	American alligator	X	X
<i>Apalone spinifera</i>	Spiny softshell turtle		X
<i>Chelydra serpentina</i>	Common snapping turtle		X
<i>Incilius nebulifer</i>	Gulf coast toad		X
<i>Nerodia rhombifer</i>	Diamondback watersnake	X	
<i>Trachemys scripta elegans</i>	Red-eared slider		X

Table 3-13
Herpetofauna Species Observed in or near the Project Long Mott Project Site, Fall 2023

Scientific Name	Common Name	On-site	Vicinity
<i>Agkistrodon piscivorus</i>	Cottonmouth		X
<i>Alligator mississippiensis</i>	American alligator		X
<i>Apalone spinifera</i>	Spiny softshell turtle		X
<i>Nerodia rhombifer</i>	Diamondback watersnake		X
<i>Thamnophis proximus orarius</i>	Gulf Coast ribbon snake	X	

3.2 Aquatic Resources

3.2.1 Fish

In summer 2023, a total of 19 fish species were observed during fish surveys. Abundant species observed included sailfin molly (*Poecilia latipinna*), western mosquitofish (*Gambusia affinis*), and sheepshead minnow (*Cyprinodon variegatus*). A summary of fish species observed in summer surveys by waterbody is shown in Table 3-14. A total of 15 fish species were observed within West Coloma Creek during the summer survey, the most abundant of which was sailfin molly. Within the Guadalupe-Blanco River Authority (GBRA) canal, a total of 10 species were observed, with the most abundant species being western mosquitofish. In the drainage outfall, a total of 6 species were observed, with the most abundant species being sheepshead minnow. One site in West Coloma Creek (WCC-01) was not sampled as no water was present at this location during the summer sampling event.



Table 3-14
Fish Species Observed in or near the Project Long Mott Project Site, Summer 2023

Location	Common Name	Scientific Name	Number	Weight (g)	Collection Method*
Dow Drainage Canal	Sheepshead minnow	<i>Cyprinodon variegatus</i>	30	20.9	SE
	Striped mullet	<i>Mugil cephalus</i>	9	172.4	SE
	Western mosquitofish	<i>Gambusia affinis</i>	7	2.3	SE
	Threadfin shad	<i>Dorosoma petenense</i>	3	17.0	SE
	Plains killifish	<i>Fundulus zebrinus</i>	2	1.3	SE
	Sailfin molly	<i>Poecilia latipinna</i>	1	0.5	SE
	Total		52	214.4	
GBRA Canal	Common carp	<i>Cyprinus carpio</i>	1	1,067	EFB, EFP
	Smallmouth buffalo	<i>Ictiobus bubalus</i>	4	2,714	EFB, EFP
	Gizzard shad	<i>Dorosoma cepedianum</i>	1	9	EFB, EFP
	Sheepshead minnow	<i>Cyprinodon variegatus</i>	2	2	EFB, EFP
	Western mosquitofish	<i>Gambusia affinis</i>	58	45.2	EFB, EFP
	Largemouth bass	<i>Micropterus salmoides</i>	1	1,322	EFB, EFP
	Spotted gar	<i>Lepisosteus oculatus</i>	4	3,813	EFB, EFP
	Channel catfish	<i>Ictalurus punctatus</i>	1	2,573	EFB, EFP
	Rio Grande cichlid	<i>Herichthys cyanoguttatus</i>	2	1.6	EFB, EFP
Sailfin molly	<i>Poecilia latipinna</i>	4	0.6	EFB, EFP	
	Total		78	11,547.4	
West Coloma Creek	Rio Grande cichlid	<i>Herichthys cyanoguttatus</i>	1	1.9	EFP, SE
	Western mosquitofish	<i>Gambusia affinis</i>	17	7.4	EFP, SE
	Warmouth	<i>Lepomis gulosus</i>	3	40.7	EFP, SE
	Striped mullet	<i>Mugil cephalus</i>	5	63.4	EFP, SE
	Sheepshead minnow	<i>Cyprinodon variegatus</i>	1	0.6	EFP, SE
	Weed shiner	<i>Notropis texanus</i>	1	0.3	EFP, SE
	Sailfin molly	<i>Poecilia latipinna</i>	76	70.4	EFP, SE
	Spotted gar	<i>Lepisosteus oculatus</i>	5	1,456	EFP, SE
	Mirror shiner	<i>Notropis spectrunculus</i>	1	1.0	EFP, SE
	Smallmouth buffalo	<i>Ictiobus bubalus</i>	1	2,083	EFP, SE
	Channel catfish	<i>Ictalurus punctatus</i>	2	2.5	EFP, SE
	Largemouth bass	<i>Micropterus salmoides</i>	1	0.5	EFP, SE
	Bluegill	<i>Lepomis macrochirus</i>	1	1.5	EFP, SE
	Ladyfish	<i>Elops saurus</i>	1	3.1	EFP, SE
Bay anchovy	<i>Anchoa mitchilli</i>	19	5.3	EFP, SE	



Location	Common Name	Scientific Name	Number	Weight (g)	Collection Method*
Total			135	3,737.6	

*Collection Method: SE = Seine, EFB = Electrofishing (boat), EFP = Electrofishing (backpack)

In fall 2023, a total of 23 fish species were observed during fish surveys. Abundant species observed included sailfin molly, western mosquitofish, and sheepshead minnow. A summary of fish species observed in fall surveys by waterbody is shown in Table 3-15. A total of 12 fish species were observed within West Coloma Creek during the fall survey, the most abundant of which was western mosquitofish. Within the GBRA canal, a total of 15 species were observed, with the most abundant species being sailfin molly and gizzard shad (*Dorosoma cepedianum*). In the drainage outfall, a total of 8 species were observed, with the most abundant species being sheepshead minnow. One site in West Coloma Creek (WCC-01) was not sampled as no water was present at this location during the fall sampling event.

Table 3-15
Fish Species Observed in or near the Project Long Mott Project Site, Fall 2023

Location	Common Name	Scientific Name	Number	Weight (g)	Collection Method*
Dow Drainage Canal	Striped mullet	<i>Mugil cephalus</i>	7	163	SE
	Rio Grande cichlid	<i>Herichthys cyanoguttatus</i>	10	9	SE
	Sailfin molly	<i>Poecilia latipinna</i>	127	82	SE
	Western mosquitofish	<i>Gambusia affinis</i>	17	6	SE
	Sheepshead minnow	<i>Cyprinodon variegatus</i>	458	183	SE
	Inland silverside	<i>Menidia beryllina</i>	2	4	SE
	Slough darter	<i>Etheostoma gracile</i>	8	5	SE
	Spotted gar	<i>Lepisosteus oculatus</i>	1	383	SE
Total			630	835	
GBRA Canal	Smallmouth buffalo	<i>Ictiobus bubalus</i>	2	2,322	EFB, EFP
	Rio Grande cichlid	<i>Herichthys cyanoguttatus</i>	2	94	EFB, EFP
	Bullhead minnow	<i>Pimephales vigilax</i>	2	2	EFB, EFP
	Bluegill	<i>Lepomis macrochirus</i>	1	68	EFB, EFP
	Largemouth bass	<i>Micropterus salmoides</i>	1	135	EFB, EFP
	Channel catfish	<i>Ictalurus punctatus</i>	2	2,623	EFB, EFP
	Gizzard shad	<i>Dorosoma cepedianum</i>	11	40	EFB, EFP
	Longear sunfish	<i>Lepomis megalotis</i>	2	25	EFB, EFP
	Green sunfish	<i>Lepomis cyanellus</i>	3	22	EFB, EFP
	Sailfin molly	<i>Poecilia latipinna</i>	11	20	EFB, EFP
	Bluefin killifish	<i>Lucania goodei</i>	2	2	EFB, EFP



Location	Common Name	Scientific Name	Number	Weight (g)	Collection Method*
	Western mosquitofish	<i>Gambusia affinis</i>	5	2	EFB, EFP
	Gulf killifish	<i>Fundulus grandis</i>	1	2	EFB, EFP
	Common carp	<i>Cyprinus carpio</i>	1	1,306	EFB, EFP
	Spotted gar	<i>Lepisosteus oculatus</i>	1	422	EFB, EFP
	Total		47	7,085	
West Coloma Creek	Sailfin molly	<i>Poecilia latipinna</i>	48	21	EFB, SE
	Western mosquitofish	<i>Gambusia affinis</i>	79	19	EFB, SE
	Bluefin killifish	<i>Lucania goodei</i>	1	1	EFB, SE
	Bluegill	<i>Lepomis macrochirus</i>	3	11	EFB, SE
	Green sunfish	<i>Lepomis cyanellus</i>	1	7	EFB, SE
	Longear sunfish	<i>Lepomis megalotis</i>	1	2	EFB, SE
	Alligator gar	<i>Atractosteus spatula</i>	3	3,342	EFB, SE
	Spotted gar	<i>Lepisosteus oculatus</i>	1	520	EFB, SE
	Inland silverside	<i>Menidia beryllina</i>	1	1	EFB, SE
	Shortnose gar	<i>Lepisosteus platostomus</i>	6	0	EFB, SE
	Bay anchovy	<i>Anchoa mitchilli</i>	8	0	EFB, SE
	Red drum	<i>Sciaenops ocellatus</i>	12	2	EFB, SE
	Total		164	3,926	

*Collection Method: SE = Seine, EFB = Electrofishing (boat), EFP = Electrofishing (backpack)

In winter 2024, a total of 18 fish species were observed during fish surveys. Abundant species observed included sailfin molly, bay anchovy (*Anchoa mitchilli*), inland silverside (*Menidia beryllina*), and western mosquitofish. A summary of fish species observed in winter surveys by waterbody is provided in Table 3-16. A total of 11 fish species were observed within West Coloma Creek during the winter survey, the most abundant of which was sailfin molly. Within the GBRA canal, a total of 11 species were observed, with the most abundant species being common carp (*Cyprinus carpio*). In the drainage outfall, a total of 3 species were observed, with the most abundant species being sailfin molly.

Table 3-16
Fish Species Observed in or near the Long Mott Project Site, Winter 2024

Location	Common Name	Scientific Name	Number	Weight (g)	Collection Method*
Drainage Canal	Sheepshead Minnow	<i>Cyprinodon variegatus</i>	13	9.2	EFP
	Sailfin Molly	<i>Poecilia latipinna</i>	33	19.3	EFP
	Western Mosquitofish	<i>Gambusia affinis</i>	24	6.1	EFP
	Total		70	34.6	



Location	Common Name	Scientific Name	Number	Weight (g)	Collection Method*
GBRA Canal	Redear Sunfish	<i>Lepomis microlophus</i>	2	39	EFP
	Longear Sunfish	<i>Lepomis megalotis</i>	3	48	EFP
	Bluegill	<i>Lepomis macrochirus</i>	3	29	EFP
	Gizzard Shad	<i>Dorosoma cepedianum</i>	1	9	EFP
	Longnose Gar	<i>Lepisosteus osseus</i>	3	3299	EFP
	Smallmouth Buffalo	<i>Ictiobus bubalus</i>	3	2269	EFP
	Common Carp	<i>Cyprinus carpio</i>	5	5329	EFP
	Warmouth	<i>Lepomis gulosus</i>	1	81	EFP
	Channel Catfish	<i>Ictalurus punctatus</i>	2	1607	EFP
	Western Mosquitofish	<i>Gambusia affinis</i>	1	0.5	EFP
	Weed shiner	<i>Notropis texanus</i>	1	0.5	EFP
	Total		25	12711	
West Coloma Creek	Sailfin Molly	<i>Poecilia latipinna</i>	69	46.6	EFP, SE
	Western Mosquitofish	<i>Gambusia affinis</i>	9	4.1	EFP, SE
	Bluefin Killifish	<i>Lucania goodei</i>	3	1.3	EFP, SE
	Gizzard Shad	<i>Dorosoma cepedianum</i>	1	265	EFP, SE
	Warmouth	<i>Lepomis gulosus</i>	5	55.9	EFP, SE
	Bluegill	<i>Lepomis macrochirus</i>	1	1.5	EFP, SE
	Plains Killifish	<i>Fundulus zebrinus</i>	3	5.1	EFP, SE
	Inland Silverside	<i>Menidia beryllina</i>	33	22.7	EFP, SE
	Bay Anchovy	<i>Anchoa mitchilli</i>	49	11.1	EFP, SE
	Sheepshead Minnow	<i>Cyprinodon variegatus</i>	17	11.3	EFP, SE
Naked Goby	<i>Gobiosoma bosc</i>	1	1.1	EFP, SE	
	Total		191	425.7	

*Collection Method: SE = Seine, EFB = Electrofishing (boat), EFP = Electrofishing (backpack)

In spring 2024, a total of 17 fish species were observed during fish surveys. Abundant species observed included western mosquitofish, sailfin molly, and gizzard shad. A summary of fish species observed in spring surveys by waterbody is provided in Table 3-17. A total of 10 fish species were observed within West Coloma Creek during the spring survey, the most abundant of which was western mosquitofish. Within the GBRA canal, a total of 11 species were observed, with the most abundant species being western mosquitofish. In the drainage outfall, a total of five species were observed, with the most abundant species being sheepshead minnow.



Table 3-17
Fish Species Observed in or near the Long Mott Project Site, Spring 2024

Location	Common Name	Scientific Name	Number	Weight (g)	Collection Method*
Dow Drainage Canal	Sheepshead minnow	<i>Cyprinodon variegatus</i>	13	15.8	EFP
	Sailfin molly	<i>Poecilia latipinna</i>	5	1.1	EFP
	Western mosquitofish	<i>Gambusia affinis</i>	3	1.8	EFP
	Alligator gar	<i>Atractosteus spatula</i>	1	3584	EFP
	Bluefin killifish	<i>Lucania goodei</i>	1	0.02	EFP
	Total		23	3586.92	
GBRA Canal	Western mosquitofish	<i>Gambusia affinis</i>	46	3.5	EFB, EFP
	Common carp	<i>Cyprinus carpio</i>	6	9825	EFB, EFP
	Sailfin molly	<i>Poecilia latipinna</i>	6	1.3	EFB, EFP
	Spotted gar	<i>Lepisosteus oculatus</i>	5	4880	EFB, EFP
	Smallmouth buffalo	<i>Ictiobus bubalus</i>	5	2337	EFB, EFP
	Largemouth bass	<i>Micropterus salmoides</i>	4	3086	EFB, EFP
	Bluegill	<i>Lepomis macrochirus</i>	3	96	EFB, EFP
	Channel catfish	<i>Ictalurus punctatus</i>	3	4645	EFB, EFP
	Bluefin killifish	<i>Lucania goodei</i>	2	0.5	EFB, EFP
	Longnose gar	<i>Lepisosteus osseus</i>	2	3623	EFB, EFP
	Warmouth	<i>Lepomis gulosus</i>	1	93	EFB, EFP
		Total		83	28590.3
West Coloma Creek	Western mosquitofish	<i>Gambusia affinis</i>	59	3.9	EFP, SE
	Sailfin molly	<i>Poecilia latipinna</i>	42	54.2	EFP, SE
	Gizzard shad	<i>Dorosoma cepedianum</i>	40	20.4	EFP, SE
	Red drum	<i>Sciaenops ocellatus</i>	3	1.7	EFP, SE
	Inland silverside	<i>Menidia beryllina</i>	2	2	EFP, SE
	Spotted gar	<i>Lepisosteus oculatus</i>	2	1261	EFP, SE
	Striped mullet	<i>Mugil cephalus</i>	2	101	EFP, SE
	Sheepshead minnow	<i>Cyprinodon variegatus</i>	1	4.1	EFP, SE
	Bluegill	<i>Lepomis macrochirus</i>	1	3.7	EFP, SE
Warmouth	<i>Lepomis gulosus</i>	1	8.7	EFP, SE	
	Total		153	1460.7	

*Collection Method: SE = Seine, EFB = Electrofishing (boat), EFP = Electrofishing (backpack)

Recreationally important fish species encountered included largemouth bass and channel catfish, which were encountered in the GBRA canal and West Coloma Creek. Additional game species encountered in West Coloma Creek include warmouth, bluegill, and red drum. Commercially important aquatic species encountered during aquatic ecology sampling include red drum and white shrimp.

The only non-native fish species observed were common carp and Rio Grande cichlid (*Herichthys cyanoguttatus*). Other non-native or nuisance species observed in aquatic ecology



sampling included apple snail (*Pomacea maculata*), water hyacinth (*Eichoria crassipes*), and Eurasian milfoil (*Myriophyllum spicatum*). Water hyacinth was present only in the GBRA Canal, while Eurasian milfoil was observed in both the GBRA Canal and West Coloma Creek.

No threatened or endangered fish species were identified at any location. The only state listed species of concern noted in seasonal aquatic ecology sampling was alligator gar (*Atractosteus spatula*), which was encountered in West Coloma Creek in fall 2023 seasonal survey.

3.2.2 Macroinvertebrates

In addition to fish, macroinvertebrates were sampled during the fall 2023 and spring 2024 aquatic ecology surveys. Fall macroinvertebrate sampling occurred on November 7-9, 2023. A total of 68 distinct taxa were encountered in macroinvertebrate sampling. A full list of taxa can be found in Table 3-18. The most individuals were encountered in West Coloma Creek (n=409) followed by the GBRA Calhoun Canal (n=338). Similarly, diversity was greatest in West Coloma Creek, with 41 distinct taxa encountered. The GBRA Calhoun Canal and Dow Drainage Canal had similar levels of macroinvertebrate diversity, with 25 and 23 distinct taxa, respectively. The most abundant taxa was a Chironomid (*Tanypus* sp., 20.86%) followed by a taxa of Lymnaeid snails (*Pyrgophorous* sp., 14.11%) and an annelid worm in the family Naididae (11.45%).

Table 3-18
Macroinvertebrates Encountered in the Vicinity of the Long Mott Project Site by
Water Body, Fall 2023

Common Name	Family	Taxa (genus)	West Coloma Creek	GBRA Calhoun Canal	Dow Drainage Canal	Total		
						Number	Percent of Total	
Flies and Midges	Simuliidae		1			1	0.10	
	Ceratopogonidae		4			4	0.41	
		<i>Culicodes</i> sp.				1	1	0.10
		<i>Dasyhelea</i> sp.	17			17	1.73	
	Chironomidae			2			2	0.20
		Suborder:						
		Chironaminae		1			1	0.10
		<i>Larsia</i> sp.		38			38	3.88
		<i>Tanypus</i> sp.		203	1	1	205	20.92
		<i>Dicrotendipes</i> sp.		4	1		5	0.51
		<i>Tanytarsus</i> sp.		7			7	0.71
		<i>Microtendipes</i> sp.		3			3	0.31
		<i>Chironomus</i> sp.		3			3	0.31
		<i>Polypedilum</i> sp.		1		1	2	0.20
	<i>Cryptochironomus</i> sp.					3	0.31	
		<i>Coelotanypus</i> sp.			1	15	16	1.63
Limoniidae	<i>Limonia</i> sp.		17			17	1.73	
Stratiomyidae	<i>Odontomyia</i> sp.		2			2	0.20	
Tanyderidae					1	1	0.10	



Common Name	Family	Taxa (genus)	Total						
			West Coloma Creek	GBRA Calhoun Canal	Dow Drainage Canal	Number	Percent of Total		
Annelid Worms	Naididae (Tubificidae)	Group II		4	1	5	0.51		
		Group III		2		2	0.20		
		Group V	1	7	104	112	11.43		
		<i>Nais sp.</i>	2			2	0.20		
		<i>Dero sp.</i>	1			1	0.10		
		<i>Pristina sp.</i>	8			8	0.82		
		<i>Branchiura sowerbyi</i>		2	1	3	0.31		
		<i>Limnodrilus sp.</i>		2	71	73	7.45		
		<i>Tubifex tubifex</i>		1		1	0.10		
		<i>Aulodrilus sp.</i>				11	1.12		
			Lumbriculidae			1	1	0.10	
			Tipulidae	<i>Ormosia sp.</i>			1	0.10	
			Corethrellidae	<i>Corethrella sp.</i>	1		1	0.10	
		Molluscs	Planorbidae	<i>Drepanotrema sp.</i>	6	1	2	9	0.92
				<i>Menetus sp.</i>	2	7	1	10	1.02
Hydrobiidae			1		1	2	0.20		
	<i>Pyrgulopsis sp.</i>			1		1	0.10		
	<i>Pyrgophorus sp.</i>					0	0.00		
Thiaridae	<i>Melanooides sp.</i>			60		60	6.12		
	<i>Melanooides tuberculata</i>			16		16	1.63		
Cyrenidae	<i>Corbicula sp.</i>			49	4	53	5.41		
Ampullaridae					1	1	0.10		
Ancylidae	<i>Hebetancylus sp.</i>			25		25	2.55		
Lymnaeidae	<i>Stagnicola sp.</i>		2			2	0.20		
	<i>Lymnaea sp.</i>		1			1	0.10		
	<i>Pseudosuccinea sp.</i>			1		1	0.10		
	<i>Pyrgophorus sp.</i>		1	136	1	138	14.08		
Physidae	<i>Physa sp.</i>		16	8		24	2.45		
Unionidae			2		2	0.20			
Gastropoda			1		1	0.10			
Bivalvia	Pteriomorphia		1		3	0.41			
	Unidentified Bivalvia				1	0.10			
	Unidentified mollusca		1	6	7	0.71			
Amphipods	Hyalellidae	<i>Hyallela sp.</i>	18	5		23	2.35		
Mayflies	Caenidae	<i>Caenis sp.</i>	1			1	0.10		
	Baetidae	<i>Callibaetis sp.</i>	5			5	0.51		
Dragonflies/damselfies	Gomphidae		1			1	0.10		
		<i>Arigomphus sp.</i>		1		1	0.10		
	Coenagrionidae	<i>Acanthagrion sp.</i>	5			5	0.51		



Common Name	Family	Taxa (genus)				Total	
			West Coloma Creek	GBRA Calhoun Canal	Dow Drainage Canal	Number	Percent of Total
Beetles	Elmidae	<i>Heterelmis sp.</i>		1		1	0.10
	Dysticidae					0	0.00
	Hydrophilidae	<i>Berosus sp.</i>	16			16	1.63
		<i>Tropisternus sp.</i>	1				0.00
		<i>Paracymus sp.</i>	1			1	0.10
True bugs	Naucoridae	<i>Pelocoris sp.</i>	2			2	0.20
	Notonectidae	<i>Buenoa sp.</i>	2			2	0.20
	Corixidae		3			3	0.31
		<i>Trichocorixa sp.</i>	8			8	0.82
	Gerridae		1			1	0.10
Collembola	Isotomidae	<i>Isotoma sp.</i>			1	1	0.10
Copepods	Cyclopidae		1			1	0.10
Leafhoppers	Cicadellidae				1	1	0.10
Total			412	338	231	980	100

Spring macroinvertebrate sampling occurred on May 21-23, 2024. A total of 50 distinct taxa were encountered in macroinvertebrate sampling, which was fewer taxa than observed in fall sampling. A full list of taxa can be found in Table 3-19. The most individuals were encountered in the Dow Discharge Canal (n=546) followed by West Coloma Creek (n=365). Diversity was greatest in the GBRA Calhoun Canal, with 30 distinct taxa encountered. Similarly, West Coloma Creek had relatively high diversity with 28 distinct taxa. In the Dow Drainage Canal, only 8 distinct taxa were observed. The most abundant taxa was in the Corixidae family (*Trichocorixa sp.*, 30.79%) followed by a taxa of hydrobid snails (*Stygopyrgus sp.*, 15.88%).

Table 3-19
Macroinvertebrates Encountered in the Vicinity of the Long Mott Project Site by
Water Body, Spring 2024

Common Name	Family	Taxa (genus)				Total	
			West Coloma Creek	GBRA Calhoun Canal	Dow Drainage Canal	Number	Percent of Total
Flies and Midges	Stratiomyidae	<i>Nemotelus sp.</i>	1			1	0.08
		<i>Heriodiscus sp.</i>		1		1	0.08
	Ceratopogonidae	<i>Forcipomyia sp.</i>	1			1	0.08
		Chironomidae			1	1	0.08
		<i>Tanypus sp.</i>	5			5	0.41
		<i>Dicrotendipes sp.</i>		4		4	0.32
		<i>Chironomus sp.</i>	5			5	0.41
	<i>Polypedilum sp.</i>	1	7		8	0.65	
Annelid Worms	Naididae (Tubificidae)	Group IV	46	3		49	3.97
		<i>Dero sp.</i>	6	1		7	0.57



							Total	
Common Name	Family	Taxa (genus)	West Coloma Creek	GBRA Calhoun Canal	Dow Drainage Canal	Number	Percent of Total	
		<i>Branchiura sowerbyi</i>		1		1	0.08	
		<i>Limnodrilus sp.</i>	9	1		10	0.81	
Molluscs	Planorbidae	<i>Drepanotrema sp.</i>		1		1	0.08	
		<i>Helisoma sp.</i>	1	7		8	0.65	
	Hydrobiidae			6		6	0.49	
		<i>Pyrgophorus sp.</i>	5	146		151	12.24	
		<i>Stygopyrgus sp.</i>		1	195	196	15.88	
	Thiaridae	<i>Melanooides sp.</i>		44		44	3.57	
	Cyrenidae	<i>Corbicula sp.</i>		6		6	0.49	
	Ancylidae	<i>Hebetancylus sp.</i>		6		6	0.49	
	Physidae	<i>Physa sp.</i>	6	35		41	3.32	
	Gastropoda		1			1	0.08	
		Budyconidae		1		1	0.08	
	Bivalvia	Pteriomorphia		4		4	0.32	
Amphipods	Amphipoda			1		1	0.08	
	Hyalellidae	<i>Hyallela sp.</i>	38	19		57	4.62	
		<i>Apocorophium lacustre</i>		1		1	0.08	
	Corophiidae			11		11	0.89	
Mayflies	Gammaridae	<i>Gammarus sp.</i>		11		11	0.89	
	Caenidae	<i>Caenis sp.</i>	2	1		3	0.24	
	Baetidae	<i>Callibaetis sp.</i>	135	41	6	182	14.75	
Dragonflies/damselflies				1		1	0.08	
	Coenagrionidae	<i>Acanthagrion sp.</i>			3	3	0.24	
		<i>Ischnura sp.</i>	8	5		13	1.05	
Beetles	Elmidae	<i>Heterelmis sp.</i>				0	0.00	
	Curculionidae				1	1	0.08	
	Dytiscidae	<i>Dytiscus sp.</i>	1			1	0.08	
		<i>Hydroporus sp.</i>	1			1	0.08	
	Hydrophilidae	<i>Berosus sp.</i>	2	1	1	4	0.32	
		<i>Cymbiodyta sp.</i>		1		1	0.08	
		<i>Hydrophilus sp.</i>			1	1	0.08	
	Helophoridae	<i>Helophorus sp.</i>	2			2	0.16	
	Chrysomelidae		1			1	0.08	
	Scirtidae	<i>Prionocyphon sp.</i>	1			1	0.08	
		<i>Scirtes sp.</i>	2			2	0.16	
True bugs	Naucoridae	<i>Pelocoris sp.</i>				0	0.00	
	Hemiptera		1			1	0.08	
	Belostomatidae	<i>Abedus sp.</i>	1	5		6	0.49	
	Saldidae		1			1	0.08	
	Corixidae	<i>Trichocorixa sp.</i>	39	3	338	380	30.79	
	Veliidae	<i>Microvelia sp.</i>	1			1	0.08	
Total			323	365	546	1234	100	



Shellfish were opportunistically sampled during fish sampling activities. A summary of shellfish encountered can be found in Table 3-20. The most abundant shellfish encountered was white shrimp.

Table 3-20
Shellfish Species Encountered in Aquatic Ecology Sampling

Water Body	Common Name	Scientific Name	Number, Fall 2023	Number, Spring 2024
West Coloma Creek	Red swamp crayfish	<i>Procambarus clarkii</i>	1	2
	White river crayfish	<i>Procambarus acutus</i>	1	
	Blue crab	<i>Callinectes sapidus</i>	29	1
	White shrimp	<i>Litopenaeus setiferus</i>	123	220
GBRA Canal	White shrimp	<i>Litopenaeus setiferus</i>	68	81
Dow Drainage Canal	White shrimp	<i>Litopenaeus setiferus</i>	287	5
	Blue crab	<i>Callinectes sapidus</i>	3	

Two non-native macroinvertebrates were encountered in sampling. These included the non-native aquatic worm, *Branchiura sowerbyi*, and one non-native snail, *Melanoides tuberculata*. Other non-native or nuisance species observed on-site during sampling activities, but not observed in samples included apple snail (*Pomacea maculata*). Commercially important macroinvertebrates encountered include white shrimp. Recreational species include blue crab, white shrimp, and red swamp crayfish (*Procambarus clarkia*).

3.3 Important Species and Habitats

Information from the USFWS IPaC, NOAA, and TPWD were reviewed to identify important species and habitats potentially occurring within or near the Project Site. Important species are summarized in the following sections.

3.3.1 State and Federally Listed Species

As part of the desktop analysis, a list of protected species potentially occurring within or near the Project Site was developed and is presented in Table 3-21 and summarized in the following paragraphs.

Table 3-21
Protected Species Potentially Occurring within or near the Project Long Mott Project Site

Common Name	Scientific Name	Status		
		Federal ^(a)	State ^(b)	Suitable Habitat Present in Project Area ^(c)
Fish				
Alligator gar	<i>Atractosteus spatula</i>		S	P
Oceanic whitetip shark	<i>Carcharhinus longimanus</i>	T	T	N
Saltmarsh topminnow	<i>Fundulus jenkinsi</i>		S	N
Shortfin mako shark	<i>Isurus oxyrinchus</i>		T	N



Common Name	Scientific Name	Status		
		Federal ^(a)	State ^(b)	Suitable Habitat Present in Project Area ^(c)
Opossum pipefish	<i>Micropis brachyurus</i>		S	N
Southern flounder	<i>Paralichthys lethostigma</i>		S	N
Birds				
Sprague's pipit	<i>Anthus spragueii</i>		S	P
Western burrowing owl	<i>Athene cunicularia hypugaea</i>		S	N
White-tailed hawk	<i>Buteo albicaudatus</i>		T	P
Red knot	<i>Calidris canutus rufa</i>	T	T	N
Piping plover	<i>Charadrius melodus</i>	T	T	N
Reddish egret	<i>Egretta rufescens</i>		T	N
Swallow-tailed kite	<i>Elanoides forficatus</i>		T	N
Northern aplomado falcon	<i>Falco femoralis septentrionalis</i>	E	E	N
Eastern black rail	<i>Laterallus jamaicensis</i>	T	T	N
Franklin's gull	<i>Leucophaeus pipixcan</i>		S	N
Whooping crane	<i>Grus americana</i>	E	E	N
Bald eagle	<i>Haliaeetus leucocephalus</i>		S	N
Wood stork	<i>Mycteria americana</i>		T	N
Black skimmer	<i>Rynchops niger</i>		S	N
White-faced ibis	<i>Plegadis chihi</i>		T	N
Reptiles and Amphibians				
Woodhouse's toad	<i>Anaxyrus woodhousii</i>		S	N
Loggerhead sea turtle	<i>Caretta caretta</i>	T	T	N
Texas scarlet snake	<i>Cemophora lineri</i>		T	P
Green sea turtle	<i>Chelonia mydas</i>	T	T	N
Leatherback sea turtle	<i>Dermochelys coriacea</i>	E		N
Hawksbills sea turtle	<i>Eretmochelys imbricata</i>	E	E	N
Kemp's Ridley sea turtle	<i>Lepidochelys kempii</i>	E	E	N
Southern crawfish frog	<i>Lithobates areolatus areolatus</i>		S	N
Texas diamondback terrapin	<i>Malaclemys terrapin littoralis</i>		S	N
Salt marsh snake	<i>Nerodia clarkii</i>		S	N
Black-spotted newt	<i>Notophthalmus meridionalis</i>		T	P
Slender glass lizard	<i>Ophisaurus attenuatus</i>		S	N
Texas horned lizard	<i>Phrynosoma cornutum</i>		T	N
Prairie skink	<i>Plestiodon septentrionalis</i>		S	N
Strecker's chorus frog	<i>Pseudacris streckeri</i>		S	N
Western massasauga	<i>Sistrurus tergeminus</i>		S	N
Eastern box turtle	<i>Terrapene carolina</i>		S	P
Western box turtle	<i>Terrapene ornata</i>		S	P
Insects				
American bumblebee	<i>Bombus pensylvanicus</i>		S	P
Monarch butterfly	<i>Danaus plexippus</i>	C		P
Mollusks				
Live oak glass	<i>Nesovitrea suzannae</i>		S	N



Common Name	Scientific Name	Status		
		Federal ^(a)	State ^(b)	Suitable Habitat Present in Project Area ^(c)
Mammals				
Sei whale	<i>Balaenoptera borealis</i>	E	E	N
Blue whale	<i>Balaenoptera musculus</i>	E	E	N
Gulf of Mexico Bryde's whale	<i>Balaenoptera ricei</i>	E	E	N
Western hog-nosed skunk	<i>Conepatus leuconotus</i>		S	N
Padre Island kangaroo rat	<i>Dipodomys compactus compactus</i>		S	N
North Atlantic right whale	<i>Eubalaena glacialis</i>	E	E	N
Eastern red bat	<i>Lasiurus borealis</i>		S	N
Hoary bat	<i>Lasiurus cinereus</i>		S	N
Northern yellow bat	<i>Lasiurus intermedius</i>		S	N
Humpback whale	<i>Megaptera novaeangliae</i>	E	S	N
Long-tailed weasel	<i>Mustela frenata</i>		S	P
White-nosed coati	<i>Nasua narica</i>		T	N
Big free-tailed bat	<i>Nyctinomops macrotis</i>		S	N
Tricolored bat	<i>Perimyotis subflavus</i>	PE	S	N
Sperm whale	<i>Physeter macrocephalus</i>	E	E	N
Mountain lion	<i>Puma concolor</i>		S	N
Eastern spotted skunk	<i>Spilogale putorius</i>		S	P
Swamp rabbit	<i>Sylvilagus aquaticus</i>		S	N
West Indian manatee	<i>Trichechus manatus</i>	T	T	N
Plants				
Sand brazos mint	<i>Brazoria arenaria</i>		S	N
Marsh-elder dodder	<i>Cuscuta attenuata</i>		S	N
Velvet spurge	<i>Euphorbia innocua</i>		S	N
Coastal gay-feather	<i>Liatris bracteata</i>		S	P
Seaside beebalm	<i>Monarda maritima</i>		S	N
Texas peachbush	<i>Prunus texana</i>		S	N
Indianola beakrush	<i>Rhynchospora indianolensis</i>		S	P
Threeflower broomweed	<i>Thurovia triflora</i>		S	P
Texas willkommia	<i>Willkommia texana var. texana</i>		S	N

Reference: USFWS 2024; TPWD 2024.

- a) Federal Status Codes:
T = Listed Threatened
E = Listed Endangered
C = Candidate
PE = Proposed Endangered
- b) State Status Codes:
E = Listed Endangered
T = Listed Threatened
S = Listed Sensitive
- c) Habitat Codes:
N = No records of species within the Project Site and no suitable habitat is present
P = Potentially suitable habitat is present

In order to inform X-energy of the potential for consultation in accordance with Section 7(c) of the ESA, as amended, a listing of federally threatened or endangered species currently listed or

candidate species proposed for listing that may occur within the Project Site was obtained from the USFWS IPaC website and TPWD Calhoun County list of rare species in July 2024 (USFWS 2024; TPWD 2024). The USFWS IPaC and TPWD Calhoun County list identified eleven endangered species: Northern aplomado falcon (*Falco femoralis septentrionalis*), whooping crane (*Grus americana*), leatherback sea turtle (*Dermochelys coriacea*), hawksbills sea turtle (*Eretmochelys imbricata*), Kemp's Ridley sea turtle (*Lepidochelys kempii*), sei whale (*Balaenoptera borealis*), blue whale (*Balaenoptera musculus*), Gulf of Mexico bryde's whale (*Balaenoptera ricei*), North Atlantic right whale (*Eubalaena glacialis*), Humpback whale (*Megaptera novaeangliae*), and sperm whale (*Physeter macrocephalus*); seven threatened species: Oceanic whitetip shark (*Carcharhinus longimanus*), red knot (*Calidris canutus rufa*), piping plover (*Charadrius melodus*), Eastern black rail (*Laterallus jamaicensis*), Loggerhead sea turtle (*Caretta caretta*), green sea turtle (*Chelonia mydas*), and West Indian manatee (*Trichechus manatus*); and one candidate species: monarch butterfly (*Danaus plexippus*). One species proposed as endangered was identified by the USFWS IPaC: tricolored bat (*Perimyotis subflavus*) (Table 3-21) (USFWS 2024). None of the federally threatened, endangered, or proposed species identified through IPaC were observed in the Project Site or have suitable habitat present in the Project Site. The federal candidate species monarch butterfly has suitable habitat within the Project Site due to the observed milkweed host plant species recorded in the northeast herbaceous portion of the Project Site. No critical habitat was identified on the IPaC system results. As discussed in Section 2.2.2, the USFWS IPaC also identified twenty-two migratory birds of conservation concern that have the potential to occur on the site. Three of these migratory birds (bald eagle, black skimmer, and swallow-tailed kite) are state sensitive species and are discussed in Table 3-21.

The National Marine Fisheries Service (NMFS) has established Essential Fish Habitat (EFH) as important habitat for aquatic species that may occur in Gudalupe Bay, Mission Lake, or Victoria Barge Canal in the Project Vicinity. Species with EFH identified within the vicinity of the project site are listed and discussed in Section 3.3.2 (NOAA 2023). No EFH exists within the Project Site or in the freshwater stream systems on-site or in the vicinity.

A review of the TPWD Calhoun County list of rare species in July 2024 identified nine state endangered species, seventeen state threatened species, and forty-two state sensitive species within Calhoun County (Table 3-21) (TPWD 2024).

Based on a review of habitat requirements for each of the wildlife species listed in Table 3-21, potentially suitable habitat is present within the Project Site for three state threatened species: white-tailed hawk, Texas scarlet snake (*Cemophora lineri*), and black-spotted newt (*Notophthalmus meridionalis*). The white-tailed hawk was observed on-site and within the vicinity during spring 2023 surveys and in the vicinity during summer and fall 2023. Since the white-tailed hawk was observed perched on a transmission line tower and as a flyover to these areas and no raptor nests were observed, the white-tailed hawk likely uses the site and the vicinity to forage and not breed. The Texas scarlet snake was not observed on-site but has the potential to occur within the Project Site based on the presence of preferred scrub habitat in the southern portion of the site and the herbaceous scrub habitat in northeast portion of site. The black-spotted newt was not observed on-site but has the potential to occur within the Project

Site based on the presence of preferred scrub-shrub and emergent wetlands in southwest corner of site.

Based on a review of habitat requirements for each of the wildlife and plant species listed in Table 3-21, potentially suitable habitat is present within the Project Site for ten state sensitive species: alligator gar (*Atractosteus spatula*), Sprague's pipit (*Anthus spragueii*), eastern box turtle (*Terrapene carolina*), western box turtle (*Terrapene ornata*), American bumblebee (*Bombus pensylvanicus*), long-tailed weasel (*Mustela frenata*), eastern spotted skunk (*Spilogale putorius*), coastal gay-feather (*Liatris bracteata*), Indianola beakrush (*Rhynchospora indianolensis*), and threeflower broomweed (*Thurovia triflora*). Alligator gar was not recorded within the Project Site during seasonal field surveys but was collected south of the site in West Coloma Creek. Sprague's pipit was not recorded on-site or within the vicinity but has the potential to occur within the Project Site based upon the presence of preferred weedy fields and herbaceous cover in northeast, west and southwest portions of the site. The eastern and western box turtles were not recorded on-site or within the vicinity but have the potential to occur within the Project Site based upon the presence of preferred fields throughout much of the site. The American bumblebee was not recorded on-site or within the vicinity but has the potential to occur within the Project Site based upon the presence of preferred farmlands and open fields throughout much of the site. Long-tailed weasel was not recorded on-site or within the vicinity but has the potential to occur within the Project Site based upon the presence of preferred brushlands and fence rows in the southern and northeast portions of the site. Eastern spotted skunk was not recorded on-site or within the vicinity but has the potential to occur within the Project Site based upon the presence of preferred croplands and fencerows throughout much of the site and brushy scrub-shrub in southern portion of site. Less than ten stems of Indianola beakrush were identified in low, wet areas of two heavily- to moderately-grazed upland cattle and goat pastures in the southeastern portion of the Project Site. No other state sensitive vascular plant species were identified during spring, summer, or fall surveys; however, marginal potential habitat does exist on-site for the coastal gay-feather and threeflower broomweed. Both species are historically found in coastal prairies, and while degradation to this habitat type is recognized as a potential threat to their survival, both species have been observed to possess some resilience to habitat disturbance and have been observed in converted prairie lands along roadsides, railroads, and pastures. Therefore, potential habitat likely exists in the open pastures herbaceous lands of the Project Site, in particular, within the large rectangular field south of the railyard in the northeast portion of the site (Figure 2-1).



3.3.2 Additional Important Species and Habitats

As stated in Section 3.1, recreationally valuable game species, based on TPWD hunting regulations (TPWD 2023a), observed within the Project Site included Northern bobwhite, mourning dove, white-tailed deer, and warmouth. Species observed in the Project Vicinity that are recreationally valuable as game species include Northern pintail, green-winged teal, sandhill crane, Northern bobwhite, black-bellied whistling-duck, American coot, Wilson’s snipe, common gallinule, gadwall, wild turkey, red-breasted merganser, Northern shoveler, blue-winged teal, mourning dove, white-tailed deer, largemouth bass, channel catfish, warmouth, bluegill, and red drum. Commercially important aquatic species encountered during aquatic ecology sampling included red drum and white shrimp. Opossum, nutria, raccoon, and striped skunk are recreationally valuable as furbearers as listed by TPWD hunting regulations. Alligators, snapping turtles, feral hogs, and coyotes are non-game species also hunted in Texas (TPWD 2023a). No commercially valuable species, species essential to the maintenance and survival of rare or commercially or recreationally valuable species, species critical to the structure and function of local terrestrial ecosystems, or species that could serve as biological indicators of effects on local terrestrial ecosystems were observed in the Project Site.

The NMFS has established EFH, identified herein as important habitat for aquatic species that may occur in Guadalupe Bay or Mission Lake, including within the Victoria Barge Canal. Species for which EFH exists within the vicinity of the project site are listed in Table 3-22 (NOAA 2023). No EFH exists in freshwater stream systems in on-site or the vicinity of the Project Site. Other important aquatic habitats in the vicinity of the Project Site include marine oyster water. Oyster waters are located in estuarine areas within Guadalupe Bay and Mission Lake. These oyster waters are listed as impaired on the Texas Commission on Environmental Quality (TCEQ) 303(d) listed for presence of fecal coliform (TCEQ 2022).

**Table 3-22:
Species for which Essential Fish Habitat Exists in Guadalupe Bay within the Vicinity of
the Long Mott Project Site**

Species/Management Unit	Scientific Name	Life Stage Potentially Found in Guadalupe Bay
Atlantic sharpnose shark (Gulf of Mexico Stock)	<i>Rhizoprionodon terraenovae</i>	Juvenile/Adult, Neonate
Blacktip shark (Gulf of Mexico stock)	<i>Carcharhinus limbatus</i>	Neonate
Bonnethead shark (Gulf of Mexico stock)	<i>Sphyrna tiburo</i>	Adult, Juvenile, Neonate
Bull shark	<i>Carcharhinus leucas</i>	Juvenile/Adult, Neonate
Coastal Migratory Pelagic Fishes	N/A	All



Species/Management Unit	Scientific Name	Life Stage Potentially Found in Guadalupe Bay
Lemon Shark	<i>Negaprion brevirostris</i>	Juvenile, Neonate
Red Drum	<i>Sciaenops ocellatus</i>	All
Reef fish (43 species)	N/A	All
Scalloped hammerhead shark	<i>Sphyrna lewini</i>	Neonate
Commercially Harvested Shrimp	Brown shrimp (<i>Penaeus aztecus</i>); White shrimp (<i>Penaeus setiferus</i>); Pink shrimp (<i>Penaeus duorarum</i>); Royal red shrimp (<i>Pleoticus robustus</i>)	All
Spinner Shark	<i>Carcharhinus brevipinna</i>	Neonate

Source: NOAA 2023

TPWD Rare Plant Communities of Texas (RPCT) report (TPWD 2011) identified five priority plant communities within Calhoun County: Black Mangrove Shrubland, Colima-Panalero-Chapote Matorral, Seacoast Bluestem-Gulfdune Crowngrass Herbaceous Vegetation, Texas Coastal Bend Interdune Swale Grassland, and Texas Coastal Bend Live Oak-Redbay Forest, none of which are located in the Project Site. During off-site reconnaissance of natural vegetation communities, a representative example of the Texas Coastal Bend Interdune Swale Grassland was identified approximately 13 miles to the southeast of the Project Site along Lane Road south of Seadrift, just east of the Welder Flats Wildlife Management Area. This community was found in sandy soils in the low swales between dunes and the dominant species observed were sharp clubrush (*Schoenoplectus pungens*) and switchgrass (*Panicum virgatum*). Additional associates identified include Carolina fimbry (*Fimbristylis caroliniana*), saltmarsh umbrella sedge (*Fuirena breviseta*), Florida bluehearts (*Buchnera floridanum*), rosy palafox (*Palafoxia rosea*), torpedo grass (*Panicum repens*), Gulf coast swallowwort (*Pattalias palustre*), starrush whitetop (*Rhynchospora colorata*), and southern beaksedge (*Rhynchospora microcarpa*). While the 2011 TPWD RPCT lists this community as State Imperiled (S2), according to NatureServe (2022a), from which this community concept is derived, this community is apparently no longer state-ranked but is still considered Globally Imperiled (G2).

Other than wetlands described in Section 3.1.1, there are no other important habitats as defined by NUREG-1555 (wildlife sanctuaries, refuges, or preserves, habitats identified by State or Federal agencies as unique, rare, or of priority for protection, land areas identified as “critical habitat” for species listed as threatened or endangered by the USFWS) within the Project Site.

A portion of the Guadalupe Delta Wildlife Management Area is within the Project Vicinity and located approximately 2.7mi west of the Project Site. It was identified by the USFWS and TPWD as a wetlands area that needs to be preserved to protect the wildlife habitat. It is a complex of natural and manmade wetlands and associated adjacent uplands in the vicinity of the delta of

the Guadalupe River. The area consists of four units, Mission Lake Unit (1,138 acres), Hynes Bay Unit (1,008 acres), Guadalupe River Unit (1,138 acres), and the San Antonio Unit (818 acres) (TPWD 2023b). The Mission Lake Unit is located within the Project Vicinity. The units of the Guadalupe Delta are freshwater marshes subject to flooding from the Guadalupe River and its adjacent bayous. Riparian areas along the numerous small bayous provide forage areas for neotropical songbirds. The Guadalupe Delta Wildlife Management Area has traditionally provided habitat for wetland-dependent wildlife, especially migratory waterfowl. Permitted waterfowl hunting is offered. The Guadalupe Delta Wildlife Management Area is depicted in Figure 3-3 and is considered important habitat in the Project Vicinity.

4 Summary

Pedestrian and general reconnaissance surveys were conducted within the Project Site to collect seasonal ecological field data descriptive of threatened and endangered species and the potential occurrence of their preferred habitats, resident plant communities, and wildlife populations (including important species and habitats).

To account for seasonal variability of wildlife use within the site, surveys were conducted in the winter (February 2023), spring (May 2023), summer (August 2023), and fall (November 2023). Aquatic resource surveys were conducted during summer (August 2023), fall (November 2023), winter (January 2024) and spring (May 2024). Seasonal surveys for vegetation were conducted in the spring, summer, and fall 2023. Vegetation habitat types within the Project Site primarily include cultivated crops, herbaceous, developed-medium intensity, and shrub-scrub. Avian observations during the winter 2023, spring 2023, summer 2023, and fall 2023 surveys included 17, 36, 33, and 20 avian species, respectively. Eight mammal species and eight herpetofaunal species were observed within the Project Site during seasonal surveys. A total of 15 fish species were observed within West Coloma Creek during the summer 2023 survey, 12 fish species during the fall 2023 survey, 11 fish species during the winter 2024 survey, and 10 fish species during the spring 2024 survey. Recreationally valuable game species observed within the Project Site included Northern bobwhite, mourning dove, white-tailed deer, and warmouth. Opossum, raccoon, and striped skunk are recreationally valuable as furbearers with alligators, snapping turtles, bullfrogs, feral hogs, and coyotes are nongame species also hunted and/or trapped in Texas. No commercially valuable species, species essential to the maintenance and survival of rare or commercially or recreationally valuable species, species critical to the structure and function of local terrestrial ecosystems, or species that could serve as biological indicators of effects on local terrestrial ecosystems were observed in the Project Site. The recreationally valuable species observed on-site would be considered common to the region and typical of the habitat types within the Project Site, vicinity, and region.

Field avian surveys include a characterization of relative abundance based upon occurrence during the field surveys and included those that were commonly encountered and those that were rarely or uncommonly encountered. However, the identified species are generally considered to be occasional or common within the region. The white-tailed hawk, state listed as threatened by TPWD, was observed within the Project Site and within the Project Vicinity. Since the white-tailed hawk was only observed perched on a transmission line tower and as a flyover to these areas and no raptor nests were observed, the white-tailed hawk likely uses the site and vicinity to forage. The wood stork, state listed as threatened by TPWD, was observed in the Project Vicinity during summer 2023. The wood stork was not observed within the Project Site. Bald eagle, identified by USFWS as a migratory bird of conservation concern and protected under the Bald and Golden Eagle Protection Act, was observed within the Project Vicinity but no raptor nests were observed. The federal candidate species monarch butterfly has suitable habitat within the Project Site due to the observed milkweed host plant species recorded in the northeast herbaceous portion of the Project Site. No other candidate, threatened, or endangered species (wildlife or plants) were observed as part of the seasonal field studies.



Potentially suitable habitat is present within the Project Site for two other state threatened species (Texas scarlet snake and black-spotted newt). The Texas scarlet snake and black-spotted newt were not observed during the 2023 field surveys, and none are known to occur in the Project Site.

Potentially suitable habitat is present within the Project Site for ten state sensitive species: alligator gar, Sprague's pipit, eastern box turtle, western box turtle, American bumblebee, long-tailed weasel, eastern spotted skunk, coastal gay-feather, Indianola beakrush, and threeflower broomweed. Alligator gar was not recorded within the Project Site during seasonal field surveys but was collected south and downstream of the Project Site in West Coloma Creek. Less than ten stems of Indianola beakrush were identified in low, wet areas of two heavily- to moderately-grazed upland cattle and goat pastures in the southeastern portion of the Project Site. No other state sensitive wildlife or vascular plant species were identified during seasonal surveys. Other than the WOTUS-delineated wetlands and features described in Section 3.1.1, field investigations have concluded that the Project Site is disturbed and does not include unique or sensitive habitat.

5 References

- Dewitz, J., and U.S. Geological Survey, 2021, National Land Cover Database (NLCD) 2019 Products (ver. 2.0, June 2021): U.S. Geological Survey data release. Available online at <https://doi.org/10.5066/P9KZCM54>. Accessed November 2023.
- Exelon Generation, 2012. Victoria County Station, Early Site Permit Application Part 03, Environmental Report. May 2012.
- Griffith, G., Bryce, S., Omernik, J., and Rogers, A. 2007. Ecoregions of Texas (text, map, summary tables, and photographs): Corvallis, Oregon, U.S. Geological Survey. Available online at http://www.ecologicalregions.info/data/tx/TXeco_Jan08_v8_Cmprsd.pdf. Accessed June 2023.
- NatureServe. 2022a. *Spartina patens* - *Fimbristylis (caroliniana, castanea)* - (*Panicum virgatum*) Marsh. Available online at [https://explorer.natureserve.org/Taxon/ELEMENT_GLOBAL.2.688274/Spartina_patens_-_Fimbristylis_\(caroliniana_castanea\)_-\(Panicum_virgatum\)_Marsh](https://explorer.natureserve.org/Taxon/ELEMENT_GLOBAL.2.688274/Spartina_patens_-_Fimbristylis_(caroliniana_castanea)_-(Panicum_virgatum)_Marsh). Accessed November 2023.
- NatureServe. 2022b. Texas-Louisiana Coastal Prairie. Available online at https://explorer.natureserve.org/Taxon/ELEMENT_GLOBAL.2.723052/Texas-Louisiana_Coastal_Prairie. Accessed November 2023.
- NOAA. 2023. NOAA Fisheries Essential Fish Habitat Mapper, National Marine Fisheries Service. Website: https://www.habitat.noaa.gov/apps/efhmapper/?page=page_1, Date accessed: October 10, 2023.
- Soil Survey Staff, Natural Resources Conservation Service (NRCS). 2023 United States Department of Agriculture. Web Soil Survey. Available online: <https://websoilsurvey.nrcs.usda.gov/app/> Accessed November 2023.
- Texas Commission on Environmental Quality (TCEQ). 2022. 2022 Texas Integrated Report – Texas 303(d) List (Category 5). July 7, 2022.
- Texas Parks and Wildlife Department (TPWD). 2011. Species of Greatest Conservation Need. Available online at <https://tpwd.texas.gov/landwater/land/tcap/sgcn.phtml>. Accessed November 2023.
- Texas Parks and Wildlife Department (TPWD). 2023a. 2023-2024 Texas Parks and Wildlife Hunting Regulations. Available online at [pwd_bk_l2000_1170a.pdf \(texas.gov\)](http://tpwd.texas.gov/pwd_bk_l2000_1170a.pdf). Accessed November 2023.
- TPWD, 2023b. Texas Parks and Wildlife Department. Guadalupe Delta WMP. Website: https://tpwd.texas.gov/huntwild/hunt/wma/find_a_wma/list/?id=37, Date accessed November 2023.
- TPWD. 2024. Texas Parks & Wildlife Department Annotated County Lists of Rare Species, Calhoun County. Accessed July 2024.



United States Fish and Wildlife Service (USFWS). 2024. Information for Planning and Conservation for site in Calhoun County, Texas. Accessed July 2024.

WSP, 2023a. Project Long Mott Environmental Report, Standard Operating Procedures for Field Data Collection Revision 2.

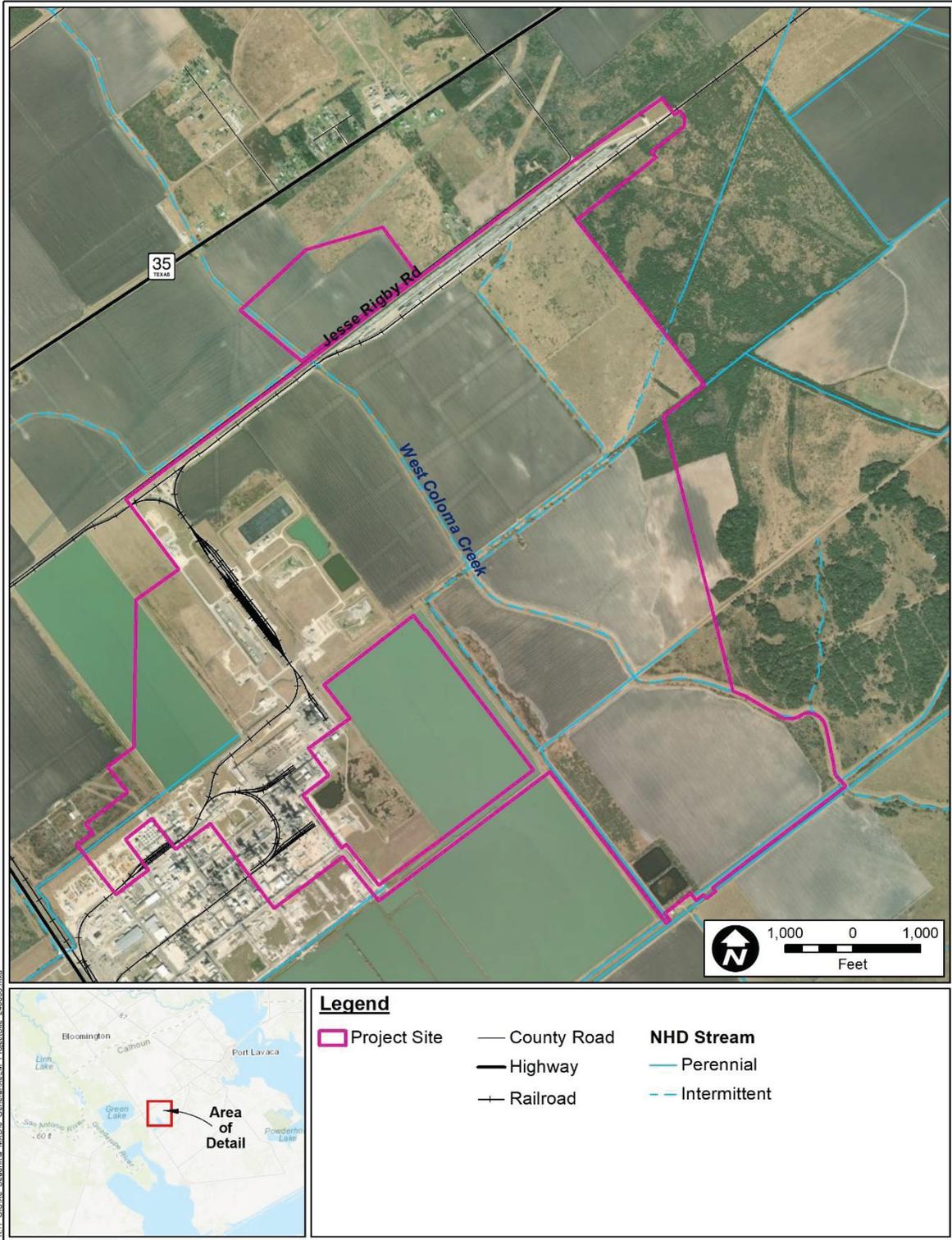
WSP, 2023b. Project Long Mott Environmental Report, Quality Assurance Project Document Revision 2. (WSP 2023b).

WSP, 2023c. Long Mott Facility Waters of the U.S. Delineation Report. WSP USA Environment & Infrastructure Inc., Ballwin, Missouri, December 2023.



Appendix A

Figures



K:\GIS\Xes_Saunders\Xes_M_ProjectSite_246895.mxd

Figure 1-1 Project Site

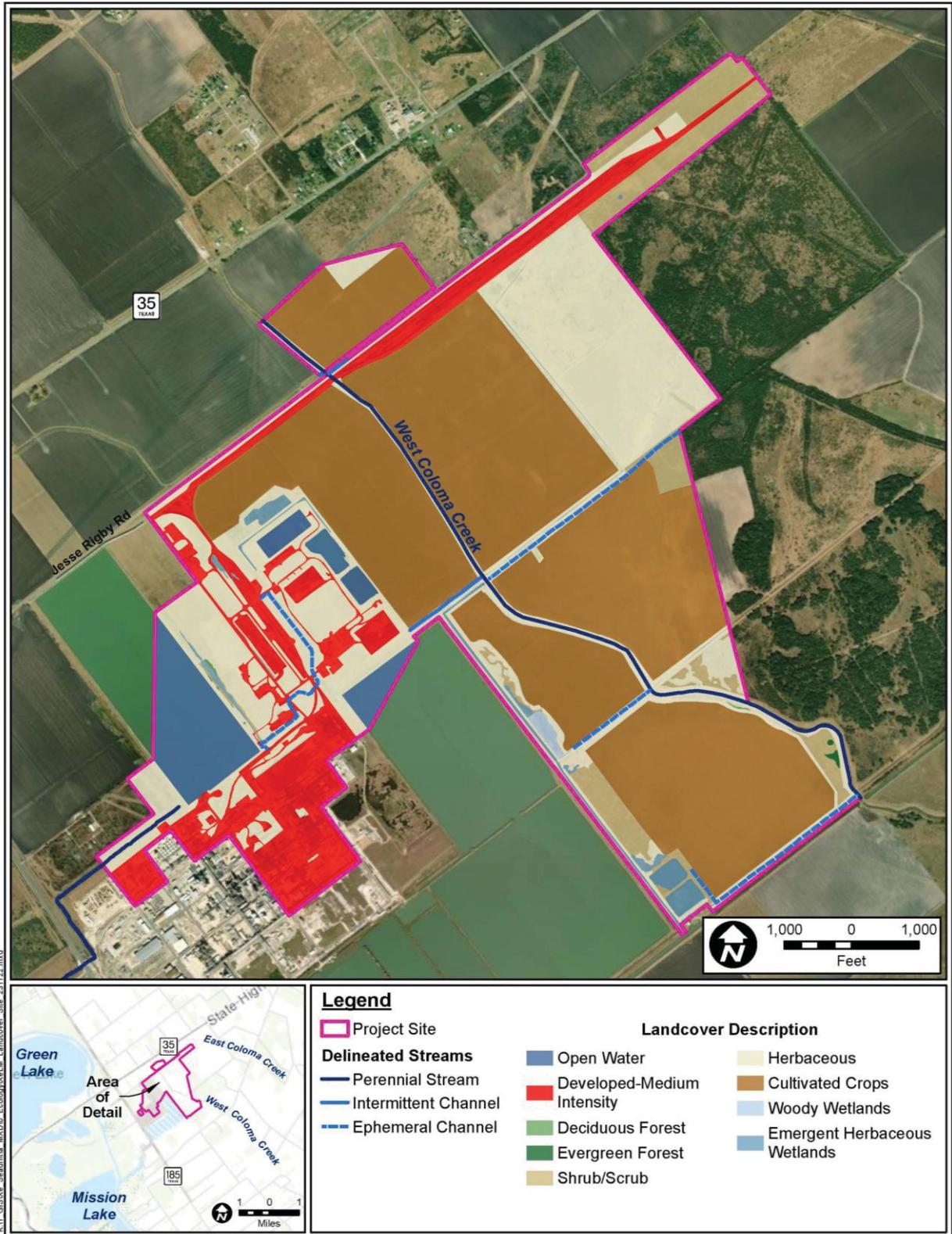


Figure 2-1 Land Cover within the Project Site

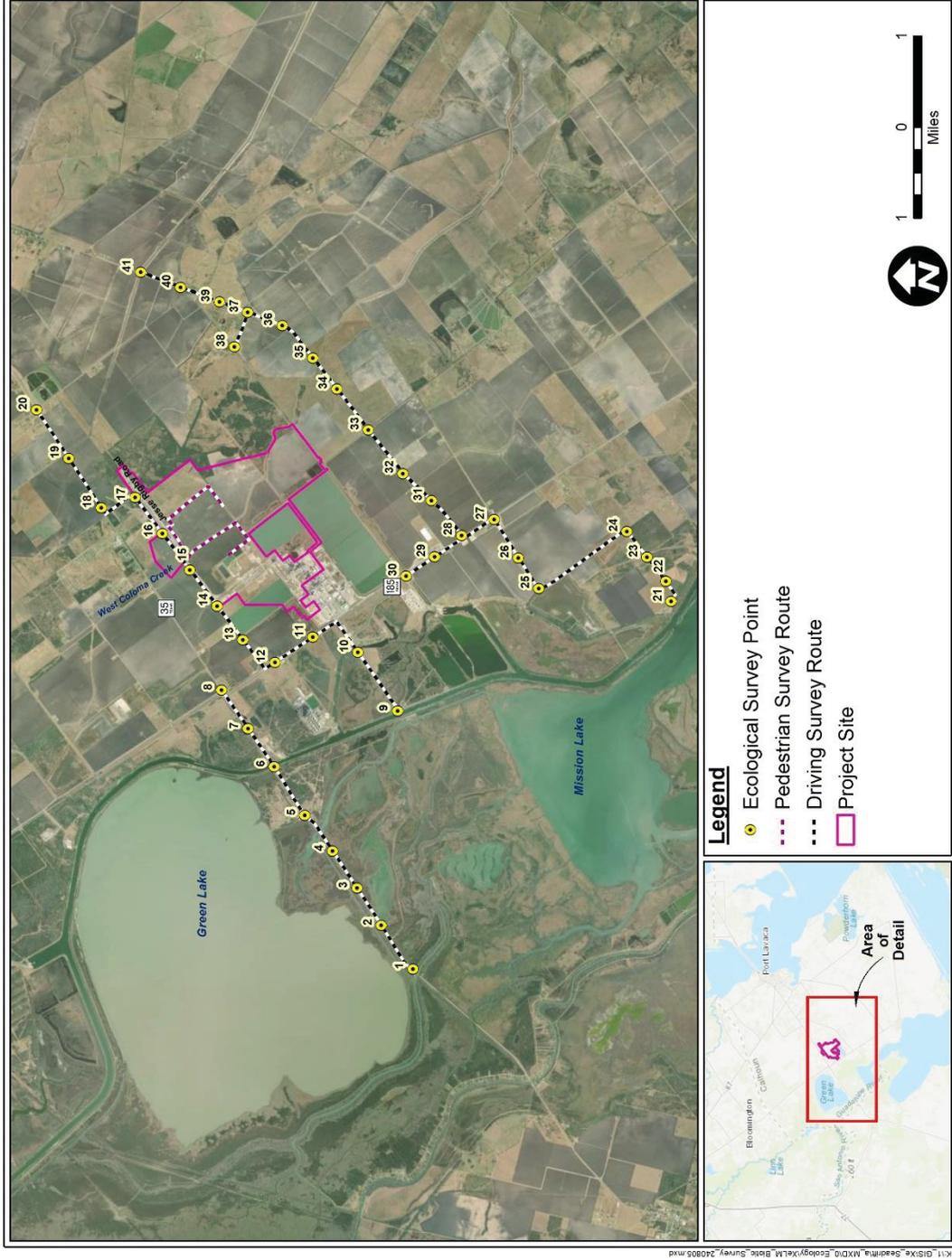


Figure 2-2 Ecological Resources Survey Routes

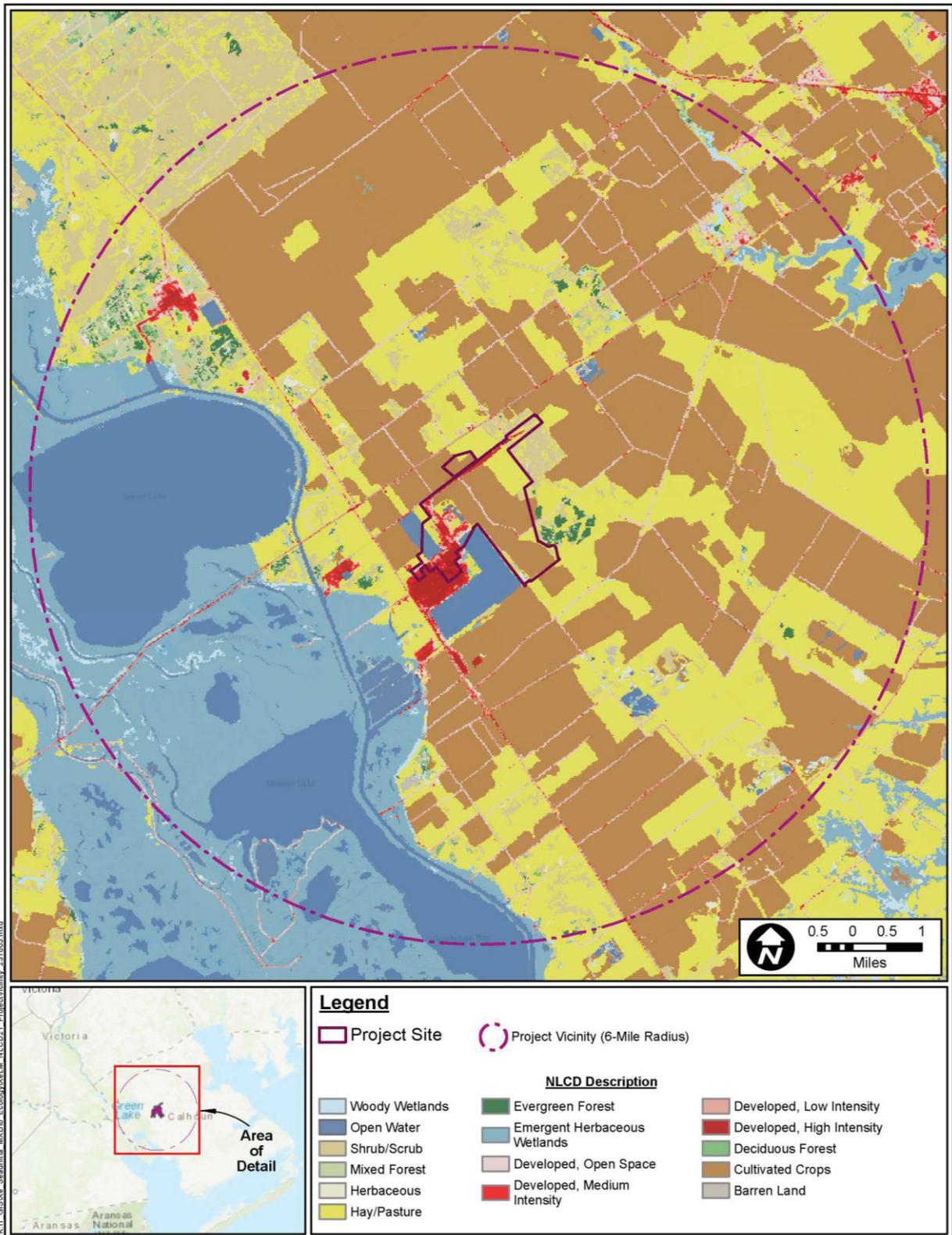


Figure 3-1 Land Cover within the Project Vicinity

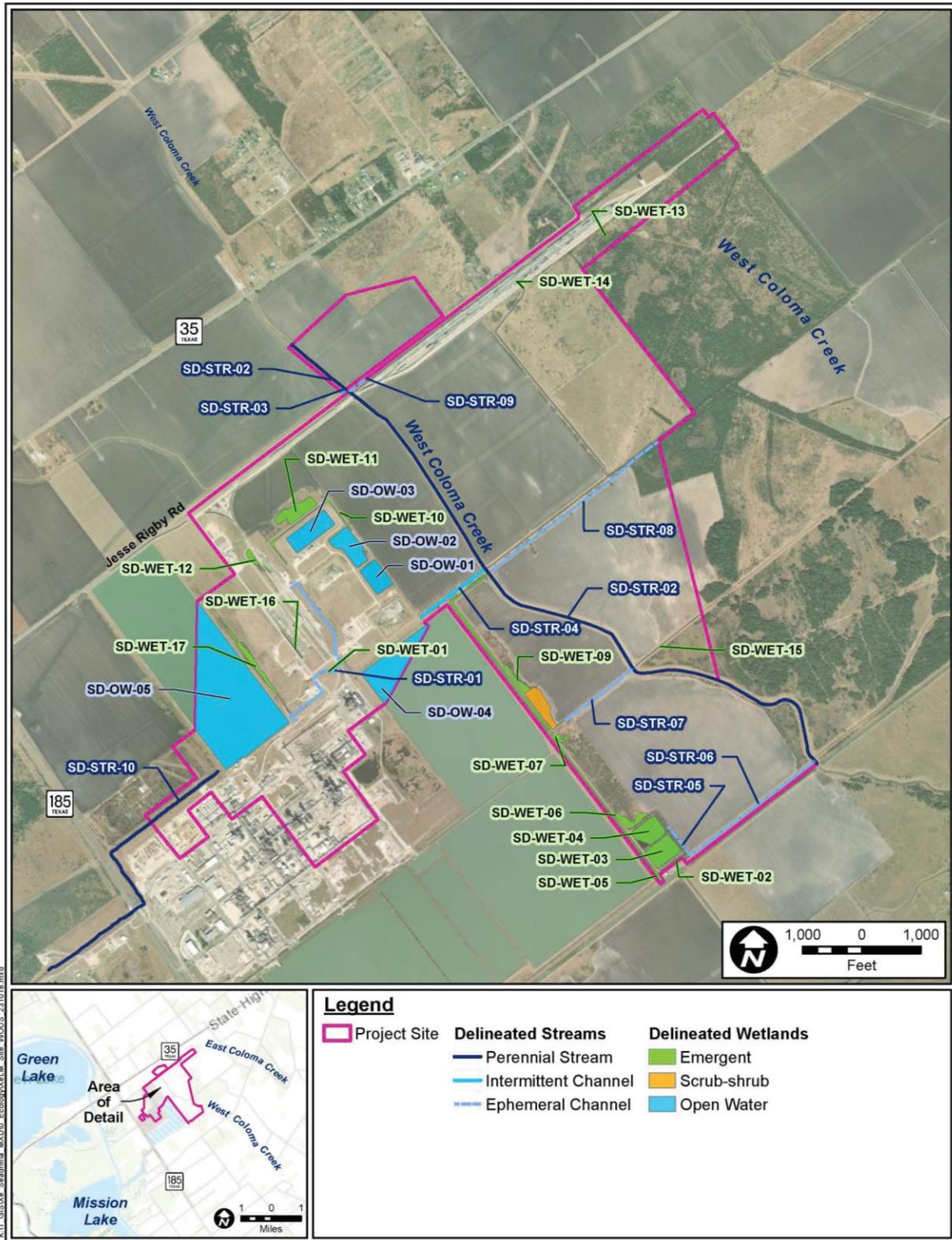


Figure 3-2 Delineated WOTUS Features within the Project Site



Figure 3-3 Wildlife Management Area within the Project Vicinity



Appendix B

Photographic Log



2/14/2023

Photo 1.

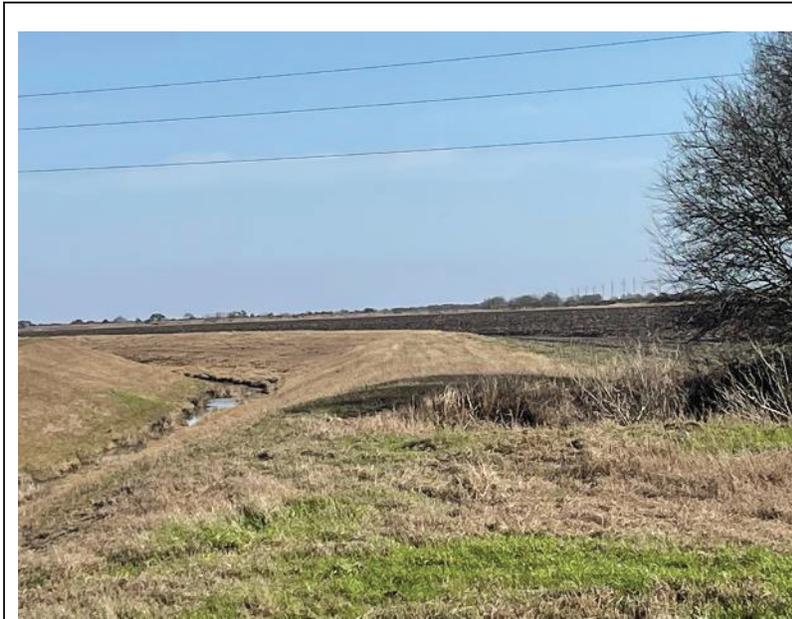
Cropped corn field in north portion of the Project Area.



2/14/2023

Photo 2.

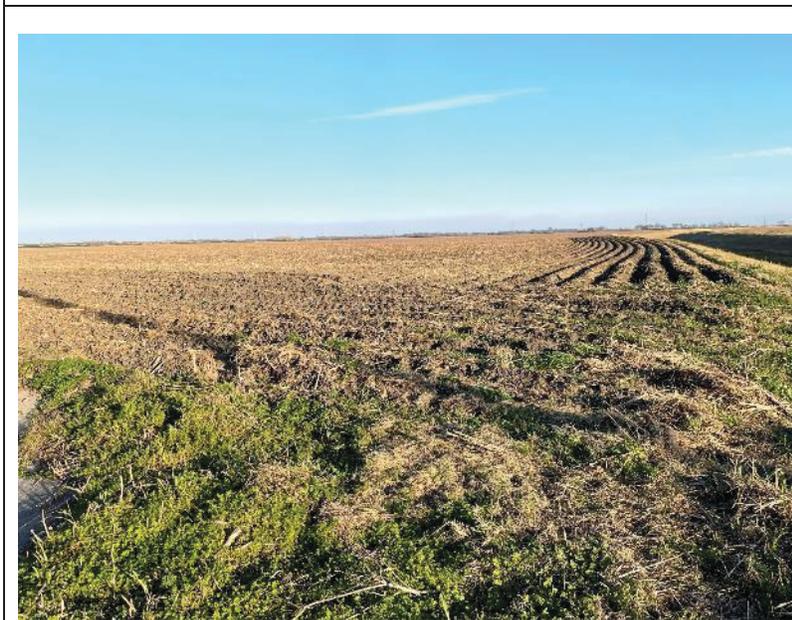
West Coloma Creek in north portion of the Project Area.



2/14/2023

Photo 3.

West Coloma Creek in central portion of the Project Area.



2/14/2023

Photo 4.

Cultivated crops in central portion of the Project Area.

	<p>2/15/2023</p> <p>Photo 5. Alligators and snowy egret in Project Vicinity south of Green Lake.</p>
	<p>5/22/2023</p> <p>Photo 6. West Coloma Creek and cultivated crops in north portion of the Project Area.</p>

	<p>5/23/2023</p> <p>Photo 7. Yellow-crowned night-heron in Project Vicinity south of Green Lake.</p>
	<p>5/24/2023</p> <p>Photo 8. GBRA Canal near pump station south of Project Area.</p>



8/15/2023

Photo 9.

West Coloma Creek just upstream of Project Area.



8/15/2023

Photo 10.

Crested caracara in Project Vicinity west of Project Area.



8/16/2023

Photo 11.

Loggerhead shrike in Project Vicinity east of Project Area.



8/17/2023

Photo 12.

GBRA Canal near pump station south of Project Area.



11/9/2023

Photo 13.

Cultivated crops in central portion of the Project Area.



11/9/2023

Photo 14.

Black vultures in central portion of the Project Area.

	<p>5/23/2023</p> <p>Photo 15. Fallow edge of actively cropped corn field in the east-central portion of the Project Area.</p>
	<p>8/17/2023</p> <p>Photo 16. Cattle and goat grazed gap in evergreen forest (Texas live oak motte) in southeastern portion of Project Area.</p>

	<p style="text-align: right;">11/7/2023</p> <p>Photo 17. Deciduous forest (sugarberry tree hedgerow) between crop field and west levee of West Coloma Creek in southeastern Project Area.</p>
	<p style="text-align: right;">11/7/2023</p> <p>Photo 18. Edge of dry shrub/scrub and herbaceous mosaic pasture as seen from the east levee of West Coloma Creek.</p>

	<p>11/7/2023</p> <p>Photo 19. Edge of overgrown moist shrub/scrub upland thicket in north central portion of Project Area.</p>
	<p>11/7/2023</p> <p>Photo 20. Groundseltree shrub/scrub association exemplifying both wetland shrub/scrub and upland shrub/scrub conditions in the southwestern portion of the Project Area.</p>

	<p style="text-align: right;">5/24/2023</p> <p>Photo 21. Herbaceous pasture of grassland and shrub/scrub mosaic in southeastern Project Area.</p>
	<p style="text-align: right;">5/24/2023</p> <p>Photo 22. Degraded herbaceous grassland pasture still retaining a few species indicative of former coastal prairie conditions. Large rectangular pasture in northeastern corner of Project Area south of railyard.</p>

	<p>11/8/2023</p> <p>Photo 23. Herbaceous maintained turf within Dow facility, adjacent to operating basin.</p>
	<p>5/22/2023</p> <p>Photo 24. Herbaceous overgrown abandoned pasture in northeastern portion of Project Area, north of railyard.</p>

 A photograph showing a field of tall green plants with bright yellow flowers. In the background, a dark pickup truck is parked on a road under a blue sky with scattered clouds.	<p style="text-align: right;">5/23/2023</p> <p>Photo 25. Emergent wetland SD-WET-06 north of depressional basin wetlands SD-WET-03 and SD-WET-04.</p>
 A wide-angle photograph of a man-made depressional basin. The foreground is filled with tall green grasses and water. The background shows a line of trees under a blue sky with white clouds.	<p style="text-align: right;">5/23/2023</p> <p>Photo 26. Man-made depressional basin (emergent wetland SD-WET-04) in southeastern portion of Project Area.</p>

	<p>11/8/2023</p> <p>Photo 27. Ruderal depression (emergent wetland SD-WET-11) north of Dow facility operating basin in northwest corner of Project Area.</p>
	<p>5/23/2023</p> <p>Photo 28. Regularly inundated, disconnected irrigation canal (emergent wetland SD-WET-05) located along southwest edge of Project Area.</p>

	<p style="text-align: right;">11/7/2023</p> <p>Photo 29. Seasonally wet irrigation ditch (emergent wetland SD-WET-14) in large rectangular pasture south of railyard in northeast part of Project Area.</p>
	<p>Photo 30. State vulnerable (S3) sensitive species Indianola beakrush (<i>Rhynchospora Indianolensis</i>) observed in two locations in the southeast part of the Project Area.</p>

 A wide, straight canal with a concrete-lined bottom and gravel-lined banks. The water is clear and reflects the blue sky. The surrounding area is flat and appears to be a construction or agricultural site.	<p>8/15/2023</p> <p>Photo 31. Dow Drainage Canal. Aquatic ecology survey locations DD-01 and DD-02.</p>
 A small, narrow stream flowing through a grassy area. In the background, there is a concrete structure with several openings, possibly a bridge or a dam. The water is slightly turbid.	<p>11/7/2023</p> <p>Photo 32. Aquatic ecology survey location WCC-01 on West Coloma Creek.</p>



11/7/2023

Photo 33.

Aquatic ecology survey
location WCC—03 on West
Coloma Creek.



11/7/2023

Photo 34.

Aquatic ecology survey
location WCC-04 on West
Coloma Creek.

	<p>8/16/2023</p> <p>Photo 35. Aquatic ecology survey location GBRA-04 on GBRA Canal.</p>
	<p>11/7/2023</p> <p>Photo 36. Rio Grande cichlid (<i>Herichthys cyanoguttatus</i>) collected in the GBRA Canal at GBRA-04.</p>

	<p>8/21/2023</p> <p>Photo 37. Striped mullet (<i>Mugil cephalus</i>) individuals collected in the Dow Drainage Canal at DD-01.</p>
	<p>8/16/2023</p> <p>Photo 38. Spotted gar (<i>Lepisosteus oculatus</i>) collected in West Coloma Creek at WCC-04.</p>

	<p>8/16/2023</p> <p>Photo 39. Smallmouth buffalo (<i>Ictiobus bubalus</i>) collected in the GBRA Canal at GBRA-04.</p>
	<p>11/8/2023</p> <p>Photo 40. Longear sunfish (<i>Lepomis megalotis</i>) collected in the GBRA Canal at GBRA-03.</p>



11/8/2023

Photo 41.

Largemouth bass (*Micropterus salmoides*) collected in the GBRA Canal at GBRA-03.



11/8/2023

Photo 42.

Channel catfish (*Ictalurus punctatus*) collected in the GBRA Canal at GBRA-03.



8/15/2023

Photo 43.

Aquatic Ecology field crew seining in the Dow Drainage Canal.