Town Bluff Dam and B.A. Steinhagen Lake DRAFT Master Plan

Neches River Basin, Jasper and Tyler Counties, Texas

August 2023

US Army Corps of Engineers®
Fort Worth District

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EXECUTIVE SUMMARY

DRAFT B.A. Steinhagen Lake and Town Bluff Dam Master Plan
U.S. Army Corps of Engineers
Prepared by the Southwestern Division
Regional Planning and Environmental Center (RPEC)
August 2023

ES.1 PURPOSE

The revision of the Town Bluff Dam and B.A. Steinhagen Lake's (hereafter referred to collectively as Town Bluff Project) 1971 Master Plan and 2003 Supplement is a framework built collaboratively to guide appropriate stewardship of U.S. Army Corps of Engineers (USACE) administered resources at Town Bluff Project over the next 25 years. The 1971 Plan has served well past its intended 25-year planning horizon and does not reflect current regulations, regional recreational and environmental needs, or the rapidly changing and growing user demographics for the zone of influence.

Town Bluff Project was originally authorized as *Dam B Reservoir* as a diversion head for the water supply canal and storage to regulate intermittent power releases from the Sam Rayburn Dam and Reservoir and Rockland Lake[1] hydropower plants to benefit agriculture, control salinity, abate pollution, support navigation, and secure water supply. Today, Town Bluff is a multi-purpose project authorized for flood control, water supply, hydropower, navigation, fish and wildlife, and recreation. Its purpose is to assist Sam Rayburn Reservoir in providing flood mitigation to the Angelina and Neches River Basin system in Southeast Texas, re-regulate flows from Sam Rayburn Dam's hydropower generation, supply water to the Lower Neches Valley Authority and the Beaumont area, and produce a clean source of electrical power generation. In addition to these primary missions, USACE has an inherent mission for environmental stewardship of project lands as reflected in ER-1130-2-540 change 2 dated July 2005, while working closely with stakeholders and partners to provide regionally important outdoor recreation opportunities.

Town Bluff Project (Figure ES.1) is located on the Neches River at river mile 113.7 about 12.4 miles below the mouth of the Angelina River and approximately 0.5 miles north of Town Bluff, Texas, straddling Jasper and Tyler Counties. The total drainage area above Town Bluff Dam is 7,573 square miles, which includes the entire Angelina drainage basin and 4,017 square miles of the drainage basin of the Neches River.

The 2003 supplement included a total of 21,759 acres in fee lands, including 8,059 acres of land and 13,700 acres of water at the normal or conservation pool elevation of 83.0 feet National Geodetic Vertical Datum of 1929 (NGVD29) and 160 miles of shoreline at the top of the conservation pool. Due to improved mapping

[1] Rockland Lake was deauthorized and never constructed

technology used for this Master Plan revision, including modern satellite imagery, Lidar (3-dimensional laser scanning) and Geographic Information System (GIS) mapping, acreage calculations differ from that found in the 1971 Master Plan and 2003 Supplement

This Master Plan Revision and supporting documentation provides an inventory and analysis, goals, objectives, and recommendations for USACE lands and waters at Town Bluff Project, with input from the public, stakeholders, and subject matter experts. The Master Plan is primarily a land use and outdoor recreation strategic plan and does not address the specific authorized purposes of flood risk management or water supply.

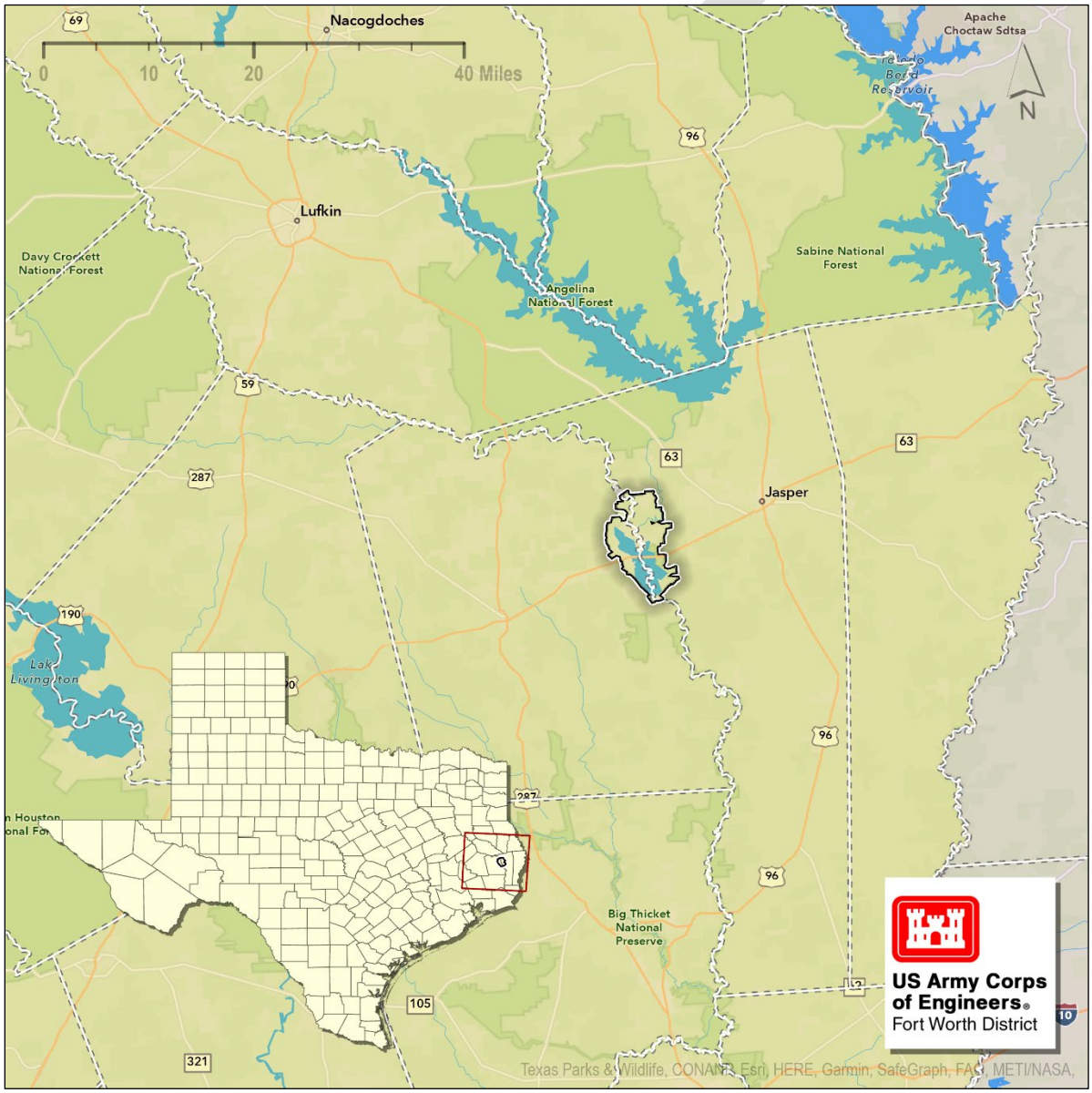

Figure ES.1 Town Bluff Project and Vicinity

ES.2 PUBLIC INPUT

To ensure a balance between operational, environmental, and recreational outcomes, the USACE obtained both public and agency input toward the Master Plan. An Environmental Assessment (EA) was completed in conjunction with the Master Plan to evaluate the impacts of alternatives and can be found in Appendix B.

Approximately 12 individuals, not including USACE personnel, attended the initial public scoping meeting held at the onset of the process on 15 September 2022 in Jasper, TX for the Town Bluff Dam and B.A. Steinhagen Master Plan Revision. During the initial 30-day comment period, only one written comment was received. This comment and USACE response can be found in Chapter 7 of this Master Plan.

The public meeting for the Draft Master Plan will begin an additional comment period where stakeholders and members of the public can provide comments on the proposed Draft Master Plan. After the comment period and careful consideration of all comments received, the USACE will further revise the Draft Master Plan and develop the Final Master Plan. Stakeholders and members of the public who signed into the earlier public meetings or submitted comments will be notified of the Final Master Plan.

ES.3 RECOMMENDATIONS

The land and water classification changes recorded in Table ES.1 and detailed in Chapter 8 were the result of the inventory, analysis, synthesis of data, documents, and public and agency input. In general, all USACE land at Town Bluff Project was reclassified either by a change in nomenclature required by regulation or changes needed to identify actual and projected use. Areas used for project operations and maintenance were classified as Project Operations in the 2003 Supplement, which is similar to the current Project Operations classification. The 2003 Supplement classified most acres within designated parks as *Class 2 – Intensive Recreation* with *Wildlife Management* and *Low Density Recreation, which in the* current nomenclature where intensive recreation can occur is classified as High Density Recreation. The 2003 Supplement also included *Class 5 – Wildlife and Vegetative Management with Low Density Recreation*, which is similar to the current nomenclature of Multiple Resource Management with possible subclassifications of Vegetation Management or Wildlife Management. The 2003 Supplement had a land classification called *Class 4 – Environment Sensitive Area* which is similar to the current Environmentally Sensitive Areas land classification. Lastly, the 2003 supplement classified the water surface as *Project Operations Water Use Area*, while the current nomenclature is Conservation Pool and is broken down into sub-classification of Recreation, No Wake, Restricted, or Fish and Wildlife Sanctuary.

Table ES.1 Changes from Prior Classification (2003 Supplement) to Proposed Classification (2023)

Prior Land Classifications (2003 Supplement)	Acres*	Proposed Land Classifications (2023)	Acres
Project Operations (Class 1 Land)	101	Project Operations	127
Intensive Recreation with Wildlife and Vegetative Management (Class 2)	2,291	High Density Recreation	2,012
Environment Sensitive Area (Class 4)	3,390	Environmentally Sensitive Areas	5,456
Multiple Resource Management (Class 5)	2,564	Multiple Resource Management – Wildlife Management	6,915
--	--	Multiple Resource Management – Vegetation Management	49
TOTAL Land Acres	14,568	TOTAL Land Acres	14,559
Prior Water Surface Classifications (2003 Supplement)	**Acres**	**New Water Surface Classifications (2023)**	**Acres**
Water Surface (Class 1 Lake)	6,856	Permanent (Conservation) Pool	6,865
--	--	– Restricted	7
--	--	– Designated No Wake	114
--	--	– Open Recreation	6,744
TOTAL Water Surface	6,856	TOTAL Water Surface	6,865

* Some acreage differences are due to improvements in mapping and measurement technology, deposition/siltation, and erosion. Note that acres are from existing GIS data and may not match current REMIS data which is under review.

It is important to emphasize that Town Bluff project includes a diverse range of wetlands that can change dramatically between seasons and from one year to another due to varying rainfall, sedimentation, and erosion. The acres reflected in this Master Plan represent a single snapshot in time reflecting the best available measuring technology at the writing of the Master Plan including satellite imagery, LiDAR (Light Detection and Ranging, laser-based measurement technology), and GIS (Geographic Information System) mapping software. Further adjustments to maps have been made while performing real estate and field boundary marker verifications. As such, the acres in this Master Plan are different than those in the 1971 Master Plan and 2003 Supplement and are subject to change with future mapping adjustments and technologies. Furthermore, since the previous Master Plan and Supplement, ongoing erosion and deposition/siltation have led to changes in the water surface acres and land acres, with some areas increasing and other areas decreasing the total acres.

ES.4 PLAN ORGANIZATION

Chapter 1 of the Master Plan presents an overall introduction to Town Bluff Project. Chapter 2 consists of an inventory and analysis of Town Bluff and associated land resources. Chapters 3 and 4 lay out management goals, resource objectives, and land classifications. Chapter 5 is the resource management plan that identifies how project lands will be managed for each land use classification. This includes current and projected overall park facility needs, an analysis of existing and anticipated resource use, and anticipated influences on overall project operation and management. Chapter 6 details special topics that are unique to Town Bluff Project. Chapter 7 identifies the public involvement efforts and stakeholder input gathered for the development of the Master Plan, and Chapter 8 gives a summary of the changes in land classification from the previous Master Plan to the present one. Finally, the appendices include information and supporting documents for this Master Plan revision, including Land Classification and Park Plate Maps (Appendix A).

An Environmental Assessment was developed with the Master Plan, which analyzed alternative management scenarios for the Town Bluff Project, in accordance federal regulations including the National Environmental Policy Act of 1969, as amended (NEPA); regulations of the Council on Environmental Quality; and USACE regulations, including Engineer Regulation 200-2-2: Procedures for Implementing NEPA. The EA is a separate document that informs this Master Plan and can be found in its entirety in Appendix B.

The EA evaluated two alternatives as follows: 1) No Action Alternative, which would continue the use of the 1971 Master Plan and 2003 Supplement, and 2) Proposed Action within the Master Plan. The EA analyzed the potential impact these alternatives would have on the natural, cultural, and human environments. The Master Plan is conceptual and broad in nature, and any action proposed in the plan that would result in significant disturbance to natural resources or result in significant public interest would require additional NEPA documentation at the time the action takes place.

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CHAPTER 1 – INTRODUCTION

1.1. GENERAL OVERVIEW

Town Bluff Dam and B.A. Steinhagen Lake (hereafter referred to collectively as Town Bluff Project) is located at river mile (RM) 113.7 on the Neches River, about 12.4 miles below the mouth of the Angelina River and approximately 0.5 miles north of Town Bluff, TX. The project area is located within Tyler and Jasper counties, with the Neches River forming the boundary between Tyler and Jasper counties. The project area is located approximately 9 miles southwest of the Sam Rayburn Dam where the Angelina River flows from the Sam Rayburn dam towards the Neches River. Figure 1.1 shows the Town Bluff Project location and vicinity.

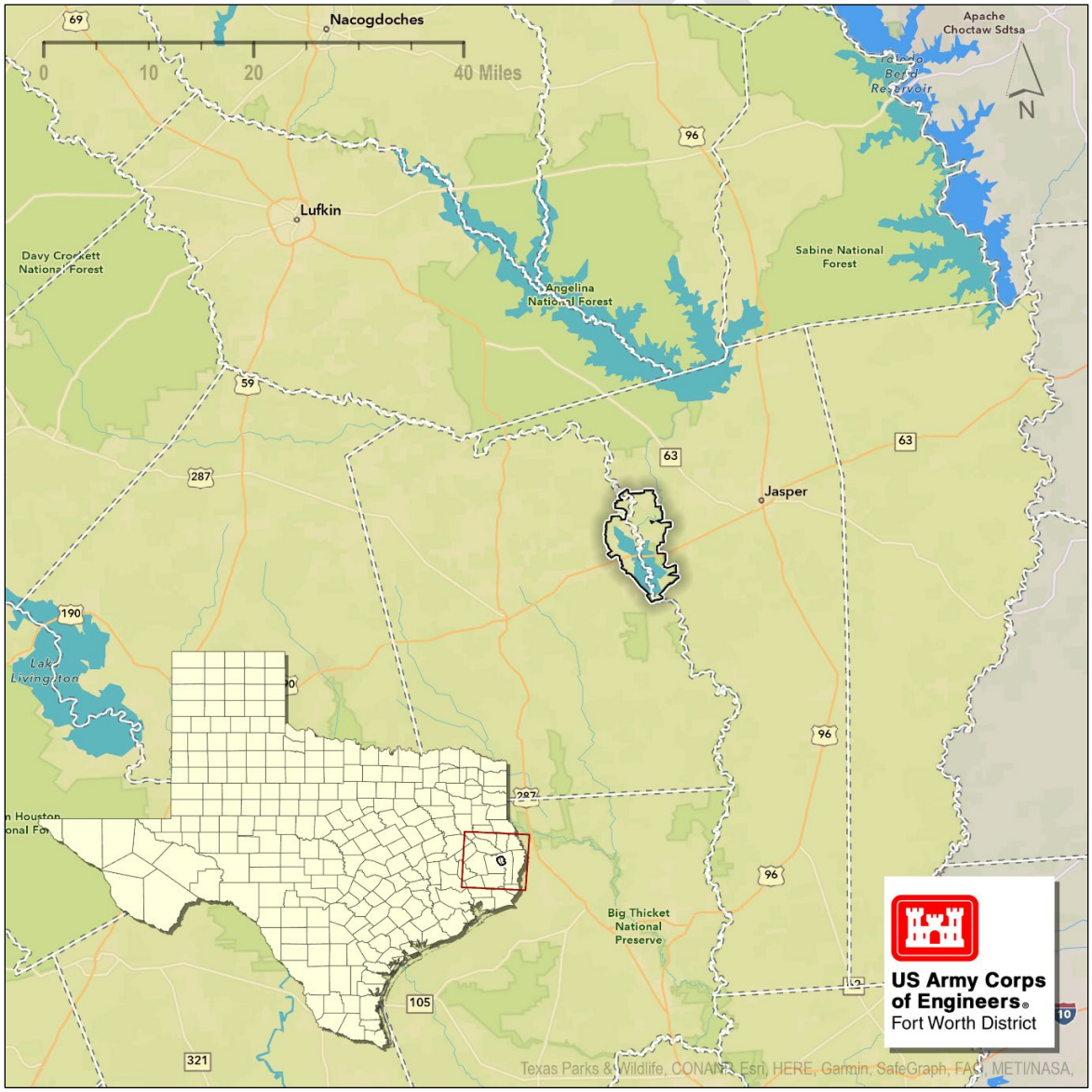

Figure 1.1 Vicinity Map of Town Bluff Project

Town Bluff Project is part of the Neches River Basin system, which consists of two USACE projects, Sam Rayburn Dam and Town Bluff Dam (also known as Dam B). The two dams are operated in conjunction to control floods, conserve water, regulate stream flow for water supply and navigation on the Neches River downstream of Town Bluff Dam, and generate hydroelectric power. The USACE built a Permanent Salt Water Barrier across the Neches River downstream of Town Bluff Dam in Jefferson and Orange Counties near Beaumont, Texas, and the saltwater barrier is operated by Lower Neches Valley Authority (LNVA). Daily coordination between USACE and LNVA is necessary to ensure that the project purpose of stream flow regulation and salinity control for water supply in the vicinity of Beaumont are met.

There are no water supply intake facilities within the lake. However, LNVA has water intake structures further downstream from the project. For some time, Town Bluff Project would regularly need to release water to prevent saltwater intrusion, but since the construction of the Permanent Salt Water Barrier, releases are no longer necessary to prevent salt water intrusion. Water is still released in coordination with LNVA for water supply downstream of the project. The LNVA, a conservation and reclamation district, and an agency of the State of Texas, is engaged in the sale and distribution of Neches River waters to municipal, industrial, and agricultural consumers. The LNVA contributed $5,000,000 toward the first cost of construction of Town Bluff Dam and Sam Rayburn Dam. Per the River and Harbor act of 1948, the LNVA is permitted to withdraw from the pool of Town Bluff Project not to exceed 2,000 cubic feet per second for its own use.

The Master Plan is intended to serve as a comprehensive land and recreation management guide with an effective life of approximately 25 years. The focus of the Plan is to guide the stewardship of natural and cultural resources and make provision for outdoor recreation facilities and opportunities on federal land associated with Town Bluff Project. The Master Plan identifies conceptual types and levels of activities, but does not include designs, project sites, or estimated costs. All actions carried out by USACE, other agencies, and individuals granted leases to USACE lands must be consistent with the Master Plan. The Plan does not address the flood risk management or water supply purposes of Town Bluff Project (the USACE Water Control Manual for Town Bluff Project includes a description of these project purposes). The Town Bluff Dam and B.A. Steinhagen Lake Master Plan was written in 1971 with a supplement in 2003, which is well past the intended planning horizon of 25 years.

National USACE missions associated with water resource development projects may include flood risk management, water conservation, navigation, recreation, fish and wildlife conservation, and hydroelectric power generation. Most of these missions serve to protect the built environment and natural resources of a region from the climate extremes of drought and floods. This helps to create a more resilient and sustainable region for the health, welfare, and energy security of its citizens. Mitigation, while not a formal mission at USACE lakes, may be implemented to achieve the fish and wildlife and recreation missions. Maintaining a healthy vegetative cover and including a native prairie or tree cover where ecologically appropriate on Federal lands within the constraints imposed by primary project purposes helps reduce stormwater runoff and

soil erosion, mitigates air pollution, and moderates temperatures. To this end, USACE has developed the following statements.

The USACE Sustainability Policy and Strategic Plan states:

> *The U.S. Army Corps of Engineers strives to protect, sustain, and improve the natural and man-made environment of our Nation, and is committed to compliance with applicable environmental and energy statutes, regulations, and Executive Orders. Sustainability is not only a natural part of the Corps' decision processes; it is part of the culture.*
>
> *Sustainability is an umbrella concept that encompasses energy, climate change and the environment to ensure today's actions do not negatively impact tomorrow. The Corps of Engineers is a steward for some of the Nation's most valuable natural resources, and must ensure customers receive products and services that provide sustainable solutions that address short and long-term environmental, social, and economic considerations.*

The USACE mission for the Responses to Climate Change Program is:

> *To develop, implement, and assess adjustments or changes in operations and decision environments to enhance resilience or reduce vulnerability of USACE projects, systems, and programs to observed or expected changes in climate.*

1.2. PROJECT AUTHORIZATION

Town Bluff Project was authorized by the River and Harbor Act of 1945 (Public Law 14, 79th Congress, 1st Session), originally with the name Dam B Reservoir. The initial development was for regulating intermittent power releases from Sam Rayburn Dam and Reservoir and Rockland Lake (not constructed and later deauthorized) power plants to provide head for diversion into water supply canal and storage for the benefit of agriculture, salinity control, pollution abatement, navigation, and water supply. Construction began in March 1947 and finished in April 1951. Impoundment began in April 1951 and conservation pool was reached in June 1954. Hydroelectric power generation was later authorized in 1985, was constructed in 1988, became operational in 1989, and is operated in coordination with Southwestern Power Administration.

1.3. PROJECT PURPOSE

Town Bluff is a multi-purpose project used for flood control, water supply, hydropower, navigation, fish and wildlife, and recreation. Its purpose is still to assist Sam Rayburn Reservoir in providing flood control to the Angelina and Neches River Basin system in Southeast Texas, re-regulate flows from Sam Rayburn Dam’s hydropower generation, supply water to the Lower Neches Valley Authority (LNVA) and the Beaumont area, and produce a clean source of electrical generation. In addition to

these primary missions, USACE has an inherent mission for environmental stewardship of project lands to provide regionally important outdoor recreation opportunities. The Master Plan is primarily a land use and outdoor recreation strategic plan that does not address the specific authorized purposes of flood risk management or water supply. The USACE administers the surrounding federal lands and water surface to provide a variety of public, outdoor recreation opportunities. Some recreation facilities on Federal land at Town Bluff Project are currently leased to and operated and maintained by Texas Parks and Wildlife Department (TPWD). Refer to the maps in Appendix A for an overview of the lands managed by the USACE and TPWD.

1.4. MASTER PLAN PURPOSE AND SCOPE

The Town Bluff Project Master Plan is the living, flexible, long-term strategic land-use management document that guides the comprehensive management and development of all the project's recreational, natural, and cultural resources. Under the guidance published in Engineering Regulation (ER) 1130-2-550 Change 7, and the accompanying Engineer Pamphlet (EP) 1130-2-550 Change 5, the Master Plan guides the efficient and cost-effective development, management, and use of project lands. It is a dynamic tool that provides for the responsible stewardship and sustainability of the project's resources for the benefit of present and future generations. The Master Plan works in tandem with the Operational Management Plan (OMP), which is the task-oriented implementation tool for the resource objectives and development needs identified in the Master Plan. The Master Plan guides and articulates the USACE responsibilities pursuant to federal laws. The USACE vision for the future management of the natural resources and recreation program at Town Bluff Project is set forth as follows:

> *The land, water, and recreational resources of Town Bluff Project will be managed to protect, conserve, and sustain natural and cultural resources, especially environmentally sensitive resources, and provide outdoor recreation opportunities that complement overall project purposes for the benefit of present and future generations.*

It is important to note what the Master Plan does not address. Details of design, management and administration, and implementation are not addressed here; but are covered in the Town Bluff Project OMP. In addition, the Master Plan does not address the specifics of regional water quality, shoreline management (a term used to describe primarily vegetation modification or permits by neighboring landowners), or water level management, nor does it address the operation and maintenance of prime project operations facilities such as the dam embankment, gate control outlet, spillway, or hydroelectric generation. Additionally, the Plan does not address the flood risk management or water conservation purposes of Town Bluff Project with respect to management of the water level in the lake (the USACE Water Control Manual for Town Bluff Project manages these project purposes).

The master planning process encompasses the examination and analysis of past, present, and future environmental, recreational, and socioeconomic conditions

and trends. Within a generalized conceptual framework, the process focuses on the following four primary components:

- Regional and ecosystem needs
- Project resource capabilities and suitabilities
- Expressed public interests that are compatible with Town Bluff Project's authorized purposes
- Environmental sustainability elements

The Town Bluff Project Master Plan was originally written in 1971 and was supplemented in 2003 with new land classifications and Environmentally Sensitive Areas. Although the previous revision was sufficient for prior land use planning and management, many changes are affecting the region. Outdoor recreation trends, regional land use, rapidly growing population, current legislative requirements, and USACE management policy have evolved. Increasing population and urbanization, fragmentation of wildlife habitat, impacts of climate change, and the growing demand for recreational access and natural resource management have affected the region and Town Bluff Project. In response to these escalating pressures, a full revision of the 1971 Master Plan and 2003 Supplement is required. The Master Plan revision will update land classifications, include new resource management objectives, and describe future plans proposed by key partners and stakeholders. The Plan will also inform the management of vegetation, wildlife, and other natural resources for the next 25 years.

1.5. BRIEF WATERSHED AND PROJECT DESCRIPTION

Town Bluff Project is located on the Neches River at river mile 113.7 about 12.4 miles below the mouth of the Angelina River and approximately 0.5 miles north of Town Bluff, Texas. The lake straddles Jasper and Tyler counties in the southeastern portion of Texas. The main river system has two principal branches, the Neches River and the Angelina River, and the Neches River continues below the confluence towards Town Bluff Dam. The total drainage area above Town Bluff Dam is 7,573 square miles, which includes the entire Angelina drainage basin and 4,017 square miles of the drainage basin of the Neches River. The Neches River originates in Van Zandt County approximately 60 miles southeast of Dallas, Texas, and flows in a southeasterly direction for approximately 416 miles to empty into Sabine Lake, 20 miles southeast of Beaumont, Texas. The watershed of the Neches River has a total drainage area of 10,011 square miles with about 4,017 square miles above the dam. The Angelina River begins in Rusk County and briefly flows southwest before turning southeast before reaching Sam Rayburn Lake, then turning southwards before reaching the Neches River at river mile 126.4. The Angelina River has a drainage area of 3,556 square miles before joining the Neches River and a total length of 205 miles. There are approximately 160 miles of shoreline at the top of the conservation pool.

The principal tributaries into B.A. Steinhagen Lake are the Neches River and Angelina River. Along the western shore of the lake and Neches River are minor tributaries including Camp Branch, Rush Creek, Wolf Creek, and Pamplin Creek. To the north of the lake and between the Angelina and Neches Rivers is the minor tributary of

Devils Slough, which is often mapped into the Neches River, but drains more into the wetlands between the Neches and Angelina Rivers. To the east of the Angelina River and lake are the minor tributaries of Kelly Branch, Spring Creek, and Sandy Creek.

The USACE Fort Worth District operates the Sam Rayburn Reservoir, which is located on the Angelina River, approximately 20 miles upstream from Town Bluff Project. Sam Rayburn Reservoir has a conservation capacity of 2.85 million acre-feet and has authorized purposes of flood control, water supply, hydropower and recreation. Town Bluff Dam was constructed to reregulate surges due to hydropower releases from Sam Rayburn Reservoir. Lake Palestine, one of two major reservoirs on the Neches River, is located near the headwaters of Neches River in Henderson, Smith, Cherokee, and Anderson Counties. Rhine Lake is a smaller reservoir located above Lake Palestine near the headwaters of Neches River.

The Salt Water Barrier (RM 27.7) near Beaumont is downstream of Town Bluff Project on the Neches River. The structure is to prevent salt water intrusion from the Gulf of Mexico and protect the fresh water supplies of LNVA and the city of Beaumont.

1.6. DESCRIPTION OF RESERVOIR

Town Bluff Dam consists of a non-overflow section, a gated spillway, outlet works, hydropower facility, and a paved compacted earth overflow section that serves as an uncontrolled spillway. The total length of the paved earthfill dam is 6,698 feet. The maximum height of the dam is 45 feet and the width of the top of the dam is 25 feet. The gated spillway is located at 50.0 ft NGVD29 and is 240 feet in length. The uncontrolled spillway is located at 80.0 ft NGVD29 and is 6,600 feet in length. The outlet works are two conduits, each four feet by six feet, controlled by two tractor-type gates with an invert elevation of 52.0 ft NGVD29 and can release approximately 3,000 cubic feet per second for power generation.

The original project design estimated 13,700 surface acres of water at conservation pool elevation 83.0 ft NGVD29. The latest survey estimates 10,687 acres, which is due partly to some wetland areas being reclassified from water to land as well as sedimentation over the past decades of operation. At conservation pool, the lake holds an estimated 66,972 acre-feet of storage. The lake contains an estimated 16,600 acre-feet of sediment reserve. The Texas Water Development Board (TWDB) conducts reservoir volumetric surveys and sedimentation surveys for major reservoirs in Texas. The most recent TWDB volumetric survey was in 2011 which estimated 10,846 acre-feet of sediment reserve had already been filled.

1.7. PROJECT ACCESS

Town Bluff Project is easily accessed by several primary, secondary, and tertiary roads, as displayed in Figure 1.2. FM 92 provides access from the south and continues along the west of the project until meeting US 190, then continues north as CR 3725 where it meets Recreational Road 255 north of the Project. US 190 is the major East-West thoroughfare that crosses the lake between Cherokee Unit, Martin Dies Jr. State

Park on the west and Walnut Ridge Unit, Martin Dies Jr. State Park on the east. North of the project, Recreational Road 255 connects US 69 to the northwest of the Project to TX 63 which continues southeast to the town of Jasper.

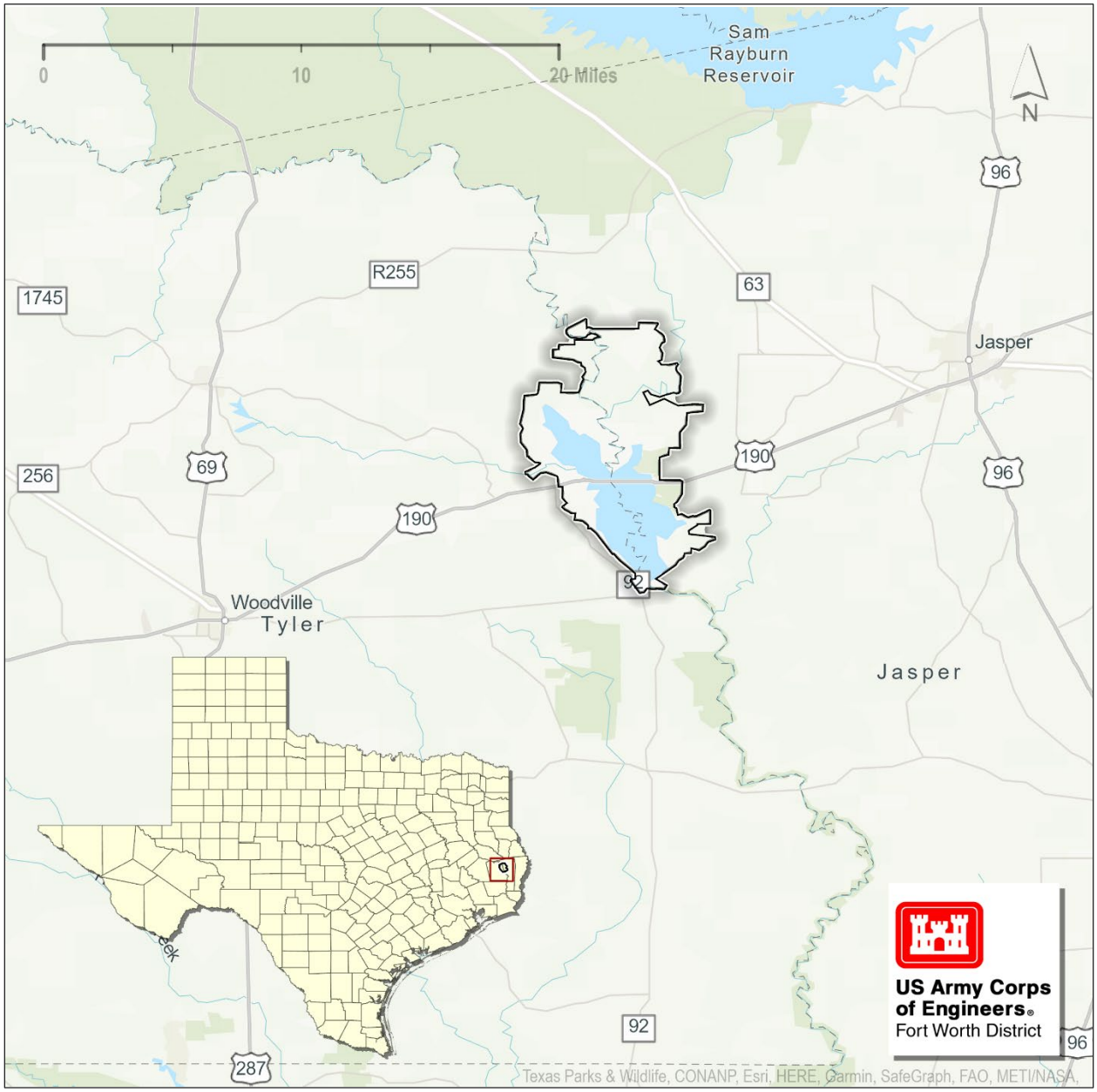

Figure 1.2 Local Project Access

The Texas Department of Transportation (TXDOT) provides transportation planning across the state in coordination with regional planning groups, counties, and cities. The South East Texas Regional Planning Commission (SETRPC) is a voluntary association of local governments that serves Hardin, Jefferson, Orange and Jasper counties and provides long-term transportation planning in the region in coordination with TXDOT. The Deep East Texas Council of Governments (DETCOG) is a local voluntary association of local governments that serves Angelina, Houston, Nacogdoches, Newton, Polk, Sabine, San Augustine, San Jacinto, Shelby, Trinity and Tyler counties. Together there are several proposed minor transportation planning projects in the area, but only one major project that could affect access to Town Bluff Project.

The Texas Department of Transportation (TXDOT) will remove two bridges along US 190 that cross over the Town Bluff Project (TXDOT, 2023). The bridges, Neches River Bridge and Neches River Relief Bridge, will be replaced with a single bridge over USACE fee-owned property. As part of the bridge replacement project, TXDOT is required to obtain a Clean Water Act Section 404 permit through USACE Regulatory Division. The mitigation for this effort is expected to occur on USACE fee-owned property. It should be noted that the new mitigation area will limit its future use by USACE Operations Division and is hereby noted in this Master Plan. Mitigation signs shall be placed on fee-owned property to advise the general public of its use and restrictions. The project is scheduled to begin construction by 2027. Closure of the bridge would require a detour of 45-minutes to one hour around the project until the project is complete.

National USACE policy set forth in ER 1130-2-550, Appendix H, states that USACE lands will, in most cases, only be made available for roads that are regional arterials or freeways (as defined in ER 1130-2-550). All other types of proposed roads, including driveways and alleys, are generally not permitted on USACE lands. The proposed expansion or widening of existing roadways on USACE lands will be considered on a case-by-case basis.

1.8. PRIOR DESIGN MEMORANDA

Design Memoranda were prepared setting forth design criteria for all aspects of the project including the prime flood risk management facilities, real estate acquisition, road and utility relocations, reservoir clearing, and the master plan for recreation development and land management. A few supplements and project related reports and manuals were later added. Table 1.1lists the Design Memoranda and other relevant manuals and reports for Town Bluff Project. This list also includes some documents related to Sam Rayburn Dam and Reservoir, since the two projects operate in tandem, and impacts of one often effect the other. As mentioned in Section 1.2, the original name for Town Bluff Dam and B.A. Steinhagen Lake was Dam B Reservoir and is reflected in the name of many early documents in Table 1.1.

Table 1.1 Design Memoranda (DM), Manuals, and Reports – Town Bluff Project

	Title	Approved
1.	Definite Project Report on McGee Bend, Dam "B," Rockland, and Dam "A" Reservoirs - Volume I of 5 Volumes – General - Volume II of 5 Volumes – McGee Bend Reservoir - Volume III of 5 Volumes – Dam "B" Reservoir - Volume IV of 5 Volumes – Rockland Reservoir - Volume V of 5 Volumes – Dam "A" Reservoir	Sep-Oct 1947
2.	Definite Project Report (Revised) on McGee Bend Reservoir - Real Estate Section	Jul 1951
3.	McGee Bend Reservoir - Brief Report on Angelina River Project - Reinvestigation of McGee Bend Reservoir, Angelina River, TX - 1st revision - 2nd revision	 Jan 1952 Nov 1952 Jul 1953
4.	Dam B Reservoir – Reservoir Regulation Manual	Mar 1956
5.	McGee Bend Reservoir – Survey Data - Dam Site Work Areas and Reservoir Area	Jul 1961
6.	McGee Bend Reservoir – Design Memorandum No. 1 - Construction for Fiscal Year 1956	May 1958
7.	Recreational and Land Use, Dam B Master Plan - Revision: Master Plan for Development and Management of B.A. Steinhagen Lake and Town Bluff Dam – Design Memorandum 1C - Supplement: Master Plan for Development and Management of B.A. Steinhagen Lake and Town Bluff Dam – Design Memorandum 1C	Jul 1952 Jan 1972 Mar 2003
8.	McGee Bend Reservoir - Design Memorandum No. 2 - General Design - General Design (Revised)	 Dec 1955 Apr 1961
9.	McGee Bend Reservoir - Design Memorandum No. 3 Real Estate - Construction Area Part I – First Increment - Construction Area Part I – Second Increment Relocations (Real Estate) ○ Part I - Gulf Coast & S.F. Railroad ○ Part II – First Increment (Hwy 147) ○ Part II – Second Increment (Hwy 147) ○ Part III – Highway 96 - Reservoir Area ○ Part I ○ Part II ○ Part III ○ Part IV ○ Part V	 Jan 1957 Feb 1957 Aug 1957 Mar 1957 Jul 1957 Aug 1959 Dec 1957 Aug 1958 Feb 1959 Apr 1960 Sep 1960

	Title	Approved

10.	McGee Bend Reservoir – Design Memorandum No. 4 Relocations:
	- Part I – Pipelines (Section A, B, C, D, E)
	- Part II – Highways (Section A, B, C, D, E, F)
	- Part III – County Roads and Forest Service Roads
	  o Supplement No. 1
	- Part IV - Railroads:
	  o GC and SF Railway
	  o A and NR Railroad
	- Part V – Power & Telephone Lines:
	  o (Section A) – Texas Power & Light Co.
	  o (Section B) – Deep East Texas Electric Coop. Inc.
	  o (Section C) – Jasper-Newton Coop.
	- Part VI – Cemeteries:
	  o (Section A) – Cemeteries No. 1 through 16
	  o (Section B) – Cemeteries
		
		Sep 1958
		May 1959
		
		Oct 1957
		Feb 1960
		
		Nov 1961
		
		Sep 1958
		Jan 1960

11.	McGee Bend Reservoir – Design Memorandum No. 5 – Spillway	Aug 1956
12.	McGee Bend Reservoir – Design Memorandum No. 6 – Availability of Materials	Sep 1956
13.	McGee Bend Reservoir – Design Memorandum No. 7 – Earthen Dam	Nov 1956
14.	McGee Bend Reservoir – Design Memorandum No. 8 – Hydro Power Studies	Jul 1959
15.	McGee Bend Reservoir – Design Memorandum No. 10 - Clearing (Part I) - Clearing (Part II)	 Nov 1960 Jan 1962

16.	McGee Bend Reservoir – Design Memorandum No. 11
	- Power Plant Preliminary Design Report No. 11-1
	- Flood Control Outlet and Power Intake Works Design Report No. 11-2
	  o (Inlet Channel, Outlet Channel, Retaining Walls, Stilling Basin, and Earthen Dam)
	- Flood Control Outlet Works, Power Intake, and Power Plant Design Memorandum Report No. 11-3
	  o Volume No. 1
	  o Volume No. 2
	  o Volume No. 3
	  o Volume No. 4
	  o Volume No. 5
	  o Volume No. 6
		
		Jan 1960
		
		Jan 1960
		
		Feb 1962
		Apr 1962
		Jun 1961
		Jun 1961
		Jun 1961
		Aug 1961

17.	Design Memorandum Report No. 11-4 - Flood Control Outlet & Power Intake (Quantity & Cost Estimate)	Mar 1962
18.	McGee Bend Reservoir – Design Memorandum No. 12 Operational Buildings & Utilities - Revised Addition	 Aug 1961 Nov 1962

	Title	Approved
19.	McGee Bend Reservoir – Design Memorandum No. 13 Recreation Facilities: - Preliminary Recreation Plan (Section A) - Construction Design Memo (part of Master Plan) (Sect. B) - Joint Master Plan (Design Memorandum No. 13B) - Revised No. 13B - Part One (Updated Joint Master Plan – No. 13C) - Appendix A (Cost Estimates for Joint Master Plan – No. 13C) - Appendix B (Updated Joint Master Plan – No. 13C) - Appendix A-A (Updated Joint Master Plan – No. 13C)	 Dec 1956 May 1962 Jul 1962 Jan 1966 Sep 1970 Sep 1970 Sep 1970 Oct 1972
20.	McGee Bend Reservoir – Design Memo. No. 14 – Brookeland	Mar 1959
21.	McGee Bend Reservoir – Design Memo. No. 15 – Hydrology (Revised)	Nov 1958
22.	McGee Bend Reservoir – Design Memo. No. 16 – Cost Allocation - First Revised Addition - Second Revised Addition	Nov 1965 Sep 1989 Aug 1996
23.	McGee Bend Reservoir – Design Memo. No. 17 – West Access Road	Dec 1960
24.	McGee Bend Reservoir – Design Memo. No. 18 – Cathodic Protection of Flood Control & Power Intake Gates	Mar 1962
25.	McGee Bend Reservoir – Design Memo. No. 19 – Shelter for Fallout Protection	Indefinite
26.	McGee Bend Reservoir – Design Memo. No. 20 – Exhibition and Guided Tour	Mar 1971
27.	McGee Bend Reservoir – Design Memo. No. 21 – Shoreline Erosion	Sep 1975
28.	McGee Bend Reservoir – Analysis of Design	Nov 1962
29.	Analysis of Design – Appendix A – General, Foundation Treatment, and Hydraulics – Computations	Nov 1962
30.	Analysis of Design – Appendix B – Structural Part 1 – Computations	Nov 1962
31.	Analysis of Design – Appendix C –Structural Part 2 – Computations	Nov 1962
32.	Analysis of Design – Appendix D – Gates and Guides – Computations	Nov 1962
33.	Analysis of Design – Appendix E – Mechanical & Electrical Computations	Nov 1962
34.	Analysis of Design – Appendix F – Two Transfer Arrangement Computations	Nov 1962
35.	Neches River Saltwater Barrier – Miscellaneous Paper H-74-9	Mar 1956
36.	Neches River Master Manual	–
37.	Sam Rayburn Reservoir – Reservoir Regulation Manual	May 1971

	Title	Approved
38.	Sam Rayburn Reservoir – Instructions for Regulating Storage in Sam Rayburn Reservoir	Mar 1965
39.	Sam Rayburn Reservoir – Pool Raise – Raising the Top of Conservation Pool Level at Sam Rayburn Reservoir	Apr 1972
40.	Sam Rayburn Dam and Reservoir – Reconnaissance Report – Dam Safety Assurance Program	May 1984
41.	Submission of Design Analysis Report (DAR) for Addition of Hydropower to Town Bluff Dam	1984
42.	Sam Rayburn Dam and Reservoir – Storage Reallocation Study	Jun 1986
43.	Sam Rayburn Dam and Reservoir – Spillway Erodibility - Reconnaissance Report for Major Rehab. Program - Reconnaissance Report (Revised) - Reconnaissance Report (Revised) - Reconnaissance Re-Evaluation Report - Reconnaissance Re-Evaluation Report	 Sep 1986 Apr 1988 Mar 1990 Apr 1991 Jul 1991
44.	Sam Rayburn Dam and Reservoir – Flood Emergency Plan	–
45.	Sam Rayburn Dam and Reservoir – Storage Reallocation Study	–
46.	Sam Rayburn Dam and Reservoir – Dam Safety Assurance Program – Spillway Modification and Freeboard Restoration	Oct 1992
47.	Water Control Manual, Appendix A, Master Reservoir Regulation Manual Revision	Mar 1956 Jan 2016

Source: The previous Master Plan revision and supplement do not contain a list of associated Design Memoranda or related documents. This list of documents is from the USACE Water Control Manual for Town Bluff Dam and B.A. Steinhagen Lake.

1.9. PERTINENT PROJECT INFORMATION

The following table provides pertinent information regarding key reservoir elevations and storage capacity at Town Bluff Project.

Table 1.2 Elevations and Water Storage Capacity

Feature	Elevation (Feet NGVD)	Lake Area (Acres)	Storage (Acre-Feet)	Runoff (inches)
Top of Dam	95.0	30,800	365,500	0.90
PMF Design Water Surface (1980 Study)	93.31	28,265	315,280	0.78
Top of Gates and Uncontrolled Spillway (1980 Study)	85.0	16,830	124,700	0.31
Normal Pool (upper) (2003 Survey)	83.0	10,687	66,972	0.17
Normal Pool (lower) (2003 Survey)	81.0	9,000	48,154	0.12

Invert of Sluice Intake (2003 Survey)	52.0	4	11	0
Gate Sill and Streambed (2003 Survey)	50.0	2	6	0
Conservation Storage	83.0	–	66,966	–

Source: USACE DMs and 2016 Town Bluff Project Water Control Manual

1.10 PERTINENT LAWS

Numerous Public Laws (PL) apply directly or indirectly to the management of federal land at Trinidad Lake. Listed below are several key PLs that are most frequently referenced in planning and operational documents. Refer to Appendix E for a more comprehensive listing.

- Flood Control Act of 1944, Public Law 78-534: Section 4 of the Act, as amended, authorizes USACE to construct, maintain, and operate public parks and recreational facilities in reservoir areas and to grant leases and licenses for lands, including facilities, preferably to federal, state, or local governmental agencies.

- Fish and Wildlife Coordination Act, Public Law 85-624: This Act, as amended, establishes the general policy that fish and wildlife conservation shall receive equal consideration with other project purposes and be coordinated with other features of water resource development programs. Opportunities for improving fish and wildlife resources, and adverse effects on these resources, shall be examined along with other purposes which might be served by water resources development.

- National Historic Preservation Act of 1966, Public Law 89-665, 54 U.S.C. Sections 300101 et seq: This Act, as amended, provides for: (1) an expanded National Register of significant sites and objects; (2) matching grants to states undertaking historic and archeological resource inventories; (3) a program of grants-in-aid to the National Trust for Historic Preservation; and (4) the establishment of an Advisory Council on Historic Preservation. Section 106 requires the President's Advisory Council on Historic Preservation to have an opportunity to comment on any undertaking which adversely affects properties listed, nominated, or considered important enough to be included on the National Register of Historic Places.

- Public Law 86-717: This law, sometimes referred to as the Forest Protection Act, provides for the protection of forest and other vegetative cover for reservoir areas under the jurisdiction of the Secretary of the Army and the Chief of Engineers.

- Federal Water Project Recreation Act, Public Law 89-72: This Act, as amended, requires that not less than one-half the separable costs of developing recreational facilities and all operation and maintenance costs at federal reservoir

projects shall be borne by a non-federal public body. A HQUSACE/OMB implementation policy made these provisions applicable to projects completed prior to 1965.

- Water Resources Planning Act 1965, Public Law 89-90. This act established the Water Resources Council and gives it the responsibility to encourage the development, conservation, and use of the Nation's water and related land resources on a coordinated and comprehensive basis.
- River and Harbor Act of 1967, Public Law 90-46. Renamed Dam B Dam and Reservoir to Town Bluff Dam and B.A. Steinhagen Lake.

- National Environmental Policy Act of 1969 (NEPA), Public Law 91-190, 42 U.S.C. Sections 4321 et seq.: NEPA declared it a national policy to encourage productive and enjoyable harmony between man and his environment, and for other purposes. Specifically, it declared a *"continuing policy of the Federal Government... to use all practicable means and measures...to foster and promote the general welfare, to create conditions under which man and nature can exist in productive harmony, and fulfill the social, economic, and other requirements of present and future generations of Americans."* Section 102 authorized and directed that, to the fullest extent possible, the policies, regulations, and public law of the United States shall be interpreted and administered in accordance with the policies of the Act. It is Section 102 that requires consideration of environmental impacts associated with federal actions. Section 101 of NEPA requires the federal government to use all practicable means to create and maintain conditions under which man and nature can exist in productive harmony. Specifically, Section 101 of NEPA declares:

    - Fulfill the responsibilities of each generation as trustee of the environment for succeeding generations.

    - Assure for all Americans safe, healthful, productive, and aesthetically and culturally pleasing surroundings.

    - Attain the widest range of beneficial uses of the environment without degradation, risk to health or safety, or other undesirable and unintended consequences.

    - Preserve important historic, cultural, and natural aspects of our national heritage, and maintain, wherever possible, an environment which supports diversity, and variety of individual choice.

    - Achieve a balance between population and resource use which will permit high standards of living and a wide sharing of life's amenities.

    - Enhance the quality of renewable resources and approach the maximum attainable recycling of depletable resources.

- Native American Graves Protection and Repatriation Act, Public Law 101-601: Requires federal agencies to return Native American human remains and cultural items, including funerary objects and sacred objects, to their respective peoples.

CHAPTER 2 – PROJECT SETTING AND FACTORS INFLUENCING MANAGEMENT AND DEVELOPMENT

2.1. PHYSIOGRAPHIC SETTING

2.1.1 Ecoregion Overview

Ecoregions denote areas of general similarity in ecosystems and in the type, quality, and quantity of environmental resources. The U.S Environmental Protection Agency (EPA) has developed a series of maps that categorizes these regions across the United States. Levels I and II divide the North American continent into 15 and 52 regions, respectively, while Level III ecoregions represent a subdivision of those into 104 unique regions and Level IV a finer sub-classification of those. Town Bluff Project and its watershed is in the Level III South Central Plains ecoregions. Within the finer Level IV ecoregions, Town Bluff Project is in the Flatwoods, Floodplains and Low Terraces, and Southern Tertiary Uplands as seen in Figure 2.1.

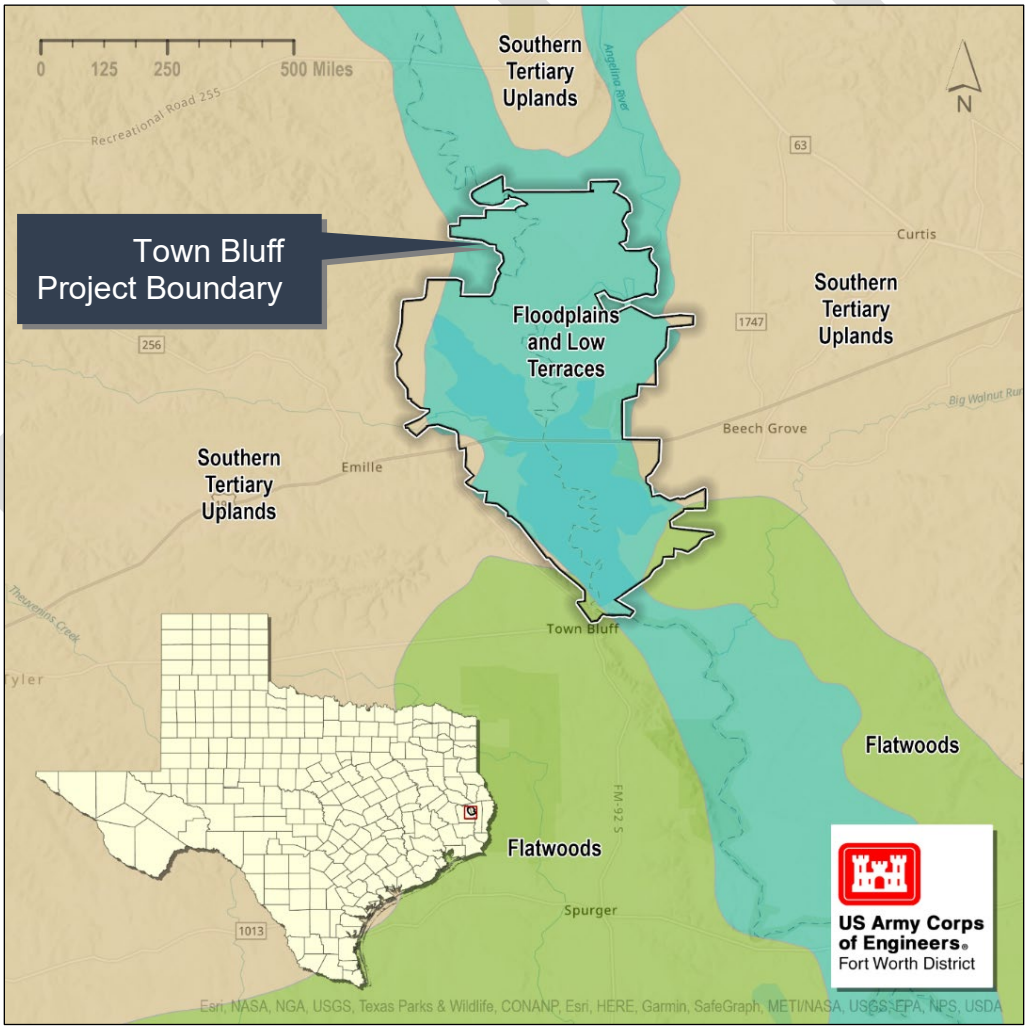

Figure 2.1 Town Bluff Project within Texas Ecoregions

Source: EPA, 2022.

2.1.2 Climate

Town Bluff Project lies in east central Texas which has a warm, temperate, continental climate with cool winters and hot, humid summers. Tropical maritime air masses from the Gulf of Mexico play a dominant role in the climate from late spring through early fall, while polar air masses determine the winter climate. The mean annual temperature at Town Bluff Project is about 66.3 degrees Fahrenheit (°F) (NOAA, 2022A). January, the coldest month, has an average temperature of 48.7°F and average minimum daily temperature of about 37.8°F. August and July, are the warmest months, with an average daily temperature of 81.4°F and have an average maximum daily temperature of 91.2°F in July and 92.9°F in August. The average length of the growing season is 257 days (NOAA, 2022B). Town Bluff Project lies within the USDA Plant Hardiness Zone 8b, which is determined by the winter extreme low temperatures, with 8A having normal winter lows between 15°F and 20°F (USDA, 2022).

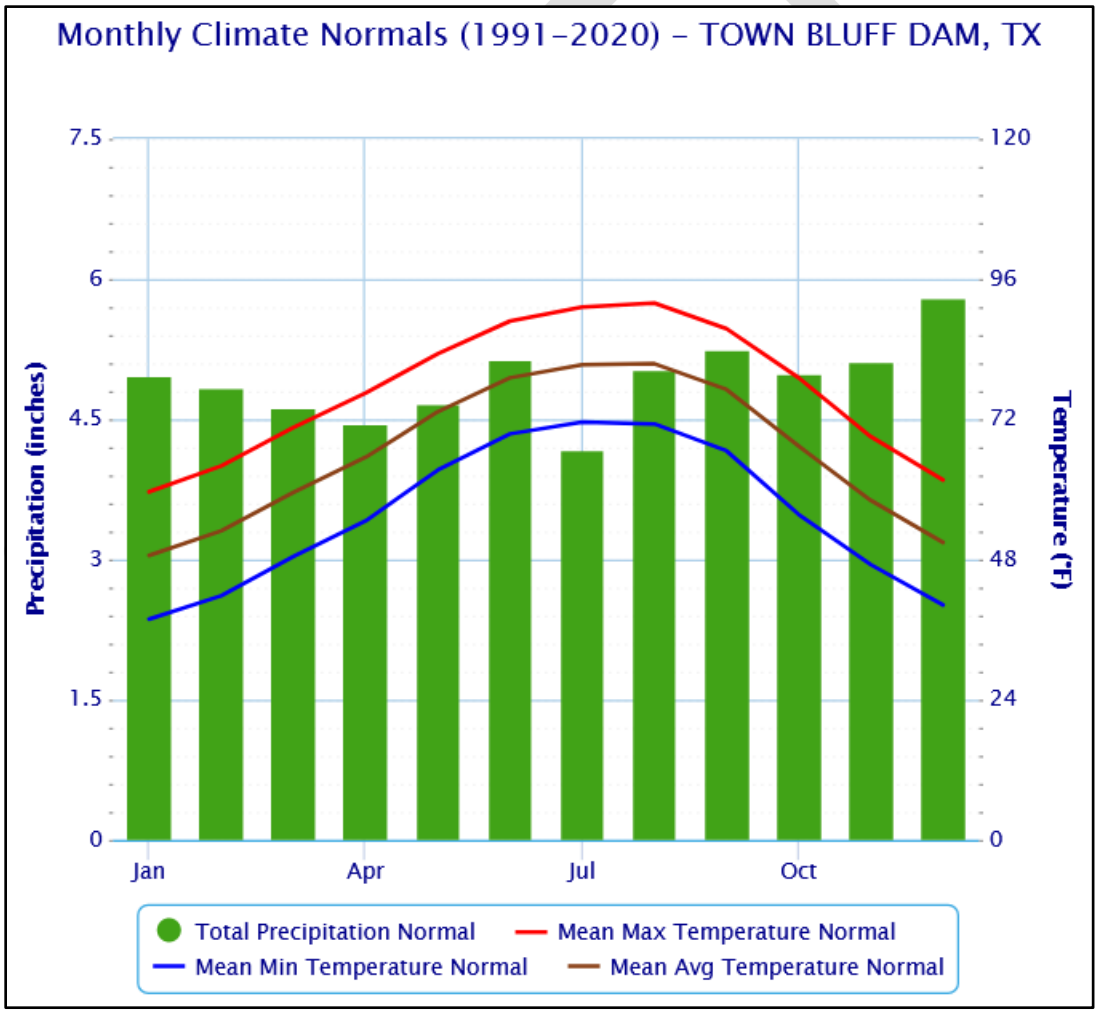

Figure 2.2 Average Monthly Climate at Town Bluff Dam, 1991 – 2020
Source: NOAA, 2022A.

The normal annual precipitation is 59.10 inches with greater precipitation during summer and winter, and less precipitation during spring and fall. Because of the preponderance of tropical maritime air, heavy showers of short duration may occur at any time during the year.

The average annual evaporation rate at Town Bluff Project, as calculated using the measured pan evaporation multiplied by the monthly pan coefficient, is about 44 inches with the lowest evaporations rates occurring during the winter and greatest evaporation occurring during the summer (USACE, 2016).

2.1.3 Climate Change and Green House Gas Emissions

The U.S. Global Change Research Program (USGCRP) looks at potential impacts of climate change globally, nationally, regionally, and by resource (e.g., water resources, ecosystems, human health). Town Bluff Project lies within the Southern Great Plains region of analysis. The Southern Great Plains region has already seen evidence of climate change in the form of rising temperatures that are leading to increased demand for water and energy and impacts on agricultural practices. Over the last few decades, the Southern Great Plains has seen fewer cold days in winter and more hot days in summer, as well as changes to precipitation patterns. The decrease in the cold days has resulted in an overall increase of the frost-free growing season. Within this region, there has been an increase in average temperatures of 1°–2°F since 1901 (Kloesel et al., 2018). The changing precipitation patterns in the region has led to more frequent extreme droughts, storms, and flood events. If the current rate of greenhouse gas (GHG) emissions continues, the potential impacts will be much greater by 2100. The USACE mission for the Responses to Climate Change Program is “to develop, implement, and assess adjustments or changes in operations and decision environments to enhance resilience or reduce vulnerability of USACE projects, systems, and programs to observed or expected changes in climate.” The effects of climate change and mitigation efforts are evolving, and Town Bluff Project and all federally owned property will be managed to comply with laws and executive orders to respond to the growing threat of climate change

2.1.4 Air Quality

The EPA established nationwide air quality standards to protect public health and welfare in 1971. The State of Texas has adopted the National Ambient Air Quality Standards (NAAQS) as the state’s air quality criteria. NAAQS standards specify maximum permissible short- and long-term concentrations of various air contaminants including primary and secondary standards for six criteria pollutants: Ozone (O_3), Carbon Monoxide (CO), Sulfur Dioxide (SO2), Nitrous Oxides (NO_x), particulate matter (PM_{10} and $PM_{2.5}$), and Lead (Pb). If the concentrations of one or more criteria pollutants in a geographic area is found to exceed the regulated “threshold” level for one or more of the NAAQS, the area may be classified as a non-attainment area. Areas with concentrations that are below the established NAAQS levels are considered either attainment or unclassifiable areas. In the case of Town Bluff Project, it is in attainment for all criteria air pollutants (TCEQ, 2023A).

2.1.5 Topography, Geology, and Soils

Geology

Town Bluff Project is on a roughly 10-mile wide strip of Holocene Alluvium soil that flanks the Neches River. This alluvial band crosses perpendicular bands of the Quaternary Lissie formation, the Miocene Fleming/Oakville formations, and the Pliocene Willis formation. The Quaternary Lissie formation primarily consists of sand, silt, and clay, while the Miocene Fleming/Oakville formations primarily consists of clay and sandstone.

Topography

The Neches River and its principal tributary, the Angelina River, rise in a region of rolling hills and flow through an area of moderately to extremely hilly relief to the vicinity of Jasper and Woodville where the rolling terrain abruptly changes to the flat coastal prairie.

Soils

The main soil series within Town Bluff Project Lands is the Urbo and Mantachie soils, frequently flooded. This soil makes up 35.06 percent (%) of soils found within Town Bluff Project lands. It is a soil that consists of two different but similar soils. Because they make such small percentage by themselves but are similar in nature they are mapped together. The soil occurs in more than 80 inches thick surface layers, normally found in floodplains, they are both somewhat poorly drained, are an alluvium derived from igneous, metamorphic and sedimentary rock, and are not prime farmland soils.

Soils at Town Bluff Dam have a well-developed, moderately deep profile. The origin of these soils is both alluvial (sandy to fine loam) and marine (silty clay to blackland clay). Major soil associations include the Bienville-Cart-Wrightsville (loamy fine sand-fine sandy loam), the Gardner-Susquehanna (fine sandy loam on a firm plastic clayey B horizon), and the Urbo-Mantachie (loamy clay loam). Major limitations include low permeability, high water table, frequent flooding, and high erodibility.

The NRCS Web Soil Survey (2022) reports 22 soil types occurring within Town Bluff Project lands. Table 2.1 shows the acreage and farmland status associated with each soil and surface type in the detention area while Figure 2.3 shows the location of the soil types.

Table 2.1 Acres of Surface Soil Types within Town Bluff Project Lands

Soil Type	Number of Acres	Percent Total	Farmland Status
Belrose-Caneyhead frequently ponded complex, 0 to 1 percent slopes	275.70	2.45%	Prime Farmland if Drained
Besner-Mollville complex, gently undulating	1,666.10	14.82%	All Areas Are Prime Farmland
Bienville-Alaga association, gently undulating	549.90	4.89%	Not Prime Farmland
Burkeville clay, 5 to 15 percent slopes	28.60	0.25%	Not Prime Farmland
Chambliss loamy sand, 0 to 8 percent slopes	10.00	0.09%	Not Prime Farmland
Choates loamy sand, 1 to 5 percent slopes	72.50	0.64%	Not Prime Farmland
Cowmarsh mucky silty clay, 0 to 1 percent slopes, frequently flooded, frequently ponded	507.70	4.52%	Not Prime Farmland
Deweyville mucky silt loam, 0 to 1 percent slopes, frequently flooded, frequently ponded	38.50	0.34%	Not Prime Farmland
Hainesville loamy fine sand, 0 to 2 percent slopes	51.30	0.46%	Not Prime Farmland
Hatliff-Pluck-Kian complex, 0 to 1 percent slopes, frequently flooded	111.20	0.99%	Not Prime Farmland
Hillister loamy sand, 5 to 15 percent slopes	22.80	0.20%	Not Prime Farmland
Mantachie and Bleakwood soils, frequently flooded	56.90	0.51%	Not Prime Farmland
Mollville-Besner complex, 0 to 1 percent slopes, frequently ponded	704.00	6.26%	Not Prime Farmland
Otanya very fine sandy loam, 1 to 3 percent slopes	8.80	0.08%	Farmland of Statewide Importance
Ozias-Pophers complex, 0 to 1 percent slopes, frequently flooded	1,385.50	12.32%	Not Prime Farmland
Sawlit-Sawtown complex, 1 to 3 percent slopes	228.40	2.03%	All Areas are Prime Farmland
Simelake-Pluck complex, 0 to 1 percent slopes, frequently flooded	1,495.10	13.30%	Not Prime Farmland
Spurger-Caneyhead frequently ponded complex, 0 to 1 percent slopes	28.40	0.25%	Not Prime Farmland
Stringtown-Bonwier complex, 5 to 15 percent slopes	0.30	0.00%	Not Prime Farmland
Urbo and Mantachie soils, frequently flooded	3,942.10	35.06%	Not Prime Farmland
Votaw fine sand, 0 to 1 percent slopes	12.50	0.11%	Not Prime Farmland
Woodville fine sandy loam, 5 to 15 percent slopes	46.10	0.41%	Not Prime Farmland
Total Acres	11,242.40		

NRCS 2022. Please note that there is a difference between total acreages listed by the NRCS and USACE due to the difference of mapping techniques and water surface elevations used to map out those acreages.

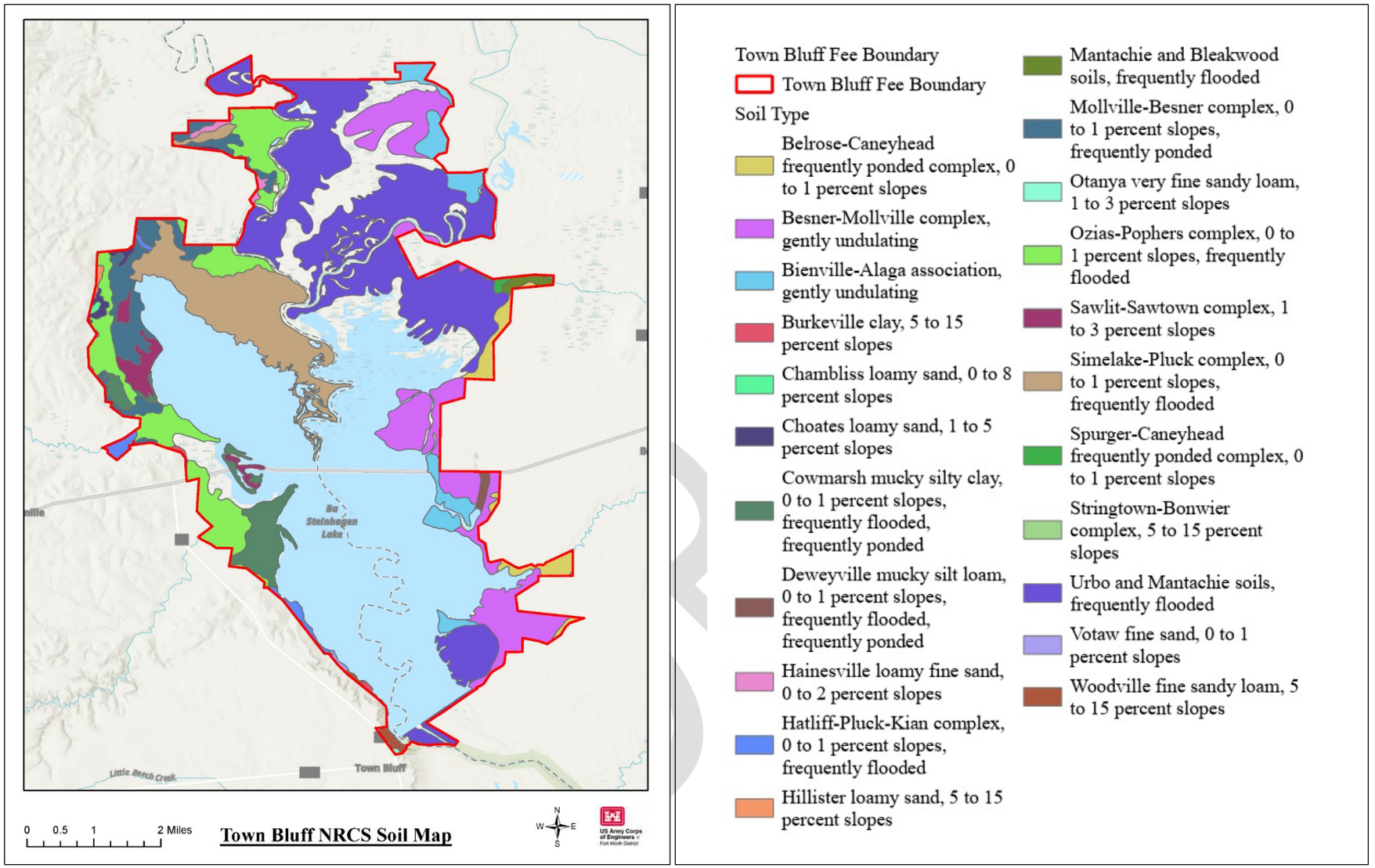

Figure 2.3 Town Bluff Project NRCS Soil Map

Prime Farmland

As required by Section 1541(b) of the Farmland Protection Policy Act (FPPA) of 1980 and 1995, 7 U.S.C. 4202(b), federal and state agencies, as well as projects funded with federal funds, are required to (a) use the criteria to identify and take into account the adverse effects of their programs on the preservation of farmland, (b) consider alternative actions, as appropriate, that could lessen adverse effects, and (c) ensure that their programs, to the extent practicable, are compatible with state and units of local government and private programs and policies to protect farmland.

There are several soil types in the study area that are considered prime farmland soils or soils associated with farmlands of state importance. However, the lands represented by these soil types have not been used for farming since the lands were acquired prior to the initiation of construction of Town Bluff Project in March 1947.

2.1.6 Water Resources

Surface Water

The Neches River originates in Van Zandt County approximately 60 miles southeast of Dallas, Texas, and flows in a southeasterly direction for approximately 416 miles to empty into Sabine Lake, 20 miles southeast of Beaumont, Texas. The watershed lies in the southeastern portion of Texas. The watershed of the Neches River has a total drainage area of 10,011 square miles. The main river system has two principal branches above the junction with the Angelina River: the Neches River, with a length of about 290 miles, and the Angelina River, with a length of about 205 miles. The slope of the Neches River in the vicinity of Town Bluff Dam is about 0.7 feet per mile. The Angelina River runs southeast to the Neches River, entering at river mile 126.4. Above their confluence, the Neches River has a drainage area of 4,017 square miles, and the Angelina River has a drainage area of 3,556 square miles (Angelina River at mouth). The drainage area between the confluence of the two rivers and the mouth is approximately 2,438 square miles.

Town Bluff Project is located on the Neches River at river mile 113.7 about 12.4 miles below the confluence with the Angelina River and approximately 0.5 miles north of Town Bluff, Texas. The lake straddles Jasper and Tyler Counties.

Wetlands

Waters of the United States are defined within the Clean Water Act (CWA), and jurisdiction is addressed by the USACE and EPA. Wetlands are a subset of the waters of the United States that may be subject to regulation under Section 404 of the CWA (40 CFR 230.3). Wetlands are those areas inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions.

Wetland classifications presented are derived from the National Wetlands Inventory, which was established by USFWS to aid in conservation efforts by collecting nationwide wetland distribution and type information (USFWS, 2022). The inventory is based on a single "snapshot" at the time of their survey and may not reflect conditions at conservation pool. Within the Town Bluff Project lands, wetlands generally occur near the rivers and flatter areas of the lake. Table 2.2 lists the acreages of various types of wetlands present at Town Bluff Project and Figure 2.4 displays the distribution of wetland types at Town Bluff Project.

Table 2.2 Total Acres of Wetland at Town Bluff Project

Wetland Type	Acres
Freshwater Emergent Wetland	206.42
Freshwater Forested/Shrub Wetland	10,868.22
Freshwater Pond	258.78
Lake	8,446.07
Riverine	8,264.05
TOTAL ACRES of Water Resources	**28,043.54**

NOTE: Acreages differ from land and water surface calculations due to USFWS using a single snapshot of the water surface that may not reflect the actual conservation pool. Source: USFWS. 2022.

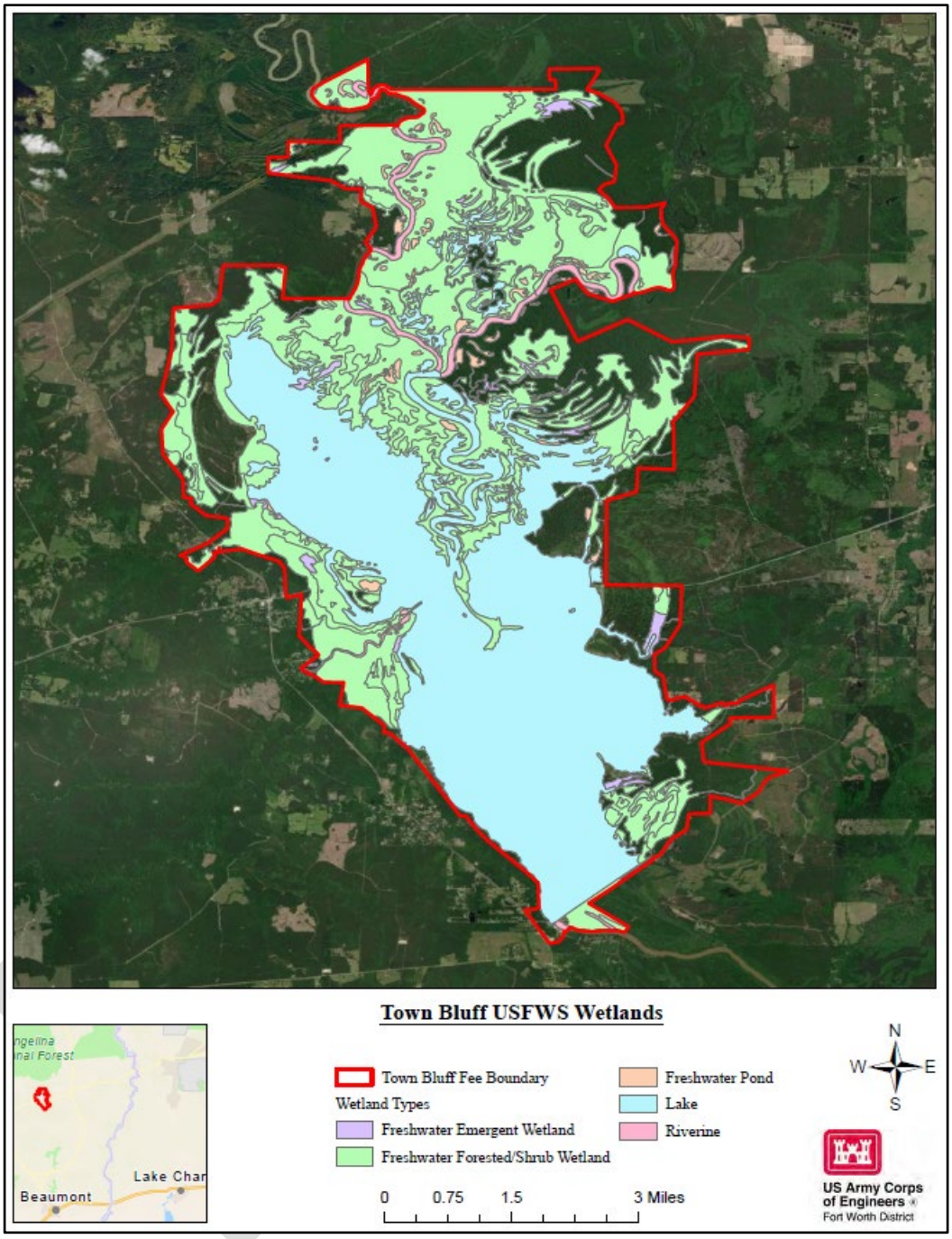

Figure 2.4 Wetland Types at Town Bluff Project
Source: USFWS 2022.

Groundwater

Deep below Town Bluff Project lies the Gulf Coast aquifer. This aquifer extends across much of the Texas Gulf Coast that runs from Mexico and Texas border to the Texas and Louisiana border. This major aquifer is composed of several smaller aquifers contained within the Jasper, Evangeline, and Chicot aquifers.

Primary use for the aquifer is for residential, municipal, industrial, and irrigation purposes. The groundwater withdrawal within Fort Bend, Galveston, Jasper, Harris, Warton Counties has led to a subsidence of up to 350ft. In these hurricane prone counties this subsidence has led to increased flooding in flood-prone areas.

In general, groundwater quality in the Gulf Coast Aquifer can vary with location. Water salinity is typically higher to the south and east and lower to the north and west ends of the aquifer. Total dissolved solids (TDS) increase from less than 500 milligrams per liter in the north and southeast to between 1,000 and over 10,000 milligrams per liter.

Hydrology

The watershed of the Neches River has a total drainage area of 10,011 square miles. The main river system has two principal branches above the junction with the Angelina River: the Neches River, with a length of about 290 miles, and the Angelina River, with a length of about 205 miles. The slope of the Neches River in the vicinity of Town Bluff Dam is about 0.7 feet per mile. The Angelina River runs southeast to the Neches River, entering at river mile 126.4. Above their confluence, the Neches River has a drainage area of 4,017 square miles, and the Angelina River has a drainage area of 3,556 square miles (Angelina River at mouth). The drainage area between the confluence of the two rivers and the mouth is approximately 2,438 square miles.

Surface waters are categorized to hydrologic units. Hydrologic units are classified by the United States Geologic Survey (USGS) using a Hydrologic Units Code system, also referred to as HUC's. The units are classified from largest HUC with a two-digit region (e.g., Texas-Gulf Region) encompassing the largest area to a twelve-digit sub-watershed HUC. Town Bluff Project is classified into sub-watersheds as follows and as illustrated in Figure 1.2.

- 12: Texas-Gulf (HUC 2: Region)
  - 1202: Neches (HUC 4: Sub-Region)
    - 120200: Neches (HUC 6: Basin)
      - 12020003: Lower Neches (HUC 8: Sub-Basin)
        - 1202000302: Sandy Creek-Neches River (HUC 10: Watershed)
          - 120200030202: Little Wolf Creek-Wolf Creek (HUC 12: Sub-Watershed)
          - 120200030203: Rush Creek Sub-watershed (HUC 12: Sub-Watershed)
          - 120200030204: Angelina River-Neches River (HUC 12: Sub-Watershed)
          - 120200030206: B.A. Steinhagen Lake (HUC 12: Sub-Watershed)
        - 1202000303: Big Walnut Run-Neches River (HUC 10: Watershed)
          - 120200030301: Big Walnut Run (HUC 12: Sub-Watershed)
      - 12020005: Lower Sabine (HUC 8: Sub-Basin)
        - 1202000510: Indian Creek-Angelina River (HUC 10: Watershed)
          - 120200051003: Kelly Branch-Angelina River (HUC 12: Sub-Watershed)
      - 12020006: Village Subbasin (HUC 8: Sub-Basin)
        - 1202000603: Theuvenins Creek-Beech Creek (HUC 10: Watershed)
          - 120200060301: Mill Creek-Beech Creek (HUC 12: Sub-Watershed)

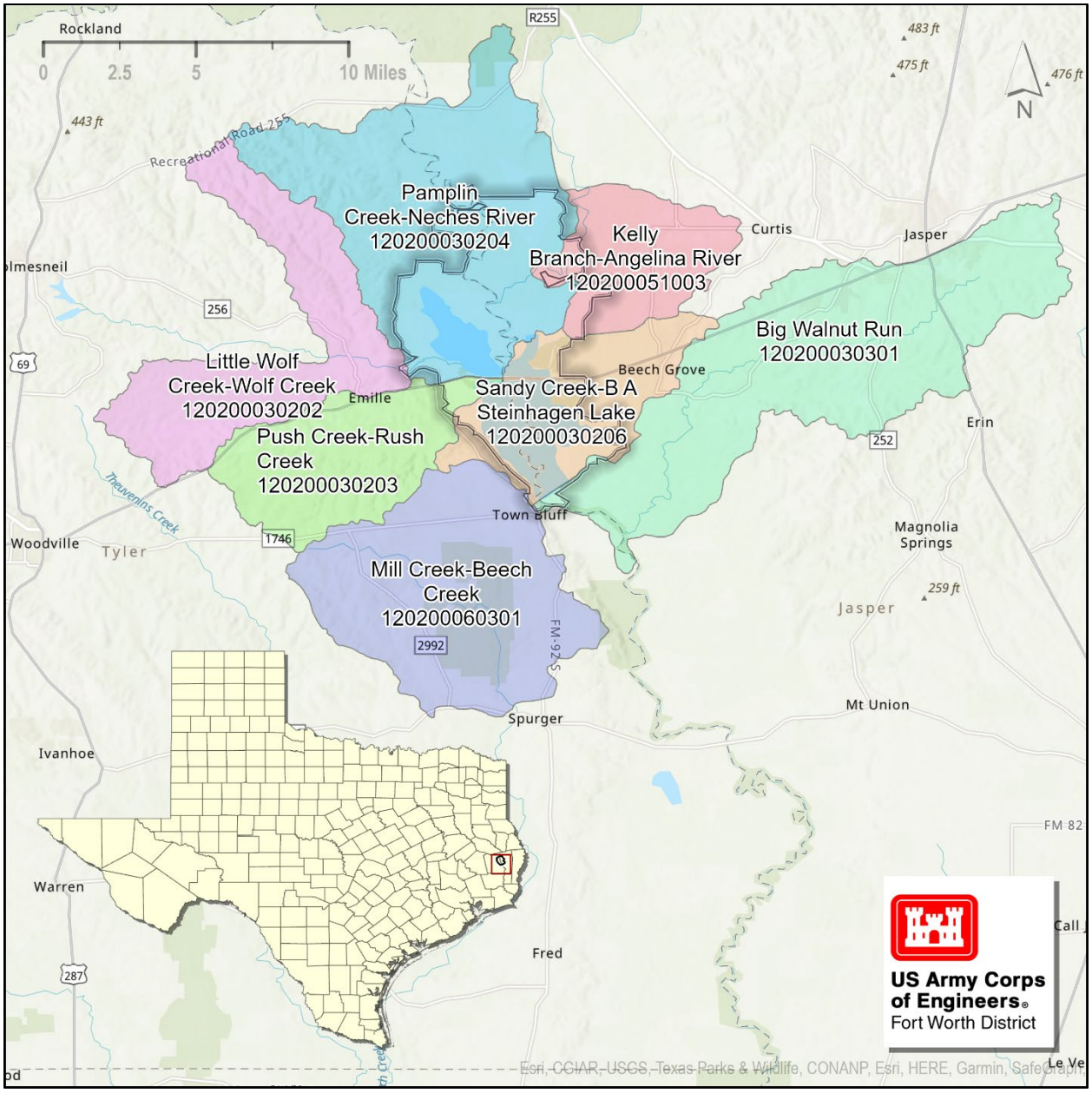

Figure 2.5 Watershed Map of Town Bluff Project

The Neches River Watershed is subject to three general types of flood-producing rainfall: thunderstorms, frontal rainfall, and tropical cyclones. Generally, the highest 24-hour and monthly precipitation periods have occurred during tropical cyclones. However, there are some instances of heavy precipitation resulting from local thunderstorms. The maximum 24-hour rainfall reported in or adjacent to the basin was 17.76 inches, which occurred at Port Arthur (just outside the basin) on 28 July 1943. The maximum monthly rainfall reported was 26.79 inches, which occurred at San Augustine in August 1915.

Town Bluff Project is an integral part of the USACE plan for flood control and water conservation in the Neches-Angelina River Basin System. The plan presently consists of 3 major USACE flood control projects –Town Bluff Dam and B.A. Steinhagen Lake, Sam Rayburn Reservoir, and Salt Water Barrier across the Neches River downstream of Town Bluff Dam in Jefferson and Orange Counties near Beaumont, Texas. These projects work in concert to control water flow and provide water supply to the surrounding communities.

Water Quality

Texas Commission on Environmental Quality (TCEQ) sets and implements standards for surface water quality to improve and maintain the quality of water in the state, based on various beneficial use categories for the water body. The Texas Integrated Report of Surface Water Quality, which is a requirement of the Federal Clean Water Act Sections 305(b) and 303(d), evaluates the quality of surface waters in Texas and identifies those that do not meet uses and criteria defined in the Texas Surface Water Quality Standards (TSWQS). The Texas Integrated Report describes the status of Texas' natural waters based on historical data and assigns waterways to various categories depending on the extent to which they attain the TSWQS.

Existing water quality within Town Bluff Project is affected by rainfall and associated stormwater flows originating from residential, commercial, and industrial point and nonpoint sources from properties upstream of the dam and reservoir. These stormwater flows have increased over time because of increased urbanization and development, increasing the risk for pollution from runoff. Sedimentation from within the watershed tends to increase turbidity and decrease dissolved oxygen levels, as will lower rainfall especially during summer months. Both turbidity and low oxygen levels can negatively affect aquatic life due to reduced photosynthesis at lower depths and decreased oxygen, greatly affecting animal life.

The 2022 Texas Integrated Report - Texas 303(d) List (TCEQ, 2020B) lists several segments within Town Bluff Project as to exceeding TSWQS. These exceedances are for dioxin and mercury in edible tissue for Town Bluff Project and within the Neches River below Town Bluff Dam, and for bacteria in water (recreation use) for Sandy and Wolf Creeks portions within Town Bluff Project fee boundary.

The Texas Department of State Health Services (DSHS) Seafood and Aquatic Life Group purpose is to address and prevent/reduce any disease-causing agent from occurring that can be transferred from aquatic life to humans within the State of Texas. As of October 2022, the DSHS has issued fish consumption advisories for Town Bluff Project, as well as the Neches River below Town Bluff Dam within USACE Fee Owned Property as a result of high levels of dioxin and mercury within the fish. Fish under this advisory include blue catfish, flathead catfish, gar (all species), largemouth bass, smallmouth buffalo, and spotted bass (DSHS, 2022). The advisory warnings range from consumption is not recommended for sensitive populations to two meals per month for certain lengths, depending on fish species. Sensitive populations are women of child-bearing age, pregnant or nursing mothers, and children up to age 12.

2.1.7 Hazardous Materials and Solid Waste

There are no hazardous or solid waste advisories within Town Bluff federal fee boundary. However, DSHS has issued any DSHS fish consumption advisory warnings within the same area as explained in the previous section.

As a part of USACE SWF lake annual environmental compliance assessment, members of USACE inspect various areas (leases, easements, and parks) at Town Bluff Project that are known to potentially emit or store hazardous materials on an annual basis as part of USACE efforts to comply with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). This assessment is completed through a USACE formal process known as the Environmental Review Guide for Operations (ERGO). Upon completion of the assessment if any compliance findings occur then formal remedial actions are required to take place.

2.1.8 Health and Safety

Town Bluff Project's authorized purposes include flood risk management, water supply, and environmental stewardship, and recreation. Compatible uses incorporated in project operation management plans include conservation and fish and wildlife habitat management components. The USACE and TPWD have established public outreach programs to educate the public on water safety and conservation of natural resources. In addition to the water safety outreach programs, the project has established recreation management practices to protect the public. These include safe boating and swimming regulations and speed limit and pedestrian signs for park roads. Town Bluff Project also has solid waste management plans in place for camping and day use areas that are maintained by the respective partners that hold the lease.

2.2. ECOREGION AND NATURAL RESOURCE ANALYSIS

2.2.1 Natural Resources Stewardship and Analysis

The natural resources present at Town Bluff Project include the water, wetlands, soil, vegetation, and fish and wildlife, including those species listed as endangered or threatened by the U.S. Fish and Wildlife Service (USFWS) and the state of Texas. The stewardship of natural resources adheres to ecosystem management principles as described in the USACE regulations ER and EP 1130-2-540. Effective stewardship is imperative to the sustainability and use of project resources. The ecoregion and the local natural resources are described in further detail in the following section.

USACE regulations and policy ER and EP 1130-2-540 require a basic inventory of natural resources at all operational civil works projects administered by USACE, which was used to inform this Master Plan revision. Referred to within USACE regulations as a Level One Inventory, this inventory includes the following:

- vegetation in accordance with the National Vegetation Classification System through the sub-class level (Section 2.2.2);

- assessment of the potential presence of special status species including but not limited to Federal and state listed endangered and threatened species, migratory species, and birds of conservation concern listed by the USFWS (Section 2.2.5);
- land (soils) capability classes in accordance with NRCS soil surveys (Section 2.1.5); and
- wetlands (see Section 2.1.6).

This inventory data is presented in Table 2.5 is recorded in the USACE national database referred to as OMBIL and is useful in providing a general characterization of the vegetation on all operational projects.

Table 2.5 Vegetation Classification and Acres at Town Bluff Project

Vegetation Order	Vegetation Class	Vegetation Sub-class	Total Classified Acres	Sustainable Acres	Total Unassessed Condition Acres
Herb Dominated	Herbaceous Vegetation	Perennial graminoid vegetation (grasslands)	42	42	21,601
Tree Dominated	Closed Tree Canopy	Deciduous closed tree canopy	9,938	3,938	11,705
Herb Dominated	Herbaceous Vegetation	Hydromorphic rooted vegetation	7,878	7,878	13,765
Shrub Dominated	Shrubland (Scrub)	Deciduous shrubland (scrub)	399	224	21,244
Herb Dominated	Herbaceous Vegetation	Annual graminoid or forb vegetation	268	268	21,375
Tree Dominated	Closed Tree Canopy	Evergreen forest	1,788	1,588	19,855
Non-Vegetated	Non-Vegetated	Non-Vegetated	468	468	21,175

Vegetation Order	Vegetation Class	Vegetation Sub-class	Total Classified Acres	Sustainable Acres	Total Unassessed Condition Acres
Tree Dominated	Closed Tree Canopy	Mixed evergreen-deciduous closed tree canopy	862	562	20,781

In addition to the Level One Inventory data, USACE completed a habitat study for the Environmental Assessment (EA, located in Appendix B) based on TPWD's Wildlife Habitat Appraisal Procedure (WHAP) to inform the development of this Master Plan. The WHAP was developed to allow a qualitative and holistic evaluation of wildlife habitat for a particular location without requiring significant time for field work or compiling data. The Town Bluff Project WHAP was conducted October 17-20, 2022 by a multi-agency team from TPWD, USACE Operations, and the Regional Planning and Environmental Center (RPEC). A total of 102 data collection sites were selected using aerial photography and knowledge of the Town Bluff Project staff.

2.2.2 Vegetation Resources

As is common in the South Central Plains ecological region, Town Bluff Project's vegetation has characteristics of upland forest that tend to be dominated by the following tree species:

- southern red oak (*Quercus falcata*),
- post oak (*Quercus stellata*),
- white oak (*Quercus alba*),
- numerous hickories (*Carya* spp.),
- loblolly pine (*Pinus taeda*), and
- shortleaf pine (*Pinus echinata*).

Town Bluff Project also supports vast bottomland hardwood forests, occurring in poorly drained areas, which consist of the following primary species:

- water oak (*Quercus nigra*),
- willow oak (*Quercus phellos*),
- swamp chestnut oak (*Quercus michauxii*),
- sweetgum (*Liquidambar styraciflua*),
- blackgum (*Nyssa sylvatica*),
- red maple (*Acer rubrum*),
- bald cypress (*Taxodium distichum*), and
- water tupelo (*Nyssa aquatica*).

What prairies exist are typically confined to managed lands like parks and wildlife management areas, since areas outside of those management areas have typically been developed into pastures and managed forests. An exception to this are the Ozark Sandstone Glades (known locally as saline prairies), which are exceptionally rare due to the unique physical attributes that must be present for it to occur.

The Ozark Sandstone Glades, as explained by Singhurst (2018), can be characterized as prairies underlined with well-draining, salty soils. These soils were created by a river depositing salty layers that were dried up over long periods of time. The resulting soil is known as Besner-Mollville loam and can be found on river terraces that have been modified by wind and riparian erosion and deposition. The predominate vegetation are the following:

- prairie plantain (*Plantago elongate*),
- whorled dropseed (*Sporobolus pyramindatus*),
- yellow hedge hyssop (*Gratiola flava*),
- narrow-leaf sumpweed (*Iva angustifolia*),
- western dwarf dandelion (*Krigia occidentalis*),
- churchmouse threeawn (*Aristida dichotoma*), and
- Nutall's Rayless goldenrod (*Bigelowia nuttallii*).

The WHAP analysis for Town Bluff Project included four major habitat types: freshwater swamp (blackwater and spring fed), riparian/bottomland hardwood forests (BHF), upland forests, and grasslands. A summary of the WHAP Scores tallied at Town Bluff Project is provided in Table 2.3 and reflects that, overall, grasslands exhibited the highest average total score (0.94), with riparian/BHF and upland forest habitats exhibiting close values, averaging total scores of 0.69 and 0.68 respectively. The WHAP report can be found in Appendix C of this Plan.

Table 2.3 Average, Minimum, and Maximum Survey Scores per Habitat Type

Habitat Type	Points Surveyed	Average Total Score	Maximum Total Score	Minimum Total Score
Grassland	4	0.94	1.00	0.81
Riparian/BHF	52	0.69	0.83	0.51
Swamp	9	0.77	0.89	0.64
Upland Forest	37	0.68	0.87	0.41

The South Central Plains ecoregion has undergone significant changes in the past 150 years. The diversity and configuration of the plant communities within the landscape influence wildlife populations, and although a variety of habitat for wildlife is present throughout the ecological region, the health and vigor of the habitat varies considerably within sub-regions. Fragmentation of once contiguous habitat into smaller land holdings; competition for food and cover with livestock; conversion of woodland habitat to improved pastures or urban and rural developments; and lack of proper wildlife and habitat management all contribute to the relative health or decline of

vegetative resources in the area. Many of these variables being absent from Town Bluff Project contribute to having some of the highest quality and sizeable extant acreage of the South Central Plains ecoregion in southeast Texas, highlighting the importance of the USACE mission of environmental stewardship on USACE lands in the region.

2.2.3 Fisheries and Wildlife Resources

Town Bluff Project provides habitat for an abundance of fish and wildlife species. Predominant fish species in the lake include the following:

- largemouth bass (*Micropterus salmoides*),
- channel catfish (*Ictalurus punctatus*),
- white crappie (*Pomoxis annularis*), and
- white bass (*Morone chrysops*).

Other less prominent species include:

- black, yellow, and striped bass,
- carp,
- blue and hybrid catfish,
- three species of gar, and
- numerous sunfish and crappie species.

Many of the undeveloped open spaces provide habitat for the following mammal species:

- coyotes (*Canis latrans*),
- bobcat (*Lynx rufus*),
- white-tailed deer (*Odocoileus virginianus*),
- eastern cottontail rabbit (*Sylvilagus floridanus*),
- gray squirrel (*Sciurus carolinensis*),
- fox squirrel (*Sciurus niger*),
- nine-banded armadillo (*Dasypus novemcinctus*),
- striped skunk (*Mephitis mephitis*), and
- raccoon (*Procyon lotor*).

The area also provides habitat for a diverse range of birds and acts as a stopover for neotropical migrant songbirds as well as breeding songbirds and colonial waterbirds Wetlands at Town Bluff Project provides habitat for numerous resident waterbirds including the following:

- rails,
- moorhens,
- grebes,
- herons, and
- egrets.

2.2.4 Timber and Forestry Resources

The east and southeast Texas regions have diverse habitats with timber and forestry resources. The land at Town Bluff Project is managed for multiple resources, but timber harvests are not a regular part of resource management or a significant source of commercial activity. Forest products generated through clearing, salvage operations, or planned harvests will be sold. Disposal procedure for standing timber is a real estate function, and all proposed sales incorporate a disposal plan. Planning for the sale of forest products is initiated by USACE personnel working at the lake. The disposal plan includes justification for the sale, sale boundaries, volume estimates, and harvest conditions. Timber sales are administered through USACE, Real Estate Division, Fort Worth District. A complete description of the forest management efforts at Town Bluff is provided in Section 6.5.

2.2.5 Threatened and Endangered Species

The Endangered Species Act was enacted to provide a program for the preservation of endangered and threatened species and to provide protection for the ecosystems upon which these species depend for their survival. USFWS is the primary agency responsible for implementing the Endangered Species Act and is responsible for birds and other terrestrial and freshwater species. USFWS responsibilities under the Endangered Species Act include (1) the identification of threatened and endangered species; (2) the identification of critical habitats for listed species; (3) implementation of research and recovery efforts for these species; and (4) consultation with other Federal agencies concerning measures to avoid harm to listed species.

An endangered species is a species officially recognized by USFWS as being in danger of extinction throughout all or a significant portion of its range. A threatened species is a species likely to become endangered within the foreseeable future throughout all or a significant portion of its range. Proposed species are those that have been formally submitted to Congress for official listing as threatened or endangered. Species may be considered eligible for listing as endangered or threatened when any of the five following criteria occur: (1) current/imminent destruction, modification, or curtailment of their habitat or range; (2) overuse of the species for commercial, recreational, scientific, or educational purposes; (3) disease or predation; (4) inadequacy of existing regulatory mechanisms; and (5) other natural or human-induced factors affecting their continued existence.

In addition, USFWS has identified species that are candidates for listing as a result of identified threats to their continued existence. The candidate designation includes those species for which USFWS has sufficient information to support proposals to list as endangered or threatened under the Endangered Species Act; however, proposed rules have not yet been issued because such actions are precluded at present by other listing activity. Although not afforded protection by the Endangered Species Act, candidate species may be protected under other federal or state laws.

The USFWS's Information for Planning and Consultation (IPaC) database (2022) lists the threatened and endangered species, and trust resources that may occur within the Town Bluff Project Federal Fee Boundary (see USFWS Species List and the IPAC Report in Appendix C). A trust resource is "migratory birds, threatened species, endangered species, interjurisdictional fish, marine mammals, and other species of concern" (16 USC § 3772(1)). Based on the IPaC report, nine federally listed species may occur within Town Bluff Project: Alligator Snapping Turtle, Louisiana Pigtoe, Monarch Butterfly, Navasota Ladies-tresses, Red-cockaded Woodpecker, Red Knot, Texas Heelsplitter, and Texas Trailing Phlox (USFWS 2023). A list of these species is presented with their scientific names and federal status in Table 2.4. Critical Habitat is present at Town Bluff Project for the Texas Heelsplitter and for the Louisiana Pigtoe near the fee boundary below the dam. The species identified as Threatened, Endangered or Candidate Species by TPWD that are not federally listed are included in Appendix C of the proposed Master Plan as well as a list of Species of Greatest Conservation Need (SGCN). Appendix C also has the list of rare plant communities for the Western Gulf Coastal Plains (Pineywoods) Ecoregions.

Table 2.4 Federally Listed Threatened and Endangered Species with Potential to Occur at Town Bluff Project.

Common Name	Scientific Name	Federal Status
Alligator Snapping Turtle	*Macrochelys temminckii*	Proposed Threatened
Louisiana Pigtoe	*Pleurobema riddellii*	Proposed Threatened
Monarch Butterfly	*Danaus plexippus*	Candidate
Navasota Ladies-tresses	*Spiranthes parksii*	Endangered
Piping Plover	*Charadrius melodus*	Threatened
Red-cockaded Woodpecker	*Picoides borealis*	Endangered
Red Knot	*Calidris canuts rufa*	Threatened
Texas Heelsplitter	*Potamilus amphichaenus*	Threatened
Texas Trailing Phlox	*Phlox nivalis ssp. Texensis*	Endangered

The Master Plan revision does not entail wind energy aspects, therefore the red knot (*Calidris canutus rufa*) and piping plover (*Charadrius melodus*) will not be addressed any further concerning possible impacts to the species.

The alligator snapping turtle (*Macrochelys temminckii*) is a reptile that is currently being considered (proposed) by the USFWS as a threatened species wherever it may be found (USFWS, 2022B). The turtle is a carnivorous species that primarily inhabits freshwater bodies of water like marshes, swamps, creeks, rivers, ponds, and lakes. It is characterized by the three rows of points that run along the topside of its shell, as well as the jagged edges of its shell. The turtle can grow up to 249 pounds and be over two feet in length (Florida Fish and Wildlife Conservation Commission [FWC], 2023). It is primarily an ambush predator that attracts its prey while submerged. It can also be an opportunistic scavenger. The presence of the species within Town Bluff Project is common because of the abundance of food and preferred habitat that is available, and

that there are numerous recent official and informal sightings of the species at Town Bluff Project.

The Louisiana Pigtoe (*Pleurobema riddellii*) is listed by the USFWS as Proposed Threatened (USFWS, 2023). It is a freshwater mussel that can grow up to 5 inches in length whose shell color ranges from black to dark reddish-brown (USFWS, 2023). Preferred habitat consists of streams and moderate size rivers preferring running water rather than lakes or ponds. Preferred habitat is typically underlined by substrate consisting of mud, sand, and gravel where the species can be found up to depths of 20 feet (NatureServe, 2023). Critical habitat is listed by the USFWS beyond the fee boundary below the dam; therefore the occurrence of the species within the Neches River below the project dam is considered common. Because the species does not prefer lakes, it is not expected to be found within the lake portion of the Town Bluff Project but could be found within the rivers and streams upstream of the lake.

The USFWS lists the monarch butterfly (*Danaus plexippus*) as a candidate species wherever it is found (USFWS, 2021). The monarch butterfly is orange with black stripes and white dots on its wings that span up to 10 cm across, while the caterpillars are around 5 cm long (NatureServe, 2022B). Its breeding habitat consists primarily of milkweed species (Asclepias sp.), which its larvae feed exclusively on. During its North American migration, the monarch butterfly can be found anywhere flowers are blooming. The Town Bluff Project fee boundary contains an abundance of blooming flowers, including milkweed, which is critical to egg laying. The combination of available habitat and numerous recent sittings confirms that this species is common to the area during migration.

Navasota Ladies-tresses (*Spiranthes parksii*) is a perennial orchid that is currently listed by (USFWS, 2023) as endangered wherever found. It ranges in height from 15-33 cm. It is characterized by the 4 single rows of white flowers which grows at the upper 5 cm of the floral stalk in a spiral patternand blooms from October to December (TPWD, 2023). This species is known to only occur in East Texas, specifically within Bastrop, Brazos, Burleson, Fayette, Freestone, Grimes, Jasper, Leon, Limestone, Madison, Milam, Robertson, and Washington counties (NatureServe, 2023). Preferred habitat consists of sandy loamy soils over a layer of impermeable clay layer, near drainages and seasonal streams. These areas are further characterized as grasslands and along the margins of post-oak woodlands. The preferred habitat does exist for the species, but because of lack of recent sightings and its overall rarity, the occurrence within Town Bluff Project is considered to be rare.

The red cockaded woodpecker (*Picoides borealis*) is a small black and white woodpecker with black beak and legs that is currently listed by the USFWS (2022J) as endangered wherever it is found. The preferred habitat of the Red-cockaded Woodpecker is that of a broad savanna that consists of mature to old growth pines that are frequently burned (NatureServe, 2022A). It is a non-migratory omnivore that primarily feeds on insects but may opportunistically utilize wild berries and pine seeds. Town Bluff Project is well within the known habitat range for the species, and it has been sighted in nearby Sam Rayburn Reservoir. However, since the project area is

primarily bottomland hardwood forest and due to the overall rarity of the species, encountering of the species extremely rare within the Town Bluff Project.

The Texas Heelsplitter (*Potamilus amphichaenus*) is listed by the USFWS as Proposed Endangered. It is a freshwater mussel that can grow up to 7 inches in length whose shell color ranges from tan to dark brown or black (USFWS, 2023). Preferred habitat consists of small- to mid-sized rivers and lakes underlined by mud or sand substrate. Critical habitat is listed by the USFWS within and below the fee boundary, which is why the occurrence of the species within the Town Bluff Project is considered common.

Texas Trailing Phlox (*Phlox nivalis* ssp. *Texensis*) is a perennial plant listed by USFWS (2023) as endangered wherever found. It can grow 10-30cm in height to form a shrub, with pink to blue flowers (TPWD, 2023). It has needle like leaves on non-flowering stems and teardrop shaped leaves on flowering stems. This species prefers deep, sandy soils in open areas that are maintained by fires. These openings are exclusively located in longleaf pine (*Pinus palustris*) savannahs or post oak-bluejack oak (*Quercus stellata-Q. incana*) woodlands (NatureServe, 2023). The species is known to occur in areas around the project where there are forests with preferred tree species. However, the lack of open areas with deep sandy soils and the overall the rarity of the species makes the likely occurrence of the species within the Town Bluff Project federal fee boundary as rare.

Texas Natural Diversity Database

The Texas Natural Diversity Database (TXNDD) (2022), administered by TPWD, manages and disseminates information on occurrence of rare species, unique native plant communities, and animal aggregations in Texas to help guide project planning efforts. TXNDD provided information for the following U.S. Geological Survey (USGS) quadrangle that encompass Town Bluff project lands, Curtis.

Several communities were identified by the TXNDD near and within Town Bluff Project to contain unique communities and species which are listed and described in Table 2.5.

Table 2.5 TXNDD Communities Found Within the Town Bluff Project.

Community	Scientific Name	Description
Water Oak-Willow Oak Series	*Quercus nigra-Quercus phellos series*)	Complex hardwood bottomland with some virgin timber; considerable old growth timber, shrub swamps and cypress stands; contains floodplain hardwoods and cypress swamps; water oak-swamp chestnut oak-willow oak-baldcypress-black gum, etc.

Community	Scientific Name	Description
Rookery	*Bubulcus ibis*, *Egretta caerulea*, *Anhinga anhinga*, *Egretta thula*, *Egretta tricolor*, *Eudocimus albus*, *Ardea herodias*, *Ardea alba*	Known locations of nests in aggregation of Cattle Egret, Little Blue Heron, Anhinga, Snowy Egret, Tricolored Heron, White Ibis, Great Blue Heron, and Great Egret.
Bald Eagle	*Haliaeetus leucocephalus*	Location of known nest. Sites.
Texas heelsplitter	*Potamilus amphichaenus*	Various live and dead specimens found at various times at the Town Bluff Project.
Southeastern Myotis Bat	*Myotis austroriparius*	Various live individuals captured and released at various times. A maternity roost was discovered at a certain time period.
Baldcypress-Water Tupelo Series	*Taxodium distichum-Nyssa aquatica* series	Mixed evergreen-deciduous streamside or lakeshore forest.
Blackspot Shiner	*Notropis atrocaudalis*	Various live individuals captured and released at various times.
Sabine Shiner	*Notropis sabinae*	Various specimens found at various times within Town Bluff Project.
Louisiana Pigtoe	*Pleurobema riddellii*	Various specimens found at various times within Town Bluff Project.
Sandbank Pocketbook	*Lampsilis satura*	Various specimens found at various times within Town Bluff Project.
Oklahoma Grass Pink	*Calopogon oklahomensis*	Various specimens found at various times within Town Bluff Project.
American Beech-Southern Magnolia Series	*Fagus grandifolia-Magnolia grandiflora* series	Mixed evergreen-deciduous mesic forest.
American Eel	*Anguilla rostrata*	Various specimens found at various times within Town Bluff Project.
Timber Rattlesnake	*Crotalus horridus*	Various specimens found at various times within Town Bluff Project.
Alligator Snapping Turtle	*Macrochelys temminckii*	Various specimens found at various times within Town Bluff Project.

Community	Scientific Name	Description
Panicled Indigobush	*Amorpha paniculate*	An area of the Town Bluff Project is a known location of the species.
Ozark Sandstone Glade	*Schizachyrium scoparium - Aristida dichotoma - Croton willdenowii* /Lichens Wooded Herbaceous Vegetation	Unique and rare prairie found within the Town Bluff Project.

2.2.6 Invasive Species

An invasive species is defined as a plant or animal that is not native to an ecosystem and whose introduction causes, or is likely to cause, economic and/or environmental harm, or harm to human health. Invasive species can thrive in areas beyond their normal range of dispersal. Sometimes native noxious species are included with invasive species when human-caused actions or practices cause similar negative impacts as invasive species. Invasive and noxious native species are characteristically adaptable, aggressive, and have high reproductive capacity. Their vigor, along with a lack of natural enemies or controls, often leads to outbreak populations with some level of negative effects on native plants, animals, and ecosystem functions and are often associated with disturbed ecosystems and human activities. One example of native noxious species is Common Cattail (*Typha latifolia*) taking over a cleared marsh and inhibiting other native marsh species from taking root. Another example would be Pine Trees (*Pinus sp.*) becoming so dense in an area that their dead needles will change the acidity of the soil or cover the soil to such an extent that only other pine trees can germinate.

Table 2.6 lists many of the invasive, exotic, and native noxious species found at Town Bluff Project. Other species are currently being researched for their invasive characteristics.

Table 2.6 Invasive and Noxious Native Species Found at Town Bluff Project

Common Name	Scientific Name	Native/Non-Native
	Birds	
Brown-headed Cowbird	*Molothrus ater*	Native
Eurasian Collared Dove	*Streptopelia decaocto*	Non-native
European Starling	*Sturnus vulgaris*	Non-native
European House Sparrow	*Passer domesticus*	Non-native
	Fish	
Common/European Carp	*Cyprinus carpio*	Non-native
	Mammals	
Nutria	*Myocastor coypus*	Non-native
Wild Boar	*Sus scrofa*	Non-native

Common Name	Scientific Name	Native/Non-Native
	Insects	
Red Imported Ant	*Solenopsis invicta*	Non-native
Western Honeybee	*Apis mellifera*	Non-native
	Plants	
Alligator weed	*Achyranthes philoxeroides*	Non-native
Bromes	*Bromus sp.*	Non-native
Common Water Hyacinth	*Pontederia crassipes*	Non-native
Annual Bastard Cabbage	*Rapistrum rugosum*	Non-native
Bermudagrass	*Cynodon dactylon*	Non-native
Bushclovers	*Lespideza spp.*	Non-native
Callery Pear	*Pyrus calleryana*	Non-native
Chinaberry	*Melia azedarach*	Non-native
Chinese Privet	*Ligustrum sinense*	Non-native
Chinese Tallow	*Triadica sebifera*	Non-native
Common Salvinia/Water Spangles	*Salvinia minima*	Non-native
Cuban Bulrush	*Cyperus blepharoleptos*	Non-native
Elephant Ears	*Colocasia antiquorum*	Non-native
Golden Bamboo/Fish Pole Bamboo	*Phyllostachys aurea*	Non-native
Giant salvinia	*Salvinia molesta*	Non-native
Giant Reed	*Arundo donax*	Non-native
Glossy Privet	*Ligustrum lucidum*	Non-native
Heavenly Bamboo	*Nandina domestica*	Non-native
Hydrilla	*Hydrilla verticillate*	Non-native
Japanese climbing fern	*Lygodium japonicum*	Non-native
Japanese Honeysuckle	*Lonicera japonica*	Non-native
Johnson Grass	*Sorghum halepense*	Non-native
King Ranch Bluestem	*Bothriochloa ischaemum var. songarica*	Non-native
Kudzu	*Pueraria montana var. lobata*	Non-native
Lilac Chaste Tree	*Vitex agnus-castus*	Non-native
Multiflora Rose	*Rosa multiflora*	Non-native
Parrot's Feather	*Myriophyllum aquaticum*	Non-native
Persian Silk Tree/Mimosa	*Albizia julibrissin*	Non-native
Quihoui Privet	*Ligustrum quihoui*	Non-native
Yaupon holly	*Ilex vomitoria*	Native
Water primrose	*Ludwigia spp.*	Non-native

Common Name	Scientific Name	Native/Non-Native
	Reptiles	
Mediterranean Gecko	*Hemidactylus turcicus*	Non-native
	Mollusks	
Asian Clam	*Corbicula fluminea*	Non-native

While currently not present at the Town Bluff Project, invasive mollusks including zebra (*Dreissena polymorpha*) and quagga (*Dreissena rostriformis bugensis*) mussels are an ongoing threat to native aquatic species and communities due to their ability to infest and expand rapidly, and the close proximity to other infested lakes increases the risk at the Town Bluff Project. Approximately 13 other USACE lakes in SWF have extant populations of zebra mussel including Sam Rayburn Lake upstream of Town Bluff Project. Funding and efforts are currently underway to manage for this species in the region. The USACE continues to monitor for zebra mussels and has a campaign to educate the public on methods to prevent the spread of zebra mussels. However, the overall risk due to zebra mussels is considered low at Town Bluff Project due to the low concentration of dissolved calcium in the lake (USACE 2013).

Apple snails (*Pomacea maculate*) are freshwater snail that can grow up to 6 inches in length (shell) and have brown shells. Its voracious appetite is its greatest threat as an invasive species, as it will readily eat various aquatic and semi-aquatic plants which can destroy entire swaths of marshes and swamps (Texas Invasives Species Institute, 2019). They will also burrow during periods of drought, which can severely damage levees. Apple snails can be host to the rat lung disease that can be passed onto humans by either ingesting undercooked apple snails or vegetation contaminated by the rat lung disease. At the time of this publication the species is not known to occur in Town Bluff Project but it is known to occur in the nearby Sam Rayburn Reservoir.

Emerald ash borer (*Agrilus planipennis*) infestations have killed millions of acres of ash trees (*Fraxinus* spp.) across North America, but they have not been reported at Town Bluff Project. Observations were initially isolated to Harrison County, Texas; but have been spreading rapidly to other eastern, northern, and central Texas counties. As of August 2022, emerald ash borers have been detected and confirmed in twelve Texas counties – Bowie, Cass, Dallas, Denton, Harrison, Marion, Morris, Parker, Rusk, Tarrant, Titus and Wise counties. Emerald ash borers are expected to move into adjacent counties in coming years, especially those with large stands of ash trees. Project and District staff are continuing to monitor for nearby infestations and follow guidance of the U.S. Department of Agriculture and the Texas Department of Agriculture.

Because of the lake's relative isolation from metropolitan areas, it does not have as many invasive landscape species compared to those within or directly adjacent to major metropolitan areas. This remoteness further protects the lake from the inadvertent release and spread of common landscape plants that could become aggressive colonizers from nearby residential developments. Despite this remoteness, two salvinia

species can be found within Town Bluff Project and are extremely invasive in the lake and slow-moving waterways. Further information about how salvinia and other aquatic invasive species are managed at Town Bluff Project can be found in Chapter 6 Special Topics.

2.2.7 Aesthetic Resources

Town Bluff Project includes many acres of scenic shorelines, lake views, and wildlife viewing areas providing high visual and scenic qualities. Some areas are admired for their scenic attractiveness (intrinsic scenic beauty that evokes a positive response), scenic integrity (wholeness of landscape character), and landscape visibility (how many people view the landscape and for what reasons and how long). Some areas have been designated as Wildlife and Vegetative Management, or Environmentally Sensitive Areas to preserve specific animal, plant, or environmental features that also add to the scenic qualities at the lake. Nearby parks have been designed to access the lake, allow access to hiking trails, and take advantage of scenic qualities at the lake and surrounding areas.

Adjacent landowners are informed that removing trees to obtain a view of the lake not only destroys wildlife habitat but also lowers the scenic quality of the shoreline when viewed by the general public from the water surface. Unauthorized removal of trees and other vegetation is considered trespass and can result in restitution from the perpetrator. Additionally, reasonable measures must be taken to ensure that damage to the natural landscape from invasive species and catastrophic wildfire are minimized. Vegetative management, mowing permits, debris removal, and other shoreline issues are addressed in the shoreline policy.

2.3. CULTURAL RESOURCES

2.3.1 Prehistoric Period

The prehistory of East Texas is typically divided into four periods, the Paleoindian, Archaic, Early Ceramic, and Caddo. A few of these periods are divided into sub-stages, distinguishing between certain changes in technology and lifeways. For example, differences occur with the changing lithic technology, food processing, and settlement patterns. The discussion of the Caddo period recognizes that the area south of Town Bluff was likely occupied by the Atakapa Indian group, as they were reported by various European expeditions into the region. Since little is known about the Atakapans and no sites have been positively associated with them, this discussion focuses on the development of the Caddo tradition in this region. The following brief discussion of the prehistoric archeological record in the vicinity of Town Bluff in East Texas draws primarily from previous summaries by Kenmotsu and Perttula and Story.

Paleoindian Period

Although a pre-Clovis occupation of the New World has long been suggested, it was not until the excavations at the Monte Verde site in Chile that the evidence for a pre-12,000 years before the present (BP) occupation was widely accepted. Within Texas, the Gault site in Bell County in central Texas was the first to be widely recognized to contain a pre-Clovis occupation, dating to 13,000 years BP. No archeological sites at Town Bluff are presently known to date to this period.

The Paleo-Indian period in East Texas (ca. 11,500–9,000 BP) generally includes those remains of human presence that can be dated to the very late Pleistocene and the immediate post- Pleistocene periods. As a matter of convenience, the period can be subdivided into an early Paleo- Indian period (ca. 11,500–10,500 BP) and a late Paleo-Indian period (10,500–9,000 BP). Unfortunately, although numerous diagnostic projectile points, such as Clovis, Plainview, Dalton, Scottsbluff, and San Patrice, have been recovered as isolated surface finds or excavated in later contexts, few Paleo-Indian sites in good stratigraphic context have been found, and fewer have received any sort of systematic excavation.

Despite the lack of good data relating to the early Paleo-Indian period in East Texas, some attempts have been made to generalize regarding settlement mobility and intensity of site occupation, drawing on the limited data that are known and on assumptions based on comparisons with other areas. For instance, a number of researchers have seen evidence for a high degree of group mobility in the broad distribution of Paleo-Indian artifacts over the landscape and in the variety of presumably nonlocal lithic raw materials from which they were made. Likewise, the well-documented exploitation of large megafauna by Paleo-Indians in the western United States, coupled with the known presence of similar species in East Texas between 11,000 and 9,000 years ago, has resulted in the popular conclusion that “big game hunting” was probably part of the Paleo-Indian subsistence strategy in East Texas.

The late Paleo-Indian period in East Texas appears to be distinguished by the divergence of the earlier, widespread fluted point tradition into several distinctive sub-traditions. The first of these includes Scottsbluff, Plainview, and similar lanceolate points that appear to be part of a more western or “plains- derived” sub-tradition in terms of origin and style; the second includes Dalton and Dalton-related projectile points that have a wide distribution throughout the wooded southeastern and midwestern United States. Some researchers have suggested that this Dalton horizon represents an adaptation to the changing environment at the end of the Pleistocene, a view that has found some support in the addition of the Dalton adze, a presumed “heavy, woodworking tool,” to what otherwise is viewed as a Paleo-Indian tool kit. San Patrice, an important complex that may be related to Dalton, is found in eastern Texas, southeastern Oklahoma, northern Louisiana, and southern Arkansas and is characterized by San Patrice points, Keithville points, and Albany scrapers. San Patrice points were reported from two sites located within Town Bluff Project fee lands.

Archaic Period

With the end of the Ice Age, the prehistoric residents of the region began to develop into localized populations of efficient hunter-gatherers, exploiting localized resource bases. This period, and the subsistence pattern that characterizes it, has come to be known as the Archaic. The Archaic represents a long period of time that was characterized by only gradual and minor changes in subsistence patterns, lithic technology, and projectile point styles and was apparently a period of strong cultural stability. Archaic populations are usually portrayed as generalized hunters and gatherers with more limited geographic ranges than the preceding Paleo-Indian peoples.

The Archaic period for this region is tentatively dated between 9,000 and 2,200 BP. As is true for many areas, a threefold division of the Archaic period, consisting of early, middle, and late subperiods, has been applied. The Early Archaic has been tentatively dated from 9,000 to 6,000 BP, the Middle Archaic from 6,000 to 4,000 BP, and the Late Archaic from 4,000 to 2,200 BP. Archaic remains are usually found in upland settings and are frequently mixed with later material. General trends that have been proposed as characterizing the Archaic period include an increasingly complex settlement system, increasing population size and density, increasing sedentism, and the development of distinct group territories.

During the defined Early Archaic (ca. 9,000–6,000 BP), the occurrence of small and widely distributed sites has been suggested to reflect high group mobility within large and poorly defined territories, based on a generalized hunting and gathering economy. Projectile point forms that may be associated with the Early Archaic in East Texas include Kirk, Keithville, Palmer, Cossatot, Dawson, and Wells.

In comparison to the Early Archaic, the Middle Archaic period (6,000–4,000 BP) appears to be characterized by an increased diversity of tool types; greater interregional variability; the addition of ground, pecked, and polished stone tools; and an increased use of plant foods as indicated by the addition of mortars, pestles, and mealing stones.

The dependence upon abundant forest resources that are evenly distributed over most of the region probably resulted in evenly distributed population densities and favored the development of exclusive or “fixed” territories. Although grinding stones apparently were introduced during the Early Archaic period, it was not until the Middle Archaic that their use became widespread. Grinding and polishing were used to produce grooved axes, atlatl weights, and ground stone pendants during this period. Diagnostic dart points that may be associated with the Middle Archaic include Big Sandy, Calf Creek, Johnson, Carrollton, Morrill, Evans, Lone Oak, Trinity, and Wesley.

Population density may have reached a peak during the Late Archaic period in this portion of Texas (ca. 4,000–2,200 BP) as evidenced by an apparent increase in the number of sites, a greater distribution of sites over the landscape, and evidence of increasing degrees of sedentism. At the same time, group mobility may have become more limited and interregional contact may have become much more common. Dart points that may be diagnostic of the Late Archaic include Lange, Castroville, Ellis, Palmillas, Edgewood, Yarbrough, Ensor, and Kent.

Early Ceramic Period

The Early Ceramic or Formative period (2,200–1,200 BP) in this portion of East Texas is generally identified by sandy paste ceramics (Bear Creek Plain and Goose Creek Plain) that appear to be common on Early Ceramic period sites from the Sabine River south to the Gulf Coast.

The few burial mounds that are known from this time period in East Texas occur to the south in the Sabine and Neches river basins around the Toledo Bend and Sam Rayburn areas at two mound sites. Early Ceramic sites in the Town Bluff area typically contain Gary and Kent dart points and may contain later arrow points having slightly expanded or rectangular stems and elaborated blades such as the Alba, Bonham, Catahoula, Friley, Hayes, and Steiner.

Caddo Period

The Caddo period is generally defined by a Formative (1,200–1,000 BP), Early Caddo (1,000-800 BP), Middle Caddo period (800–600 BP), Late Caddo period (600–320 BP), and a Historic period that begins around 1680 AD with the arrival of Europeans into the region. The overall tradition is one that manifests itself in subsistence based on cultivation and settlement in permanent villages. Perttula has suggested that these and other cultural innovations, including the introduction of the bow and arrow and increased food production based on maize, led to increases in population and sociopolitical complexity during these periods. The settlement system became increasingly complex, apparently involving sedentary villages and farmsteads, special function sites (what Binford called logistical camps), and mound centers that were presumably ritual or ceremonial in function.

The region around Town Bluff, the Neches and Angelina River drainages, has been identified as a possible regional influence for the southern Caddo groups and may

have been more closely related to Caddo groups from Louisiana, although Story also notes that the defined Mossy Grove is difficult to distinguish the possible two traditions of the Caddo influence, and the possible association with groups living further south of the Town Bluff region such as the Atakapa, Akokisa, or the Bidais and other groups occupying territory just north of the Atakapa and Akokisa (Story 1990:269). Caddo settlement patterns themselves seem to have varied over time. Perttula notes early Caddo populations appear to have been at its maximum distribution, while later settlements were typically situated at headwaters and tributaries, most often associated with spring and spring branches. The most common types of sites during the Caddo period were probably farmsteads and small hamlets consisting of one to a few houses or cabins. While larger villages did occur at possible civic or ceremonial centers such as the George C. Davis site in nearby Cherokee County, such population concentrations were apparently not common.

Ceramics during the Late Ceramic/Prehistoric period in this region tended to continue the sandy paste technology of the earlier ceramic period but grog and bone tempered ceramics are also present, including the decorated ceramics typical of the northern Caddo traditions. As discussed by Jelks, the Mossy Grove tradition in the Neches and Angelina River areas is characterized by the sandy paste pottery, Gary, Kent and Woden dart points, Friley, Perdiz, and Fresno arrow points.

The Late Ceramic/Prehistoric period also the final part of the prehistoric period and the initial years of European contact beginning in the common era (CE) year of 1680. The survivors of the de Soto entrada apparently entered Northeast Texas about midway through the Late Caddo period, the latter part of which appears to have overlapped with the initial movements of seventeenth-century European explorers and traders into northeastern Texas.

Historic Caddo Period

The Historic Caddo period began with the founding of La Salle's short-lived French colony on the Texas coast in 1685 and ended with the expulsion of the Caddo from Texas in 1859. During the closing decades of the seventeenth century, French explorers (including de Tonti, Bienville, and St. Denis) traveled through the upper Red River valley and made contact with the Native Americans residing in the area. The primary Native American groups inhabiting the Great Bend of the Red River region at that time consisted of Caddo speakers, presumably descendants of groups that had inhabited the area at least as far back as 1,200 CE. Three larger organized groups, the Kadohadacho of the Great Bend region, the Natchitoches located further south on the Red River, and the Hasinai of the Neches and Angelina River areas, are generally identified as Caddo even though there may have been some geographic, cultural, and linguistic variables.

The groups that appear to have been closest to the Town Bluff area appear to have comprised the Hasinai Confederacy. The confederacy was originally composed of a number of subgroups, the Hainais, Nabedaches, Nacogdoches, Lower Nasonis, Nadacos, Neches, Naconos, Nechauis, Nacaos, and possibly the Nabitis and the

Nasayayas. The Hasinai Confederacy was apparently not as structurally organized as the Kadohadacho located further north and into the Great Bend region of the Red River. The Kadohadacho Confederacy apparently controlled the entire Texas portion of the Great Bend region and was apparently significantly respected by the Europeans as well as other Native American Indian tribal groups. Don Domingo de los Rios, who in 1692 visited one of the Kadohadacho villages located just above the Great Bend near present-day Texarkana, noted that the Kadohadacho power extended as far south as Big Cypress Creek. A similar statement could be said of the Hasinai Confederacy extending north.

Following the sale of Louisiana to the United States in 1803, the majority of the other Caddo confederacy, the Natchitoches, left Louisiana and either joined the Kadohadacho to the north, by then settled on Caddo Lake, or with the remaining Hasinai to the west still living in Spanish controlled Texas. In the Caddo Treaty of 1835, the Kadohadacho sold their land in the United States and agreed to leave the country within one year. After the abandonment of the Great Bend region by the Kadohadacho, groups of displaced Native Americans from east of the Mississippi River began to move into Caddo territory in Spanish Texas. These movements were in response to the increasing pressure to give up their traditional livelihoods and become incorporated into Anglo-American culture. The Spanish initially welcomed these groups with the idea of using them to create a “buffer” between the Spanish settlements in Texas and the land-hungry Anglo-Americans. Unfortunately, as more of these groups (such as the Choctaw, Delaware, Quapaw, Shawnee, Cherokee, and Alabama-Koasati) moved into East Texas, they began increasingly to compete with the Caddo for a diminishing resource base. The Caddo that remained in East Texas were then forced out at the end of the Cherokee War of 1839.

The Cherokee War of 1839 was the culmination of friction between the Cherokee, Kickapoo, and Shawnee Indians and the white settlers in Northeast Texas. The Indians, who had obtained squatters' rights to the land from Spanish authorities, were promised title to the lands between the Angelina and Sabine rivers and northwest of the Old San Antonio Road. By 1854, the East Texas Caddo were residing, along with other Native American Indian groups, on a tract of land on the Brazos River in Northcentral Texas. Subsequently, they were moved north to Indian Territory in 1859 where they merged with the Caddo members of the former Kadahadocho and Natchitoches Confederacies.

2.3.2 Historic Period

The period of European exploration and settlement and the subsequent Anglo-American and African- American development of the area of Town Bluff is briefly covered in the remaining sections. Town Bluff extends across the five counties current-day counties of Angelina, Jasper, Nacogdoches, Sabine, and San Augustine. The counties share similar histories and economies.

European Exploration and the Spanish Period (1542–1804)

The initial European penetration into the general area of East Texas probably occurred in 1542 when the survivors of the de Soto entrada, led by Luis de Moscoso de Alvarado, entered Texas in their attempt to reach New Spain by land. Moscoso reported a crossing of the Angelina River where he encountered several Caddo-speaking groups. Little other exploration or settlement activities occurred in this part of Texas by the Spanish until the French, through the efforts of Rene Robert Cavelier, Sieur de la Salle, took possession of the Mississippi River valley in 1682. The movement of the French into west Louisiana and East Texas prompted the Spanish to pay more attention to the region. In 1690, Father Damian Massanet crossed into East Texas and founded Mission San Francisco de los Tejas and Mission Santisimo Nombre de Maria near the Neches River, the first of several missions and presidios to eventually be built in the region. In 1691 Governor Domingo Teran de los Rios began to cut a road through the region that would link the missions with San Antonio. The road would eventually be known as the Old San Antonio Road, or Camino Real. When the French threat was diminished in 1763 with the cession of the Louisiana territory from the French to the Spanish, the need for the missions and the presidios was negated and they were abandoned. In 1779, Antonio Gil Ibarvo and fellow settlers returned to the area of the abandoned mission Nuestra Senora de Guadelupe de los Nacogdoches. Other settlers to the area to the south, near the confluence of the Neches and Angelina Rivers, noted several settlements of Caddo-related Cherokees and groups of Alabama and Coushatta Indians in the area.

Initial Euroamerican Settlement (1804–1836)

Following the sale of Louisiana to the United States in 1803, legal and illegal Anglo-American immigration into East Texas intensified, although for a number of years it was not clear who actually owned the area south of the Red River. The United States considered it (and indeed, most of Texas) to be part of Louisiana and encouraged settlement of the area. Spain, on the other hand (and later Mexico), was opposed to this view, and at several times during the first few decades of the nineteenth century, the dispute nearly led to war. Despite Spain's claim, East Texas was too close to the United States not to fall into the Anglo-American sphere of influence, and settlement continued. The earliest settlements in the area of Town Bluff was Bevil's Settlement by John Bevil in 1824, later called Bevilport, and the ferry and port town of Town Bluff in 1833 as part of the Lorenzo de Zavala colony. Following Texas Independence in 1836, immigration into Texas increased because of large tracts of available land and the low cost to purchase these tracts.

Antebellum Period (1836–1861)

Jasper County was established by the Convention of 1836 and the town of Jasper was named the county seat. Jasper County was subsequently divided again into Newton and Jasper Counties. In 1847, Andrew Smyth built a water powered sawmill near Bevilport, one of the first of many such operations to take advantage of the abundance of timber and water sources in the region. River transportation facilitated

trade in the region but was only available when the Angelina River was high enough for navigation. By 1850 there were a reported 123 farms in the county and 1,767 people living there. Approximately 530 of these individuals were slaves. When a steam-powered sawmill was constructed at Fords Bluff (later Evadale) in 1852, the lumber industry began to expand at an even greater rate.

The area of what was to become Tyler County was originally organized as the Menard District in 1841. The Menard District was established out of Liberty County. Tyler County was then established by the Texas Legislature in 1846. The ferry at Town Bluff was still in operation and a small community had settled there around its operations as the head of navigation on the Neches River. Town Bluff was selected as the original 1842 county seat but Woodville was subsequently selected as the county seat in 1845. In 1850 the population of Tyler County was 1,894 with approximately 400 slaves. While the region was not suitable for most crop production, similar to Jasper County, especially cotton, there was a reported 137 farms present that were generally involved in a subsistence type of lifestyle relying on generalized grains and livestock to provide most of the resources needed on the farm, with a small amount left over for cash to purchase tools, furnishings, and non-farm food items. The farms of these yeoman farmers tended to be small, operated by the family or possibly with the help of one to five slaves.

By 1860 the populations of Jasper and Tyler Counties combined was reported as 8,562 of which approximately 2,780 were slaves. In Jasper County, only three of the reported 170 slaveholders in the county owned more than 50 slaves and most owned less than five each. It can be assumed that Tyler County had a similar ratio. For the most part, Jasper and Tyler Counties remained rural and agricultural, producing corn, tobacco, very little cotton, and raising cattle and sheep.

The Civil War and Its Aftermath (1861–1880)

After the presidential election of 1860, it was not surprising that the sympathies of most of the Anglo- American residents in this region of East Texas lay with the secessionist southerners. East Texas escaped serious, direct effects from the Civil War, being too far from the centers of fighting to the east and south to be affected by Union forces, and too far east and south of the frontier to be affected by the resurgence of Native American Indian problems which accompanied the withdrawal of United States and Texas military forces. While much of the South suffered throughout the war, East Texas supplied essential corn, cotton, leather, beef, tallow, and the plentiful timber to the war effort.

While the inhabitants of East Texas profited from supplying the war effort, the end of the conflict in 1865 brought with it the end of slavery in Texas and the breakdown of the old slave-based plantation system, the presence of a Union army of occupation, and a Radical Republican administration firmly in control of the state house. Despite the loss of a large portion of its work force, East Texas appears to have blunted the economic impact by continuing to grow crops and livestock, turning to lumber production, and eventually, to oil.

The populations of Jasper and Tyler Counties remained close to its 1860 levels throughout the 1870s and 1880s. The railroads had not reached the areas yet and river transportation of goods was difficult and costly. The transportation improvements that eventually made their way into the area contributed greatly to the growth of East Texas and the timber economy.

Commercialization (1880–1940)

Lumbering became one of the chief industries of Jasper and Tyler Counties in the late 1870s and into the early part of the 20th Century. Maxwell and Baker (1983) describe this period, ranging roughly from 1876–1917, as the "Bonanza Period" of the logging industry in East Texas. The majority of timber harvested in the Jasper and Tyler County areas during the early period was floated down the Neches River to mills at Orange and Beaumont, where mills manufactured 82,000,000 shingles and 75,000,000 board feet of timber by 1880. Exports, including pine for cross-ties and bridges, made these towns major lumber centers by 1900. In 1882 the Sabine and East Texas Railroad constructed a line from Kountze to Rockland that went through Tyler County. In 1884, the Missouri, Kansas, and Texas Railroad constructed a spur line to Colmesneil in the northern end of Tyler County. By 1895 the Gulf, Beaumont and Kansas City Railway had constructed a line from Kirbyville to Roganville in southern Jasper County, and in 1900 extended the line into the City of Jasper. With the coming of the transportation system available by rail, the ability to move the vast timber resources to mills and other markets created a massive wood and wood products industry not only in Jasper and Tyler Counties but throughout the entire region. Other small connecting and short line railroads were constructed to support the loading and hauling of timber and by 1890 there were 19 sawmills operating in Tyler County alone. By 1910 there were reportedly more than 600 sawmills in Texas. Many of the sawmills became home to communities of workers employed at the mills and some of the towns became major centers. In the Jasper and Tyler County regions, Doucette, Maydell, Mobile, Seneca, Barnum, Camden, Hampton, Josie, Hyatt, and Hillister, were just a few. The railroads contributed to the growth of these communities at whistle-stops along their routes and resulted in some older communities being abandoned in favor of locations closer to the railroad lines. By 1920, many of the large timber stands had been cut and the land left barren. When the standing timber became scarce, the mills went out of business, bankrupt, or just moved to the West Coast, where other large tracts of timber were available, some of these mills and the towns surrounding them simply disappeared.

The Great Depression impacted both counties significantly and the number of people in agricultural and non-agricultural occupations declined through the early 1940s. There was a population decline for the region as well. The discovery of oil in Texas created yet another economic opportunity for East Texas, but its benefits would be deferred. Oil was first discovered in Jasper County in 1928; however, substantial production did not occur until the 1950s and beyond. Oil and gas production in Tyler County, starting in 1937, was similarly restrained.

World War II to the Present (1940–Present)

The period following the end of World War II has been one of general prosperity and urbanization for the entire region. Demographic changes within this area have been dominated by the growth of nearby cities such as Lufkin, and further south by the larger metropolitan areas of Houston and Beaumont-Port Arthur. Commercial patterns in the region have benefited from the construction of several major highways that have served to link the area to major manufacturing centers to both the east and the west. The improved infrastructure, as well as the construction of lakes in the area, also has brought increased prosperity in the form of tourism and the recreational dollar. In spite of this growth, agriculture, livestock, and primarily timber continue to play a major role in the regional economy. Lumbering still remains an important industry in both Tyler and Jasper Counties along with oil and natural gas.

The Construction and Operation of Town Bluff Dam and B.A. Steinhagen Lake (1947–Present)

B.A. Steinhagen Lake and Town Bluff Dam (Town Bluff) (formerly identified as Dam B Reservoir) was created by the construction of the dam on the Neches River beginning March 1947 at a projected cost of $8,749,000.00. Deliberate impoundment began April 16, 1951 and the control structure was completed in June 1953. The project was originally authorized and appropriated by the River and Harbors Act of 1946 (PL 79-525) and subsequently modified by the River and Harbors Act of 1948 (PL 80-858). The approximate location of Town Bluff was originally a component of four reservoirs suggested by the Lower Neches Valley Authority (LNVA) in 1936 for the Neches River. The LNVA proposed two large reservoirs, one near Rockland, Texas on the Neches River, a second on the Angelina River near Jasper, Texas, and two smaller regulating reservoirs to be built downstream on the Neches River in order to control the release from the two larger reservoirs. The LNVA was created in 1933 by the Texas Legislature to protect and manage the freshwater storage and distribution systems of the Neches River and its tributaries. Concurrent with the 1936 LNVA plan, the U.S. Army Corps of Engineers had prepared a similar plan in to construct four such reservoirs. These were to be a regulatory, Dam A to be located downstream of the Rockland Dam and Reservoir, which then was to be constructed upstream and near the town of Rockland, Texas, regulatory Dam B on the Neches River, and the McGee Bend Dam and Reservoir to be constructed on the Angelina River near Jasper, Texas. Because of the involvement with World War II, the authorization and appropriation for the construction of the reservoirs was not made until after the war. Other than Dam B (Town Bluff), only McGee Bend, now known as Lake Sam Rayburn, was constructed and the other projects were subsequently de-authorized. The early planning and construction of Town Bluff was accomplished by the Galveston District of the U.S. Army Corps of Engineers but was subsequently transferred from the Galveston District to the Fort Worth District in 1950 when the Fort Worth District was created out of a portion of the Galveston District.

Dam B Reservoir was renamed in July 1967 as B.A. Steinhagen Lake in honor of a prominent citizen of Beaumont, Texas, who was active in the initial planning, authorization, and other water conservation activities of the project. The control structure was designated Town Bluff Dam at the same time because of its proximity to the small community of Town Bluff.

2.3.3 Previous Investigations

Town Bluff Dam and B.A. Steinhagen Lake have seen multiple archeological investigations in the last 75 years, beginning just after World War II. The National Park Service-funded River Basin Surveys sponsored investigations beginning in 1947. Later, the Texas Archeological Salvage Project recoded several sites in the early 1960s. There was a 30-year lull in archaeological in professionally led archaeological investigations between the 1960s and 1990s. During this time, various avocationalists, including some affiliated with the Houston Archeological Society, performed sporadic work, usually informed by local collectors. The most recent era of professional cultural resource management investigations began at the lake in the 1990s. Archeologists from University of Texas, University of North Texas, and multiple private-sector cultural resource management companies were contracted to perform National Historic Preservation Act, Section 106 inventories. TPWD archeologists have also conducted small-scale investigations as needed on portions of the lake property included in their lease area.

2.3.4 Resources Recorded to Date

To date, seventy-seven (77) archeological sites have been recorded at B.A. Steinhagen Lake. Twenty-three of these sites were assessed as ineligible for inclusion on the National Register of Historic Places (NRHP). Fifty-four (54) sites have yet to be assessed for eligibility.

2.3.5 Long-term Cultural Resources Objectives

An Integrated Cultural Resource Management Plan was created for B.A. Steinhagen Lake in 2006 and will be updated in parallel with this effort. Such plans establish standard operating procedures pertaining to both USACE and external activities that might impact cultural resources. Completion of a full inventory and National Register of Historic Places eligibility evaluation of cultural is a long-term objective that is needed for compliance with Section 110 of the NHPA. Ultimately, all currently known sites, as well as those found in future inventories should be evaluated to determine their eligibility for the NRHP. Sites of currently unknown NRHP eligibility and those found in the future to be eligible for the NRHP must be protected from impacts caused by USACE or those having easements on fee lands. All future cultural resource activities will be coordinated with the State Historic Preservation Officer at the Texas Historical Commission and with the federally-recognized Caddo Nation of Oklahoma, who recognize the area as part of their historic homeland, in order to insure compliance with the National Historic Preservation Act, the Archaeological Resources Protection Act, and the Native American Graves Protection and Repatriation Act.

2.4. DEMOGRAPHIC AND ECONOMIC ANLALYSIS

2.4.1 Zone of Interest

Town Bluff Dam is located midway between Jasper and Woodville, Texas. It assists the Sam Rayburn Reservoir in providing flood control to the Angelina and Neches River basins. It also supplies water to the Lower Neches Valley Authority and the Beaumont area, and produces a clean source of electric generation, and is a popular recreation area for fishing, camping, and birding. The B.A. Steinhagen Lake covers 10,690 acres. The zone of interest for the socio-economic analysis of the lake encompasses two states and 31 counties/parishes. Figure 2.6 provides a map showing the Louisiana Parishes and Texas Counties within 75 miles of Town Bluff Project that are included in the Zone of Interest.

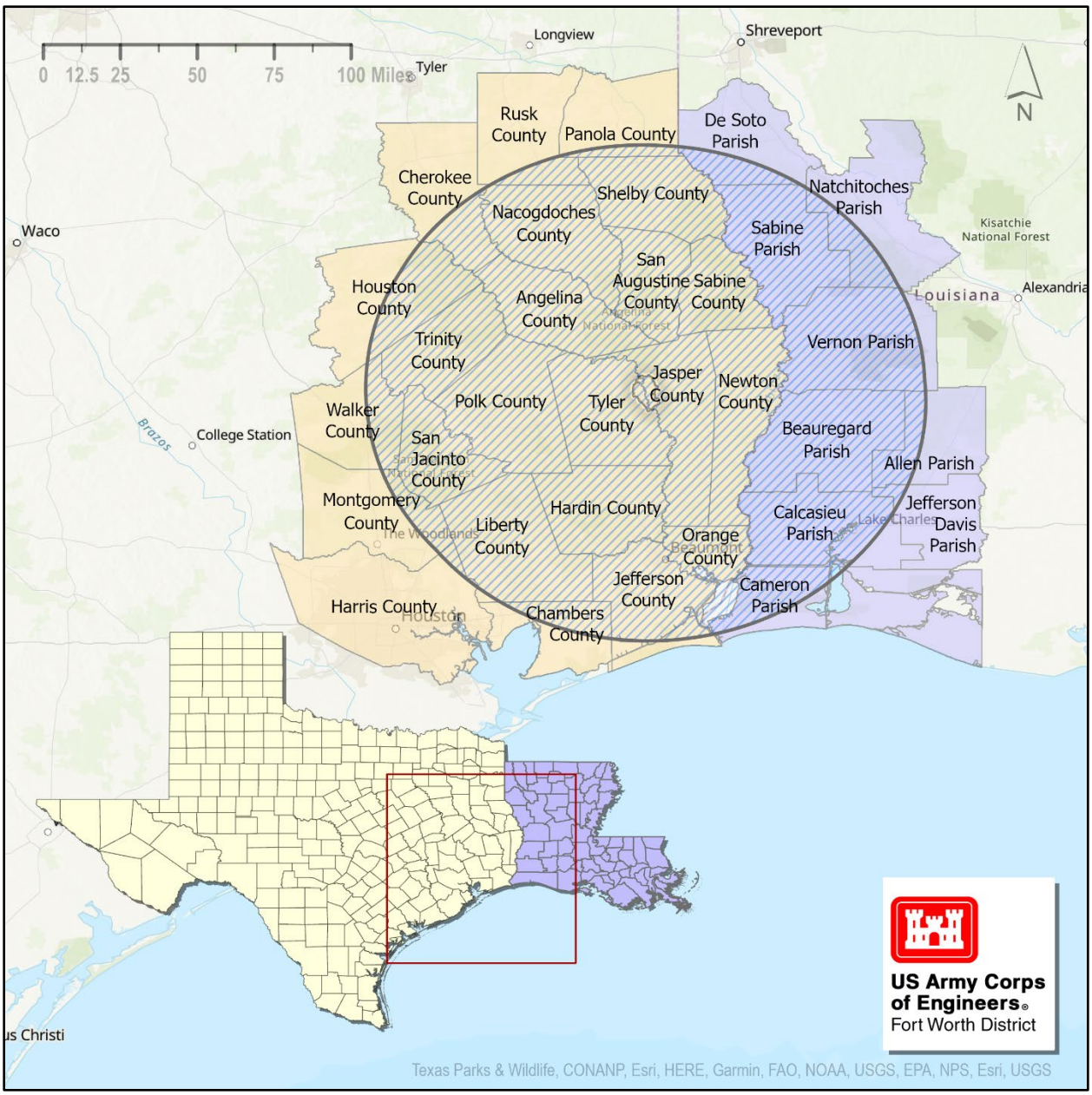

Figure 2.6 Louisiana Parishes and Texas Counties within the Zone of Interest

The following are the Louisiana Parishes and Texas Counties within 75 miles of Town Bluff Project:

Louisiana parishes: *Allen, Beauregard, Calcasieu, Cameron, De Soto, Jefferson Davis, Natchitoches, Sabine, Vernon*

Texas counties: *Angelina, Chambers, Cherokee, Hardin, Harris, Houston, Jasper, Jefferson, Liberty, Montgomery, Nacogdoches, Newton, Orange, Panola, Polk, Rusk, Sabine, San Augustine, San Jacinto, Shelby, Trinity, Tyler, Walker.*

Population

The total population for the zone of interest in 2021 was 6,859,754, as shown in Table 2.7. Approximately 68% of the zone of interest's population resides in Harris County, TX, 9% in Montgomery County, TX, 3% in Calcasieu Parish, LA. The remaining counties/parishes in the zone of interest each account for less than 1% of the zone of interest's population.

Table 2.7 2020 and 2021 Population Estimates, and 2030 and 2050 Projections

Geographical Area	2000	2010	2020 Population Estimate	2021 Population Estimate	2030 Population Projection	2050 Population Projection
LOUISIANA	**4,468,976**	**4,533,372**	**4,588,310**	**4,657,305**	**4,813,420**	**5,263,640**
Allen Parish, LA	25,441	25,764	25,330	23,085	24,640	23,260
Beauregard Parish, LA	32,948	35,654	39,900	36,417	42,770	48,510
Calcasieu Parish, LA	183,606	192,768	183,740	212,646	179,420	170,780
Cameron Parish, LA	9,965	6,839	6,660	5,650	5,760	3,960
De Soto Parish, LA	25,489	26,656	30,390	26,803	33,020	38,280
Jefferson Davis Parish, LA	31,432	31,594	30,400	32,270	29,720	28,360
Natchitoches Parish, LA	39,077	39,566	35,610	37,896	34,170	31,290
Sabine Parish, LA	23,434	24,233	25,630	22,377	27,300	30,640
Vernon Parish, LA	52,539	52,334	41,510	49,064	38,190	31,550
TEXAS	**20,851,820**	**25,145,561**	**29,695,345**	**28,862,581**	**33,913,233**	**42,294,281**
Angelina County, TX	80,123	86,771	93,316	86,584	99,848	110,332
Chambers County, TX	26,006	35,096	42,162	45,257	50,543	68,541
Cherokee County, TX	46,716	50,845	55,634	50,564	61,005	72,560
Hardin County, TX	48,075	54,635	59,477	56,124	63,986	69,560
Harris County, TX	3,401,139	4,092,459	4,707,870	4,697,957	5,058,144	5,678,242
Houston County, TX	23,148	23,732	24,151	22,288	24,260	24,260
Jasper County, TX	35,552	35,710	36,878	33,369	37,695	37,849
Jefferson County, TX	251,968	252,273	267,379	256,755	284,620	323,802
Liberty County, TX	70,196	75,643	86,303	89,948	97,227	118,048

Geographical Area	2000	2010	2020 Population Estimate	2021 Population Estimate	2030 Population Projection	2050 Population Projection
Montgomery County, TX	293,779	455,746	627,917	607,999	811,252	1,267,916
Nacogdoches County, TX	59,197	64,524	72,136	64,822	81,040	99,155
Newton County, TX	15,054	14,445	14,445	12,532	14,445	14,445
Orange County, TX	85,033	81,837	86,327	85,045	90,233	94,848
Panola County, TX	22,759	23,796	25,111	22,583	26,378	27,873
Polk County, TX	41,152	45,413	51,870	49,372	57,943	66,796
Rusk County, TX	47,410	53,330	59,272	52,542	66,067	79,763
Sabine County, TX	10,400	10,834	11,217	9,974	11,249	11,249
San Augustine County, TX	8,939	8,865	8,917	7,964	8,917	8,917
San Jacinto County, TX	22,211	26,384	29,610	27,380	32,627	37,614
Shelby County, TX	25,215	25,448	27,461	24,254	29,532	33,095
Trinity County, TX	13,748	14,585	16,502	13,695	17,847	17,473
Tyler County, TX	20,842	21,766	22,288	20,032	22,396	22,396
Walker County, TX	61,757	67,861	71,800	76,506	75,243	80,050
Zone of Interest (Total)	**5,134,350**	**6,057,406**	**6,917,213**	**6,859,754**	**7,537,487**	**8,771,414**

Source: U.S. Census Bureau, Population Division (2000, 2010 Estimate); U.S. Census Bureau, 2021 American Community Survey 5-Year (2017-2021); Demographics and Geography - The official website of Louisiana (2020, 2030 estimates, 2050 estimates are interpolated); Texas Water Development Board County Population Projections (2020-2050 estimates)

From 2020 to 2050, the population in the zone of interest is expected to increase from 6,917,213 to approximately 8,771,414, an average annual growth rate of 0.93%. By comparison, the population of Louisiana is expected to increase at an annual rate of 0.43% and Texas 1.55%. During this timeframe, Louisiana parishes indicating a decline in population include the parishes of Allen, Calcasieu, Cameron, Jefferson Davis, Natchitoches, and Vernon. None of the counties in Texas within the zone of interest are projected to decrease in population. Population for the years 2000 and 2010 are included for historical reference.

The distribution of the population among gender, as shown in Table 2.8 is approximately 50% male and 50% female in the zone of interest.

Table 2.8 2021 Population Estimate by Gender

Geographical Area	Male	Female
LOUISIANA	**2,283,561**	**2,373,744**
Allen Parish, LA	13,188	9,897
Beauregard Parish, LA	18,637	17,780

Geographical Area	Male	Female
Calcasieu Parish, LA	104,323	108,323
Cameron Parish, LA	2,812	2,838
De Soto Parish, LA	13135	13668
Jefferson Davis Parish, LA	15,891	16,379
Natchitoches Parish, LA	18,256	19,640
Sabine Parish, LA	11,153	11,224
Vernon Parish, LA	26,090	22,974
TEXAS	**14,398,171**	**14,464,410**
Angelina County, TX	42,550	44,034
Chambers County, TX	22,708	22,549
Cherokee County, TX	26,009	24,555
Hardin County, TX	27,551	28,573
Harris County, TX	2,341,438	2,356,519
Houston County, TX	12,134	10,154
Jasper County, TX	16,470	16,899
Jefferson County, TX	132,064	124,691
Liberty County, TX	44,580	45,368
Montgomery County, TX	302,314	305,685
Nacogdoches County, TX	31,232	33,590
Newton County, TX	6,523	6,009
Orange County, TX	42,388	42,657
Panola County, TX	11,182	11,401
Polk County, TX	26,732	22,640
Rusk County, TX	28,380	24,162
Sabine County, TX	4,856	5,118
San Augustine County, TX	3,921	4,043
San Jacinto County, TX	13,599	13,781
Shelby County, TX	12,069	12,185
Trinity County, TX	6,683	7,012
Tyler County, TX	10,967	9,065
Walker County, TX	44,770	31,736
TOTAL Zone of Interest Total	**3,434,605**	**3,425,149**

Source: U.S. Census Bureau, 2021 American Community Survey 5-Year (2017-2021)

Figure 2.7 shows the population by age group for the two states and the ZOI. The zone of interest is consistent with the two states as whole with no notable difference plus or minus a percent in populations for the noted age groups.

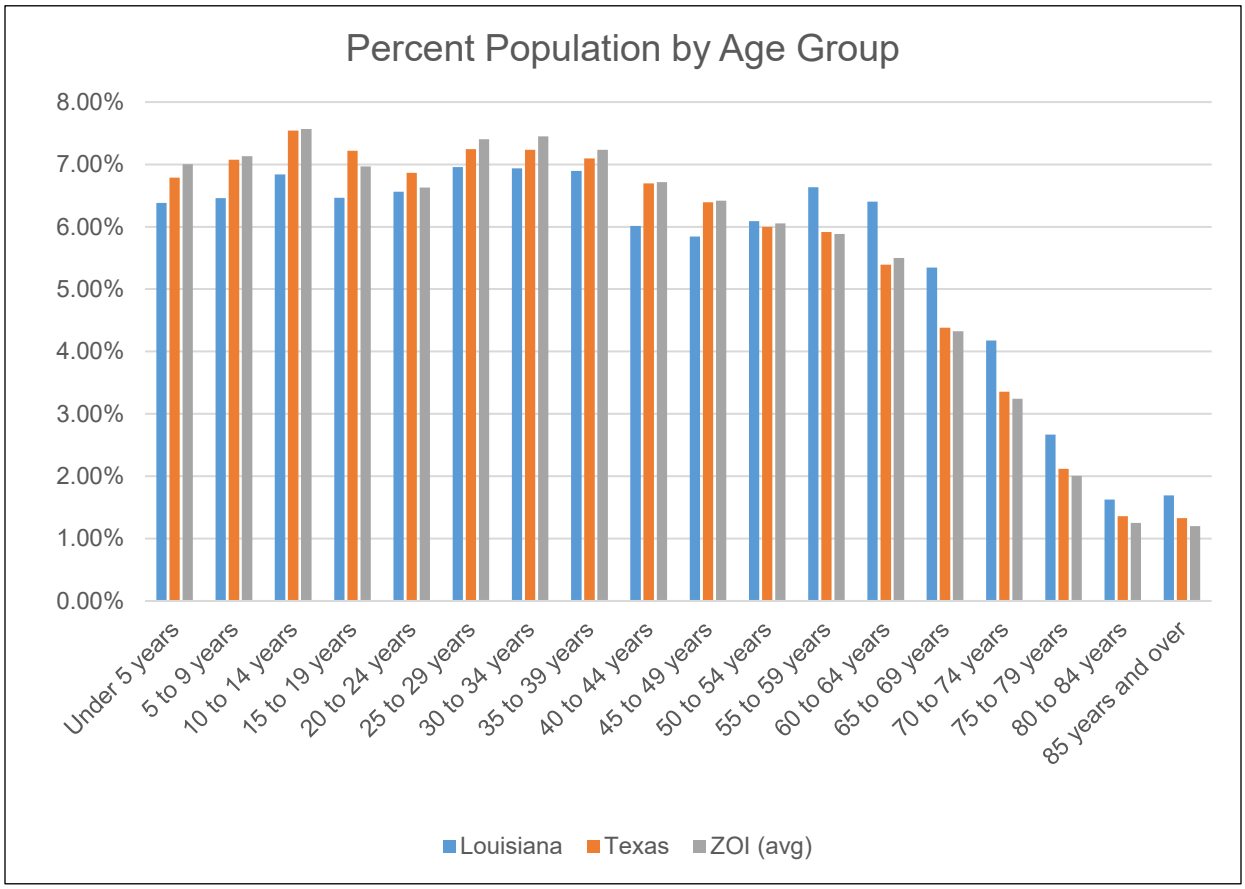

Figure 2.7 2021 Percent of Population by Age Group
Source: U.S. Census Bureau, 2021 American Community Survey 5-Year (2017-2021)

Population by Race and Hispanic Origin is displayed in Table 2.9. The zone of interest is approximately 43% white, 26% Hispanic or Latino, 13% black, 0.38% American Indian and Alaska native, 4% Asian, 0 .04% native Hawaiian-Pacific Islander, 5.8% some other race and 7.3% two or more races. Notable differences include Louisiana 57% white and Louisiana with a population of 30% black compared with the ZOI population of 13% black.

Table 2.9 2021 Population Estimate by Race/Hispanic Origin

Area	White	Hispanic or Latino	Black	American Indian and Alaska Native	Asian	Native Hawaiian and Other Pacific Islander	Some other race	Two or more races
LOUISIANA	**2,805,875**	**248,782**	**1,486,002**	**25,550**	**80,438**	**2,172**	**79,627**	**177,641**
Allen Parish, LA	17,268	1,635	4,180	378	157	0	314	788
Beauregard Parish, LA	29,918	1,400	4,396	66	233	59	359	1,386
Calcasieu Parish, LA	146,628	8,527	53,236	444	3,127	3	2,262	6,946
Cameron Parish, LA	5,251	282	70	99	21	0	0	209
De Soto Parish, LA	16,381	825	9,356	143	42	11	104	766
Jefferson Davis Parish, LA	25,179	822	5,245	289	51	0	262	1,244
Natchitoches Parish, LA	19,673	922	16,148	342	59	0	767	907
Sabine Parish, LA	15,137	901	3,245	1,411	75	7	236	2,266
Vernon Parish, LA	37,029	4,698	6,887	548	954	194	899	2,553
TEXAS	**18,566,027**	**11,479,932**	**3,499,862**	**147,892**	**1,452,713**	**24,608**	**2,019,394**	**3,152,085**
Angelina County, TX	63,882	19,695	11,917	767	867	0	2,297	6,854
Chambers County, TX	35,837	10,962	3,445	40	337	0	2,740	2,858
Cherokee County, TX	36,606	12,103	6,959	784	228	18	1,817	4,152
Hardin County, TX	49,826	3,535	3,409	162	276	0	570	1,881
Harris County, TX	2,443,521	2,049,914	888,826	23,731	330,239	2,885	479,518	529,237
Houston County, TX	15,075	2,651	5,560	61	72	0	453	1,067
Jasper County, TX	25,310	2,361	5,168	80	141	8	1,099	1,563
Jefferson County, TX	130,837	56,336	85,721	973	9,723	136	9,998	19,367
Liberty County, TX	64,613	26,323	8,056	427	399	8	8,251	8,194
Montgomery County, TX	479,464	153,488	32,831	2,182	19,744	126	20,379	53,273
Nacogdoches County, TX	45,160	13,006	11,916	556	680	17	1,807	4,686
Newton County, TX	9,304	515	2,571	60	85	0	67	445

Area	White	Hispanic or Latino	Black	American Indian and Alaska Native	Asian	Native Hawaiian and Other Pacific Islander	Some other race	Two or more races
Orange County, TX	71,215	7,245	7,382	144	705	41	935	4,623
Panola County, TX	17,620	2,060	2,966	17	186	0	154	1,640
Polk County, TX	39,440	7,664	4,438	683	420	24	1,148	3,219
Rusk County, TX	38,398	9,223	8,615	30	271	61	969	4,198
Sabine County, TX	8,795	483	550	45	124	25	109	326
San Augustine County, TX	5,708	608	1,785	38	4	0	331	98
San Jacinto County, TX	21,421	3,911	2,607	142	44	9	562	2,595
Shelby County, TX	17,717	4,562	4,506	346	117	0	778	790
Trinity County, TX	11,486	1,521	1,170	24	12	0	446	557
Tyler County, TX	16,742	1,666	2,066	13	129	0	255	827
Walker County, TX	52,164	14,021	17,517	158	853	240	1,330	4,244
TOTAL Zone of Interest	**4,012,605**	**2,423,865**	**1,222,744**	**35,183**	**370,375**	**3,872**	**541,216**	**673,759**

Source: U.S. Census Bureau, 2021 American Community Survey 5-Year (2017-2021)

2.4.2 Population Estimate by Highest Level of Educational Attainment

Table 2.10 displays the highest level of education attained by the population ages 25 and over. In the zone of interest, 4.3% of the population has less than a 9th grade education, and another 4.0% has between a 9th and 12th grade education; 13% has a high school diploma or equivalent, and another 10.3% has some college and no degree; 3.6% has an Associate degree; 9.5% has a bachelor's degree, and 5.3% has a graduate or professional degree. The ZOI is similar in all educational attainments but has the widest variation for the high school graduate group. The ZOI high school graduate group (13%) compares with Louisiana (16%) and Texas (12%).

Table 2.10 2021 Population Estimate by Highest Level of Educational Attainment, Population 25 Years of Age and Older

Area	Population 25 years and over	Less than 9th grade	9th to 12th grade, no diploma	High school graduate (includes equivalency)	Some college, no degree	Associate degree	Bachelor's degree	Graduate or professional degree
LOUISIANA	**3,133,855**	**144,130**	**287,465**	**1,036,204**	**656,412**	**209,561**	**511,447**	**288,636**
Allen Parish, LA	16,245	889	2,396	7,038	2,926	1,025	1,404	567
Beauregard Parish, LA	24,337	986	2,057	9,491	5,128	2,223	2,944	1,508
Calcasieu Parish, LA	140,837	4,651	12,008	48,394	30,665	11,605	22,306	11,208
Cameron Parish, LA	3,945	109	439	1,453	851	417	438	238
De Soto Parish, LA	18,319	1,027	2,184	7,636	3,584	1,243	1,682	963
Jefferson Davis Parish, LA	21,552	1,205	2,472	9,310	3,736	1,270	1,984	1,575
Natchitoches Parish, LA	22,733	696	2,269	8,634	3,914	2,304	2,963	1,953
Sabine Parish, LA	15,308	580	1,546	7,276	3,011	943	1,339	613
Vernon Parish, LA	30,038	977	2,622	11,896	6,636	2,331	3,983	1,593
TEXAS	**18,619,469**	**1,422,360**	**1,403,821**	**4,563,619**	**3,956,030**	**1,402,444**	**3,791,665**	**2,079,530**
Angelina County, TX	56,662	3,916	5,261	17,909	14,472	4,881	6,817	3,406
Chambers County, TX	28,532	1,306	1,713	7,403	8,615	2,667	4,598	2,230
Cherokee County, TX	32,942	2,893	3,545	10,009	8,025	2,736	3,723	2,011
Hardin County, TX	37,970	1,266	3,119	14,979	8,196	3,292	5,424	1,694
Harris County, TX	3,010,456	311,182	234,665	685,095	585,144	215,181	618,971	360,218
Houston County, TX	16,337	1,078	2,259	5,977	3,423	1,258	1,650	692
Jasper County, TX	23,050	863	2,715	10,088	4,805	1,549	1,829	1,201
Jefferson County, TX	170,484	12,289	13,513	54,607	42,863	14,566	22,140	10,506
Liberty County, TX	57,429	5,208	7,394	22,359	13,497	3,307	4,234	1,430
Montgomery County, TX	397,841	17,328	24,055	91,933	89,606	30,207	96,934	47,778

Area	Population 25 years and over	Less than 9th grade	9th to 12th grade, no diploma	High school graduate (includes equivalency)	Some college, no degree	Associate degree	Bachelor's degree	Graduate or professional degree
Nacogdoches County, TX	37,632	2,708	2,813	11,478	9,214	2,125	5,831	3,463
Newton County, TX	8,801	424	1,154	3,794	2,055	644	567	163
Orange County, TX	56,948	1,367	4,922	20,535	14,360	6,217	7,058	2,489
Panola County, TX	15,336	736	1,921	4,633	4,537	1,437	1,542	530
Polk County, TX	35,680	2,396	4,603	13,350	8,369	2,301	3,269	1,392
Rusk County, TX	36,031	2,089	3,481	11,939	9,402	3,370	3,733	2,017
Sabine County, TX	7,582	282	751	2,660	1,824	663	806	596
San Augustine County, TX	5,802	352	746	2,508	1,248	248	428	272
San Jacinto County, TX	19,279	1,089	1,901	7,535	5,099	894	1,677	1,084
Shelby County, TX	15,794	1,304	1,750	5,595	4,005	899	1,663	578
Trinity County, TX	9,957	521	1,082	3,886	2,546	592	972	358
Tyler County, TX	14,320	862	1,801	5,639	3,306	599	1,529	584
Walker County, TX	49,766	2,802	4,237	19,393	10,164	3,186	6,702	3,282
TOTAL Zone of Interest	**4,437,945**	**385,381**	**357,394**	**1,144,432**	**915,226**	**326,180**	**841,140**	**468,192**

Source: U.S. Census Bureau, 2021 American Community Survey 5-Year (2017-2021)

Employment by sector is presented in Figure 2.8 and Table 2.11 and shows that the largest percentage of the zone of interest is employed in the educational services, and health care and social assistance sector at 20.2%, followed by professional, scientific, and management 11.9%, retail 10.6%, and construction 10.4%. The remainder of the employment sectors each comprise 10% or less of the zone of interest's labor force.

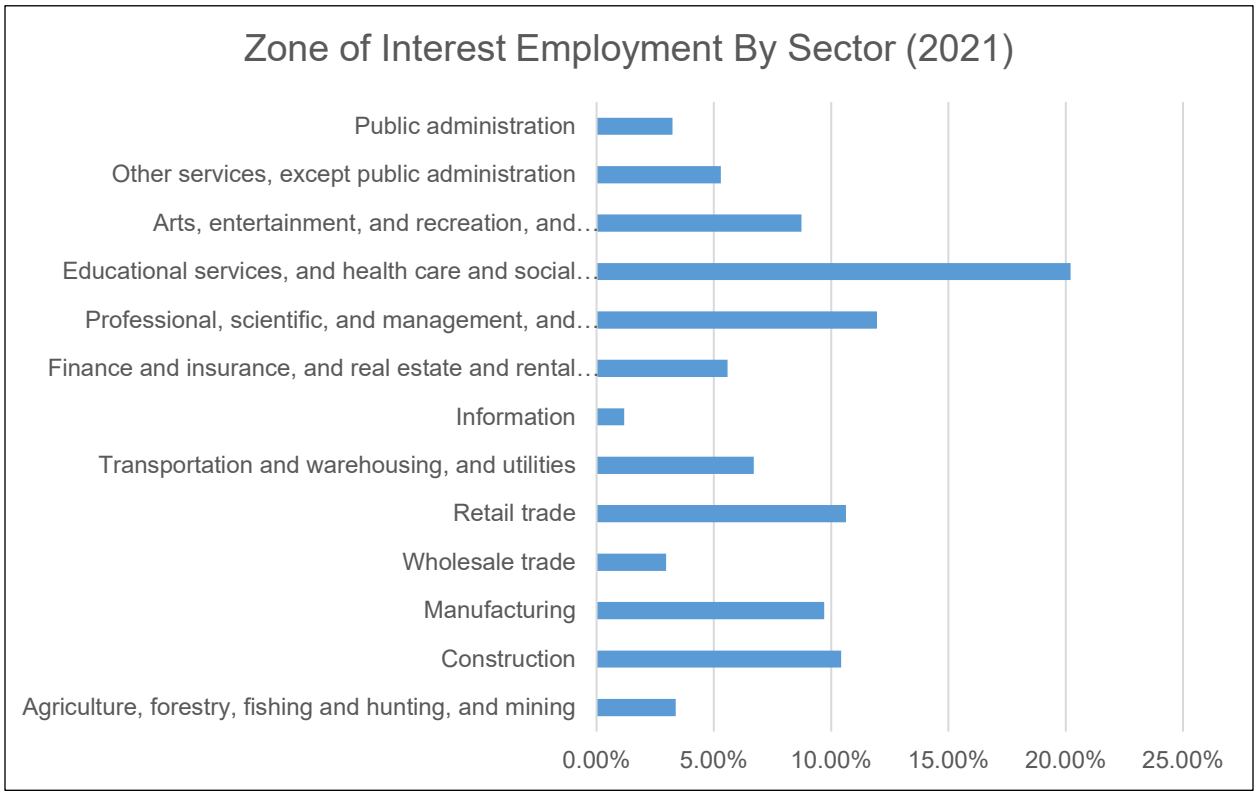

Figure 2.8 Zone of Interest Employment by Sector (2021)
Source: U.S. Census Bureau, 2021 American Community Survey 5-Year (2017-2021)

Table 2.11 Annual Average Employment by Sector (2021)

	LA	TX	Allen Parish, LA	Beauregard Parish, LA	Calcasieu Parish, LA	Cameron Parish, LA	De Soto Parish, LA	Jefferson Davis Parish, LA	Natchitoches Parish, LA	Sabine Parish, LA	Vernon Parish, LA	Angelina County, TX	Chambers County, TX	Cherokee County, TX	Hardin County, TX	Harris County, TX	Houston County, TX	Jasper County, TX
Civilian employed population 16 years and over	2,013,907	13,618,630	7,666	14,275	93,848	2,558	9,891	12,578	13,096	7,313	15,808	36,994	20,448	20,514	23,596	2,257,547	7,350	12,133
Agriculture, forestry, fishing and hunting, and mining	70,002	374,528	384	555	1,739	214	598	1,306	479	1,105	589	1,362	460	1,379	484	68,091	432	523
Construction	164,042	1,183,978	679	1,271	11,212	270	985	1,140	734	536	1,274	2,833	2,980	1,867	3,022	236,925	348	1,391
Manufacturing	153,320	1,160,355	823	2,213	8,963	359	846	1,089	1,930	764	894	4,677	3,415	2,646	2,961	209,582	654	1,473
Wholesale trade	51,224	368,376	219	166	1,668	75	155	160	99	98	178	759	817	259	614	70,889	54	320
Retail trade	230,331	1,512,535	606	1,856	10,008	378	1,257	1,438	1,646	1,220	1,696	4,057	1,884	2,058	3,127	234,668	799	1,120
Transportation and warehousing, and utilities	112,575	851,148	548	834	4,709	119	772	642	542	385	839	2,309	1,433	1,086	1,297	154,788	584	864
Information	29,056	223,506	24	130	1,242	34	21	110	83	49	237	185	85	273	166	28,053	105	61
Finance and insurance, and real estate and rental and leasing	101,822	930,348	239	715	4,464	47	609	436	728	346	678	1,556	771	685	1,149	135,203	256	480
Professional, scientific, and management, and administrative and waste management services	189,201	1,625,997	257	1,184	7,395	100	415	744	657	562	1,547	2,903	1,474	1,245	1,426	296,898	570	422
Educational services, and health care and social assistance	500,306	2,950,798	1,730	2,639	22,482	363	2,475	2,728	4,152	1,141	3,973	9,647	3,796	5,776	4,867	444,776	1,944	3,259
Arts, entertainment, and recreation, and accommodation and food services	200,098	1,194,692	991	1,006	11,085	399	667	1,519	926	390	1,493	2,988	1,896	1,169	2,426	199,123	521	941
Other services, except public administration	101,448	679,369	349	1,116	4,973	82	637	608	652	355	785	1,871	727	985	1,025	120,557	440	611
Public administration	110,482	563,000	817	590	3,908	118	454	658	468	362	1,625	1,847	710	1,086	1,032	57,994	643	668
Civilian employed population 16 years and over	105,395	32,368	289,747	28,313	4,675	38,080	9,578	18,158	21,846	3,047	2,683	10,034	9,770	4,719	6,151	28,515	3,168,694	
Agriculture, forestry, fishing and hunting, and mining	1,399	1,265	14,381	974	227	543	1,196	859	2,284	189	188	521	1,167	277	640	921	106,731	
Construction	14,179	5,432	25,613	1,915	629	4,468	724	2,501	1,476	145	148	1,955	889	559	478	1,893	330,471	
Manufacturing	11,772	3,718	26,954	3,839	684	7,002	750	1,457	3,384	180	368	624	1,223	292	434	1,490	307,460	
Wholesale trade	2,737	966	10,187	611	34	407	165	324	574	108	34	215	104	95	154	601	93,846	
Retail trade	12,640	3,592	32,650	4,157	518	4,012	1,009	1,853	1,855	424	263	920	1,097	509	913	2,690	336,920	
Transportation and warehousing, and utilities	5,680	3,084	20,915	882	294	1,947	807	1,250	1,681	118	206	848	565	374	321	1,892	212,615	

	LA	TX	Allen Parish, LA	Beauregard Parish, LA	Calcasieu Parish, LA	Cameron Parish, LA	De Soto Parish, LA	Jefferson Davis Parish, LA	Natchitoches Parish, LA	Sabine Parish, LA	Vernon Parish, LA	Angelina County, TX	Chambers County, TX	Cherokee County, TX	Hardin County, TX	Harris County, TX	Houston County, TX	Jasper County, TX
Information	814	337	3,578	532	29	118	34	87	219	69	58	74	76	21	22	349	37,275	
Finance and insurance, and real estate and rental and leasing	3,549	1,670	16,414	949	81	1,697	338	756	836	51	119	288	334	171	318	948	176,881	
Professional, scientific, and management, and administrative and waste management services	9,174	2,736	35,566	1,381	301	3,936	858	1,615	1,554	161	164	795	553	254	308	1,532	378,687	
Educational services, and health care and social assistance	22,761	4,416	55,112	7,885	1,283	7,481	2,091	3,986	4,503	916	754	1,896	2,128	1,050	1,095	7,386	640,491	
Arts, entertainment, and recreation, and accommodation and food services	9,537	2,321	22,914	2,714	176	3,028	707	1,444	1,193	122	85	765	893	395	447	2,728	277,009	
Other services, except public administration	5,264	1,416	15,384	1,604	186	2,133	689	564	1,252	344	214	751	472	141	486	1,174	167,847	
Public administration	5,889	1,415	10,079	870	233	1,308	210	1,462	1,035	220	82	382	269	581	535	4,911	102,461	

Source: U.S. Census Bureau, 2021 American Community Survey 5-Year (2017-2021)

A summary of the civilian labor force in the zone of interest is displayed in Table 2.12. In 2021, the zone of interest had an unemployment rate of 7.58%, higher than the unemployment rate in Texas of 5.4% and the unemployment rate in Louisiana of 6.8%.

Table 2.12 Labor Force, Employment and Unemployment Rates, 2021 Annual Averages

Geographic Area	Civilian Labor Force	Number Employed	Number Unemployed	Unemployment Rate %
LOUISIANA	**2,160,206**	**2,013,907**	**146,299**	**6.80**
Allen Parish, LA	8,442	7,666	776	9.20
Beauregard Parish, LA	15,606	14,275	1,331	8.50
Calcasieu Parish, LA	99,251	93,848	5,403	5.40
Cameron Parish, LA	2,576	2,558	18	0.70
De Soto Parish, LA	10,852	9,891	961	8.90
Jefferson Davis Parish, LA	13,324	12,578	746	5.60
Natchitoches Parish, LA	15,111	13,096	2,015	13.30
Sabine Parish, LA	8,086	7,313	773	9.60
Vernon Parish, LA	16,939	15,808	1,131	6.70
TEXAS	**14,390,216**	**13,618,630**	**771,586**	**5.40**
Angelina County, TX	39,473	36,994	2,479	6.30
Chambers County, TX	22,330	20,448	1,882	8.40
Cherokee County, TX	21,964	20,514	1,450	6.60
Hardin County, TX	24,643	23,596	1,047	4.20
Harris County, TX	2,414,092	2,257,547	156,545	6.50
Houston County, TX	7,693	7,350	343	4.50
Jasper County, TX	14,062	12,133	1,929	13.70
Jefferson County, TX	111,651	105,395	6,256	5.60
Liberty County, TX	35,218	32,368	2,850	8.10
Montgomery County, TX	303,618	289,747	13,871	4.60
Nacogdoches County, TX	30,589	28,313	2,276	7.40
Newton County, TX	5,216	4,675	541	10.40
Orange County, TX	40,242	38,080	2,162	5.40
Panola County, TX	9,854	9,578	276	2.80
Polk County, TX	20,055	18,158	1,897	9.50
Rusk County, TX	23,261	21,846	1,415	6.10
Sabine County, TX	3,394	3,047	347	10.20
San Augustine County, TX	3,027	2,683	344	11.40
San Jacinto County, TX	10,874	10,034	840	7.70
Shelby County, TX	10,390	9,770	620	6.00

Geographic Area	Civilian Labor Force	Number Employed	Number Unemployed	Unemployment Rate %
Trinity County, TX	5,152	4,719	433	8.40
Tyler County, TX	7,340	6,151	1,189	16.20
Walker County, TX	29,890	28,515	1,375	4.60
TOTAL Zone of Interest	**3,384,215**	**3,168,694**	**215,521**	**7.58**

Source: U.S. Census Bureau, 2021 American Community Survey 5-Year (2017-2021) (2021 averages)

2.4.3 Households, Income and Poverty

Table 2.13 displays the number of households and average household sizes in the states and zone of interest. There were approximately 2,423,618 households in the zone of interest with an average household size of 2.7.

Table 2.13 2021 Households and Household Size

Area	Total Households	Average Household Size
LOUISIANA	**1,748,688**	**2.59**
Allen Parish, LA	7,687	2.47
Beauregard Parish, LA	13,352	2.7
Calcasieu Parish, LA	76,829	2.73
Cameron Parish, LA	2,216	2.54
De Soto Parish, LA	10,168	2.62
Jefferson Davis Parish, LA	11,351	2.8
Natchitoches Parish, LA	13,765	2.65
Sabine Parish, LA	8,361	2.63
Vernon Parish, LA	17,263	2.68
TEXAS	**10,239,341**	**2.76**
Angelina County, TX	31,151	2.69
Chambers County, TX	14,905	3.02
Cherokee County, TX	18,173	2.61
Hardin County, TX	20,568	2.71
Harris County, TX	1,658,503	2.81
Houston County, TX	7,353	2.6
Jasper County, TX	12,776	2.55
Jefferson County, TX	92,751	2.6
Liberty County, TX	27,688	3.02
Montgomery County, TX	214,328	2.83
Nacogdoches County, TX	24,179	2.47
Newton County, TX	4,728	2.62
Orange County, TX	30,636	2.75

Area	Total Households	Average Household Size
Panola County, TX	8,186	2.71
Polk County, TX	17,028	2.7
Rusk County, TX	17,656	2.73
Sabine County, TX	4,317	2.29
San Augustine County, TX	3,167	2.45
San Jacinto County, TX	9,451	2.88
Shelby County, TX	8,898	2.71
Trinity County, TX	5,879	2.31
Tyler County, TX	6,525	2.73
Walker County, TX	23,780	2.54
TOTAL Zone of Interest	**2,423,618**	**2.66**

Source: U.S. Census Bureau, 2021 American Community Survey 5-Year (2017-2021)

The median household income in the zone of interest ranged from $33,965 in Natchitoches Parish, LA to $93,707 in Chambers County, TX in 2021, as displayed in Table 2.14. Per capita income in the zone of interest was $27,562 in 2021, lower than the states of Louisiana and Texas which ranged from a low of $30,340 in Louisiana and a high of $34,255 in Texas.

Table 2.14 2021 Median and Per Capita Income

Geographic Area	Median Household Income (All)	Per Capita Income
LOUISIANA	**53,571**	**30,340**
Allen Parish, LA	47,660	22,186
Beauregard Parish, LA	57,130	29,612
Calcasieu Parish, LA	59,470	31,044
Cameron Parish, LA	64,525	31,805
De Soto Parish, LA	45,364	26,151
Jefferson Davis Parish, LA	45,578	27,645
Natchitoches Parish, LA	33,965	22,281
Sabine Parish, LA	39,975	23,363
Vernon Parish, LA	53,215	26,214
TEXAS	**67,321**	**34,255**
Angelina County, TX	52,377	24,737
Chambers County, TX	93,707	38,269
Cherokee County, TX	54,222	24,657
Hardin County, TX	65,347	30,773
Harris County, TX	65,788	35,103
Houston County, TX	43,644	22,914
Jasper County, TX	44,356	28,475

Geographic Area	Median Household Income (All)	Per Capita Income
Jefferson County, TX	53,613	28,529
Liberty County, TX	53,871	23,475
Montgomery County, TX	88,597	44,256
Nacogdoches County, TX	47,306	26,453
Newton County, TX	38,116	22,893
Orange County, TX	68,756	33,498
Panola County, TX	54,853	28,706
Polk County, TX	52,826	25,140
Rusk County, TX	60,330	29,210
Sabine County, TX	41,308	32,072
San Augustine County, TX	43,130	22,880
San Jacinto County, TX	46,678	24,838
Shelby County, TX	44,504	24,381
Trinity County, TX	45,392	26,915
Tyler County, TX	49,130	22,709
Walker County, TX	44,104	20,814
Zone of Interest Median (Avg)	**53,089**	**27,562**

Source: U.S. Census Bureau, 2021 American Community Survey 5-Year (2017-2021)

Table 2.15 displays the percentage of persons and families whose incomes fell below the poverty level in the past twelve months as of 2021. Within the zone of interest, Natchitoches Parish, LA had the greatest share of people with incomes below the poverty level at 26.5%, followed by San Augustine County, TX at 25.1%. In terms of families below the poverty level, Jasper County, TX is reporting the highest percent with 20.5% compared with Cameron Parish, LA which is reporting the lowest rate at 5.7%. The ZOI median for both categories are shown in the table for reference.

Table 2.15 Percent of Families and People Whose Income in the Past 12 Months is Below the Poverty Level (2021)

Geographic Area	All Persons	All Families
LOUISIANA	**18.80**	**14.00**
Allen Parish, LA	18.10	16.70
Beauregard Parish, LA	14.10	10.40
Calcasieu Parish, LA	16.40	11.70
Cameron Parish, LA	8.30	5.70
De Soto Parish, LA	21.10	15.80
Jefferson Davis Parish, LA	16.90	14.30
Natchitoches Parish, LA	26.50	14.70
Sabine Parish, LA	21.60	14.40

Geographic Area	All Persons	All Families
Vernon Parish, LA	17.70	13.90
TEXAS	**14.00**	**10.70**
Angelina County, TX	17.30	12.70
Chambers County, TX	15.00	12.50
Cherokee County, TX	14.80	12.40
Hardin County, TX	11.60	8.40
Harris County, TX	15.60	12.60
Houston County, TX	19.00	11.70
Jasper County, TX	24.20	20.50
Jefferson County, TX	18.20	14.60
Liberty County, TX	15.00	11.50
Montgomery County, TX	8.80	6.60
Nacogdoches County, TX	23.10	15.80
Newton County, TX	24.00	16.30
Orange County, TX	12.00	8.80
Panola County, TX	13.60	9.70
Polk County, TX	15.90	12.90
Rusk County, TX	11.70	8.40
Sabine County, TX	19.50	17.00
San Augustine County, TX	25.10	17.00
San Jacinto County, TX	17.00	13.20
Shelby County, TX	23.60	18.80
Trinity County, TX	16.80	14.10
Tyler County, TX	19.10	12.10
Walker County, TX	20.60	13.20
Combined Zone of Interest (Avg)	**17.57**	**13.08**

Source: U.S. Census Bureau, 2021 American Community Survey 5-Year (2017-2021)

2.5. RECREATION FACILITIES, ACTIVITIES, AND NEEDS

The initial development of outdoor recreation facilities at Town Bluff Project was addressed in the 1971 Master Plan and 2003 Master Plan Supplement. These documents laid out plans for the comprehensive management of the lake's lands and water surface including plans for a significant investment in outdoor recreation facilities.

USACE's role in outdoor recreation at Town Bluff Project consists of managing roads and trails, fishing along waterways and adjacent to the stilling basin area below the dam, management of the water surface as it relates to boating activity and managing general access to lands that are not managed by TPWD. TPWD's role in managing parks, trails, and activities is described in Chapter 5. See Chapter 6 for more details about Town Bluff Project's hunting program.

The following factors contribute to the importance of Town Bluff Project as a recreational area:

- Located approximately 2 hours northeast of Houston, TX
- Located midway between Jasper and Woodville, TX
- Provides rare public recreation and hunting land within the state of Texas
- Easily accessed by nearby highways
- Provides full-service campgrounds and day-use areas
- Access to water-based recreation boat ramps
- Provides multiuse trails for hiking, biking, and equestrian use
- Many natural areas provide opportunities for bird watching and other wildlife viewing
- Convergence of Neches and Angelina Rivers provide unique swamp and wetland habitat for boaters and kayakers to enjoy
- Martin Dies State Park is managed by TPWD

2.5.1 Zone of Influence

There are no large cities nearby, but visitors to Town Bluff Project come from near and far with most coming from Texas counties and Louisiana Parishes within 75 miles. The recreation Zone of Influence encompasses the following 31 Texas counties and Louisiana parishes as also shown in Figure 2.9.

> ***Louisiana parishes:*** *Allen, Beauregard, Calcasieu, Cameron, De Soto, Jefferson Davis, Natchitoches, Sabine, Vernon*
>
> ***Texas counties:*** *Angelina, Chambers, Cherokee, Hardin, Harris, Houston, Jasper, Jefferson, Liberty, Montgomery, Nacogdoches, Newton, Orange, Panola, Polk, Rusk, Sabine, San Augustine, San Jacinto, Shelby, Trinity, Tyler, Walker.*

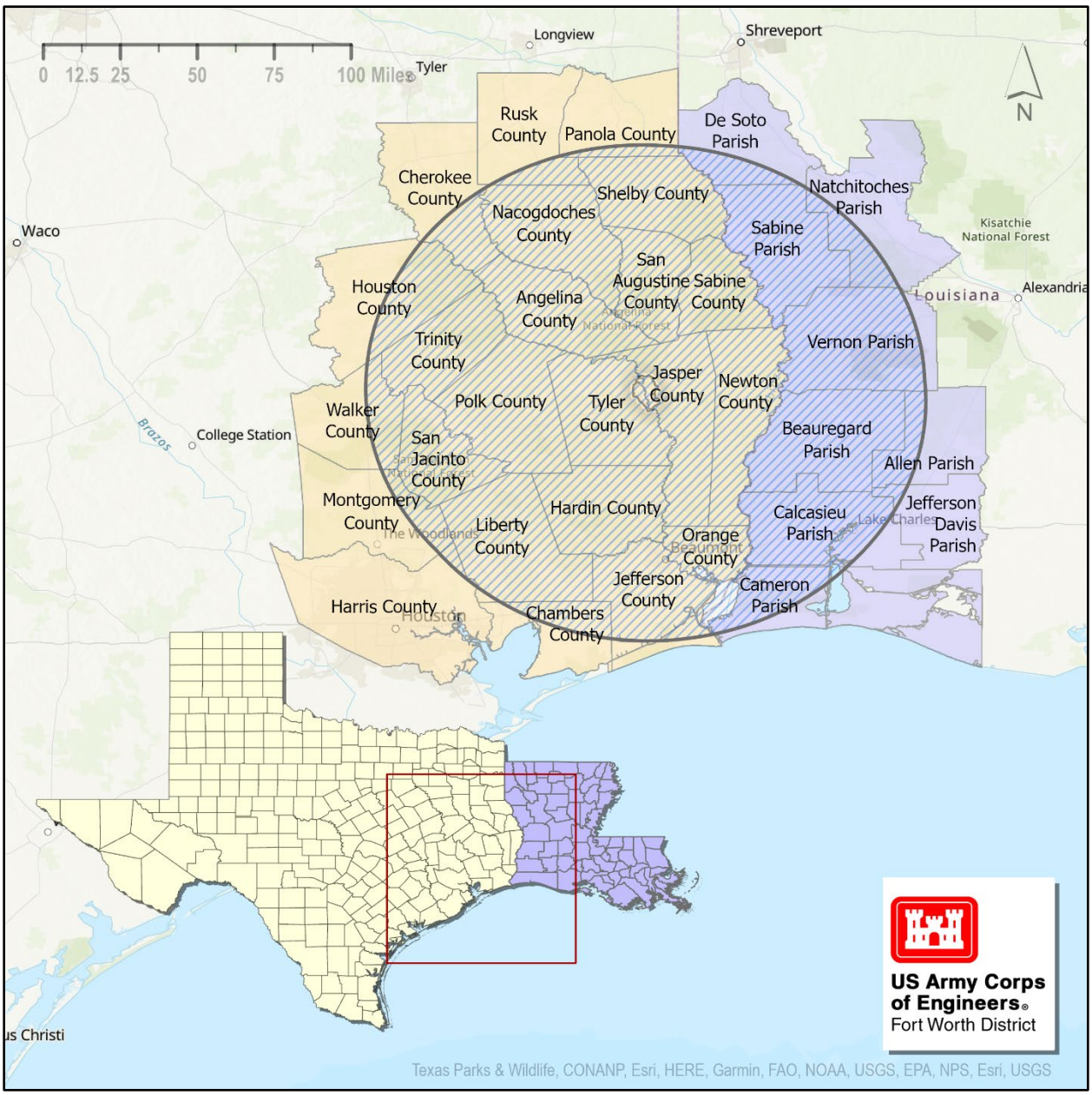

Figure 2.9 Louisiana Parishes and Texas Counties within the Zone of Interest

2.5.2 Recreation Areas and Facilities

Recreation areas at Town Bluff Project are managed jointly by the USACE and TPWD under a lease agreement with the USACE, with a small lease for a boat ramp by Jasper County. The lake provides camping, picnic sites and shelters, group shelters, boat ramps, playgrounds, a variety of trails, and more. Table 2.16 summarized the available recreation facilities, and a full list of amenities, maps, rules and regulations, hours, fees, reservation instructions, and other important information can be found on the Town Bluff Project and Martin Dies, Jr. State Park websites. Chapter 5 of this plan gives more details on the types of facilities and amenities and provides future plans for each resource.

Table 2.16 Recreational Facilities at Town Bluff Project Amenities

Recreation Area	Camping	Restrooms	Showers	Boat Ramps	Fishing Facilities	Picnic Areas/Shelter	Playground	Designated Swimming Area	Trails
Bevilport Boat Ramp - Jasper CO.	-	-	-	X	-	-	-	-	P
Bluffview Park ($) - USACE	-	W V	-	-	P	A G S	X	-	H
Campers Cove Park (partially closed for restoration) - USACE	N D	-	X	X	D	A	-	-	H
Cherokee Unit - Martin Dies Jr. State Park-TPWD (Day Use Only)	-		-	X	P	A	-	-	P
East End Day Use Area - USACE	-	-	-	-	P	A G	-	-	-
Magnolia Ridge Park ($) - USACE	E D G	W V	X	X	P	S	X	-	H B
Hen House Ridge Unit - Martin Dies Jr. State Park-TPWD	E D G	W V	X	X	C D P	A	X	B	H B P
Sandy Creek Park ($) - USACE	E D	W V	X	X	D P	S	X	-	H B
Walnut Ridge Unit - Martin Dies Jr. State Park-TPWD	E D G	W V	X	X	C P	A G	X	-	H B

Key to Table:

USACE – Corps of Engineers Managed
($) USACE Fees Collected
Managed by Others in *Italics*
X Exists at lake

Managing Entity
T TPWD
U USACE

Camping
E Electric Campsites
C Cabins
S Screened Shelters
G Group Camping
Q Equestrian Campsites

Fishing
B Bank
C Fish Cleaning Stations
P Fishing Piers

Picnic
A Picnic Area
G Group Picnic

Trails
B Bike Trails
Q Equestrian Trails
H Hiking Trails
I Interpretive Hiking Trails

2.5.3 Recreational Analysis - Trends

The states of Texas and Louisiana each have an outdoor recreation plan. The Texas Outdoor Recreation Plan (TORP) was last published in 2018 by TPWD, while the Statewide Comprehensive Outdoor Recreation Plan (SCORP) for Louisiana was last published in 2020. These plans subdivide the state into regions and evaluate

recreational trends and needs across the state using public input, the National Survey on Recreation and the Environment (NSRE) published by USFWS, and recreational subject matter experts. For the purposes of this evaluation, Region 6 of the Texas TORP and Region 5 of the Louisiana SCORP were used. The following sections summarize the data from these two regions.

As shown in Table 2.17 and Table 2.18, the TORP and SCORP indicates that respondents to the survey ranked walking for pleasure in nature highest for both the states of Texas and Louisiana, as well as in the regions. Fishing, swimming, picnicking, and wildlife observation are also in the top 10 outdoor recreational activities. Town Bluff Project provides an array of opportunities for walking for pleasure; picnicking, cookouts, and gatherings; sightseeing; wildlife viewing and photography; fishing; and swimming in the lake, providing all the top 10 areas of participation for outdoor recreation activities in the state and region.

Table 2.17 Top 10 Recreational Activities - Texas State and Region 6

Activity	State	Region 6
Walking for Pleaser	1	1
Picnicking, cookouts, other gatherings	2	2
Sightseeing	4	3
Swimming in a swimming pool	3	4
Attending outdoor festivals, shows, and other events	5	5
Viewing/photographing wildlife/nature	6	6
Fishing	8	7
Visiting historical/cultural sites	7	8
Running/jogging	9	9
Swimming in lakes, stream, rivers	10	10

Source: Texas TORP 2018

Table 2.18 Top 10 Recreational Activities - Louisiana State and Region 5

Activity	State	Region 5
Walking / Nature Walks	1	2
Visiting Nature	2	1
Fishing	3	3
Picnicking	4	6
Swimming	5	8
Interpretive Experience	6	4
Bird Watching	7	5
Paddling	8	10
Hiking	9	9
Playgrounds	10	7

Source: Louisiana SCORP 2020

Asked “which outdoor recreation opportunities does your community currently lack or would like to see more of in your community,” the top answer across the Texas state and region was connected trails and places to hike and bike, and the next highest response was pools/swimming facilities (other than lakes). Respondents in Region 4 for the Louisiana SCORP were fairly satisfied with their current recreational facilities and opportunities. Similar to the TORP, outdoor recreational preferences in the region include established trails in forests and near lakes and rivers, with dispersed camping, boating, and fishing opportunities.

Comparing recreational facilities at Town Bluff Project to information contained in both the TORP and the SCORP show that USACE and its TPWD and Jasper County recreational partners at Town Bluff Project provides an array of recreation opportunities that help to meet the recreation needs in the regions. Relatedly, recreational opportunities at the Project facilitates social, economic, and environmental benefits within the zone of interest, which is covered in the next section.

2.5.4 Social, Economic, and Environmental Benefits

USACE recognized the importance of Town Bluff Project and the activities on USACE lands and waters as being an important part of the local economy. Besides the obvious economic savings through flood risk management and development advantages afforded by water conservation businesses can see investment opportunities, and people are drawn to the natural areas surrounding Town Bluff Project, as is evidenced by the growing number of adjacent residents. The economic benefit from the USACE outdoor recreation and environmental stewardship missions are well documented. Nationally, USACE lakes attract about 335 million recreation visits every year, with direct economic benefits on local economies within a 30-mile radius. The following information in Table 2.19–Table 2.21 describes some of the extended social and environmental benefits of Town Bluff Project for surrounding communities in 2021. By providing opportunities for active recreation, USACE lakes help combat one of the most significant of the nation's health problems: lack of physical activity. Recreational programs and activities at USACE lakes also help strengthen family ties and friendships; provide opportunities for children to develop personal skills, social values, and self-esteem; and increase recreational water safety.

Table 2.19 Social Benefits at Town Bluff Project in FY 2023

Facilities in FY 2021	Visits (person-trips) in FY 2021
9 recreation areas • 85 picnic sites • 365 camping sites • 6 playgrounds • 1 swimming area • 10 trails • 25 trail miles • 13 fishing docks and piers • 15 boat ramps	265,327 in total • 57,327 picnickers • 51,965 campers • 50,677 swimmers • 32,455 hikers/joggers • 2,250 boaters • 11,031 sightseers • 27,387 anglers • 53,396 special event attendees • 15,279 others

Source: USACE Value to the Nation Website

There have also been many economic benefits to the nation and economy at Town Bluff Project. The money spent by visitors to USACE lakes on trip expenses adds to the local and national economies by supporting jobs and generating income. Visitor spending represents a sizable component of the economy in many communities around USACE lakes as summarized in Table 2.20.

Table 2.20 Economic Benefits at Town Bluff Project in FY 2021

Visitation per year resulted in:	With multiplier effects, visitor trip spending resulted in:
• $10,111,408 in visitor spending within 30 miles of the USACE lake. • $7,136,458 in sales within 30 miles of the Corps lake. • 74 jobs within 30 miles of the Corps lake. • $2,152,550 in labor income within 30 miles of the Corps lake. • $3,314,727 in value added within 30 miles of the Corps lake. • $2,859,756 in National Economic Development Benefits.	• $9,967,229 in total sales. • 98 jobs. • $2,913,975 in labor income. • $4,655,010 in value added (wages & salaries, payroll benefits, profits, rents, and indirect business taxes).

Source: USACE

Town Bluff Project provides environmental benefits to the local community by providing the public with access to a large expanse of natural area and recreational water surface. Recreation experiences increase motivation to learn more about the environment; understanding and awareness of environmental issues; and sensitivity to the environment. The land acres, water acres, and shoreline miles are summarized in Table 2.21.

Table 2.21 Environmental Resource Summary in FY 2021

Resources in FY 2021
7,943 land acres
13,700 water acres
160 shoreline miles

2.6. REAL ESTATE

Town Bluff Project was authorized by the River and Harbor Act of 1945 (Public Law [PL] 14, 79th Congress, 1st Session). Originally named "Dam B," it was planned to be part of a four-dam system that was to include Rockland Dam, McGee Bend Dam, Dam A, and Dam B for the purpose of regulating flow of the river for navigation, flood risk mitigation, and development of hydroelectric power. McGee Bend Dam was built on the Angelina River above Town Bluff Dam and later renamed to Sam Rayburn Dam. Dam A and Rockland Dam were deauthorized in November 1988. Construction began in March 1947 and was completed in April 1951. Deliberate impoundment began 16 April 1951, and the conservation pool was first filled in June 1954. Construction of the hydropower facility began in March 1987 and was available for operation on 17 November 1989. After construction of the powerhouse, flood releases up to about 3,000 cfs were released through the turbines instead of the flood gates to maximize the generation of power.

The current fee simple owned lands total 21,424 acres based on current GIS and LiDAR data and may not match the original Real Estate acquisition acres. In lieu of fee simple acquisition, flowage easements were acquired in the upper reaches of most tributaries with approximately 1,157 acres of flowage easement are owned up to elevation 88.0 NGVD29 (Table 2.21). A flowage easement, in general, grants to the government the perpetual right to temporarily flood/inundate private land during flood risk management operations and to prohibit activities on the flowage easement that would interfere with flood risk management operations such as placement of fill material or construction of habitable structures on flowage lands. The boundary at Town Bluff Project is typically fenced.

Table 2.22 Real Estate Fee and Flowage Acreage

Land	Acres
Fee Acres	21,424
Flowage Easement Acres	1,157

2.6.1 Outgrants

The term "outgrant" is a broad term used by USACE to describe a variety of real estate instruments wherein an interest in real property has been conveyed by USACE to another party. Outgrants at Town Bluff Project include leases, licenses, easements, consents, permits, and others. Outgrants do not include the Shoreline Use Permits that authorize private structures and activities owned or conducted by adjacent landowners

such as boat docks and vegetation modification. At present, there are approximately 25 recorded outgrants in effect on USACE lands at Town Bluff Project, listed in Table 2.23.

Table 2.23 Outgrants at Town Bluff Project

Outgrant Type	Number
Leases	**2**
Park and Recreation Lease	1
BLM Lease	1
Easements	**19**
Road	5
Gas pipeline	2
Electric/Communication Line	9
Waterline/Storm Drainage	3
Licenses	**2**
TPWD	1
Waterlines	2
Consents/Other	**1**
Gas Pipeline	1
Total Outgrants	**25**

2.6.2 Guidelines for Property Adjacent to Public Land

It is the policy of the USACE to manage the natural, cultural, and developed resources of Town Bluff Project to provide the public with safe and healthful recreational opportunities, while protecting and enhancing those resources. While private exclusive use of public land is not permitted, property owners adjacent to public lands do have all the same rights and privileges as any other citizen. Therefore, the information contained in these guidelines is designed to acquaint the adjoining landowner and other interested persons with the types of property involved in the management of Town Bluff Project. Adjoining landowners interested in more information should request additional information from the USACE Town Bluff Project Office.

2.6.3 Trespass and Encroachment

Government property is monitored by USACE personnel to identify and correct instances of unauthorized use, including trespasses and encroachments. The term “trespass” includes unauthorized transient use and occupancy, such as mowing, tree cutting and removal, livestock grazing, cultivation and harvesting crops, and any other alteration to Government property done without USACE approval. Unauthorized trespasses may result in a Title 36 citation to appear in Federal Magistrate Court, which could subject the violator to fines or imprisonment (See Title 36 Code of Federal Regulations (CFR) Part 327 Rules and Regulations Governing Public Use of Water Resources Development Projects Administered by the Chief of Engineers). More serious trespasses will be referred to the USACE Office of Counsel for enforcement

under state and federal law, which may require restoration of the premises and collection of monetary damages.

The term “encroachment” pertains to an unauthorized structure or improvement on Government property. When encroachments are discovered, lake personnel will attempt to resolve the issue at the project level. Where no resolution is reached, or where the encroachment is a permanent structure, the method of resolution will be determined by USACE Real Estate Division, with recommendations from Operations Division and Office of Counsel. USACE’s general policy is to require removal of encroachments, restoration of the premises, and collection of appropriate administrative costs and fair market value for the term of the unauthorized use.

CHAPTER 3 – RESOURCE GOALS AND OBJECTIVES

3.1. INTRODUCTION

This chapter sets forth goals and objectives necessary to achieve the USACE vision for the future of Town Bluff Project. The terms “goal” and “objective” are often defined as synonymous, but in the context of this Master Plan “goals” express the overall desired end state of the Master Plan whereas resource “objectives” are specific task-oriented actions necessary to achieve the overall Master Plan goals. The Master Plan resource objectives will be used as the basis for the OMP, which is the master plan strategic implementation plan.

3.2. RESOURCE GOALS

The following goals are the priorities for consideration when determining management objectives and development activities. Implementation of these goals is based upon time, manpower, and budget. The objectives provided in this chapter are established to provide high levels of stewardship to USACE managed lands and resources while still providing a high level of public service. These goals will be pursued through the use of a variety of mechanisms such as: assistance from volunteer efforts, hired labor, contract labor, permit conditions, remediation, and special lease conditions. The following statements, based on EP 1130-2-550, Chapter 3, express the goals for the Town Bluff Project Master Plan:

GOAL A. Provide the best management practices to respond to regional needs, resource capabilities and capacities, and expressed public interests consistent with authorized project purposes.

GOAL B. Protect and manage the project’s natural and cultural resources through sustainable environmental stewardship programs.

GOAL C. Provide public outdoor recreation opportunities that support project purposes and public interests while sustaining the project’s natural resources.

GOAL D. Recognize the project’s unique qualities, characteristics, and potentials.

GOAL E. Provide consistency and compatibility with national objectives and other State and regional goals and programs.

In addition to the above goals, USACE management activities are guided by USACE-wide Environmental Operating Principles as follows:

- Strive to achieve environmental sustainability. An environment maintained in a healthy, diverse, and sustainable condition is necessary to support life.
- Recognize the interdependence of life and the physical environment. Proactively consider environmental consequences of USACE programs and act accordingly in all appropriate circumstances.

- Seek balance and synergy among human development activities and natural systems by designing economic and environmental solutions that support and reinforce one another.
- Continue to accept corporate responsibility and accountability under the law for activities and decisions under our control that impact human health and welfare and the continued viability of natural systems.
- Seek ways and means to assess and mitigate cumulative impacts to the environment; bringing systems approaches to the full life cycle of our processes and work.
- Build and share an integrated scientific, economic, and social knowledge base that supports a greater understanding of the environment and impacts of our work.
- Respect the views of individuals and groups interested in USACE activities; listen to them actively and learn from their perspective in the search to find innovative win-win solutions to the nation's problems that also protect and enhance the environment.

3.3. RESOURCE OBJECTIVES

Resource objectives are clearly written statements that respond to identified issues and that specify measurable and attainable activities for resource development and/or management of the lands and waters under the jurisdiction of the USACE Fort Worth District, Town Bluff Project Office. The objectives stated in this Master Plan support the goals of the Master Plan, USACE Environmental Operating Principles (EOPs), and applicable national performance measures. They are consistent with authorized project purposes, Federal laws and directives, regional needs, resource capabilities, and they consider public input. Recreational and natural resources carrying capacities are also accounted for during development of the objectives found in this Master Plan. Regional and State planning documents including TPWD’s Texas Conservation Action Plan (TCAP) and TORP.

The objectives in this Master Plan provide project benefits, meet public needs, and foster environmental sustainability for Town Bluff Project to the greatest extent possible. The objectives are provided in Tables 3.1 through 3.5; and include recreational objectives; natural resource management objectives; visitor information, education, and outreach objectives; general management objectives; and cultural resource management objectives. Implementation of these objectives is dependent on personnel and budget availability, as well as partnerships with other agencies.

Table 3.1 Recreational Objectives

Recreational Objectives Goals:	A	B	C	D	E
Evaluate the demand for improved recreation facilities and increased public access on USACE-managed public lands and water for recreational activities (i.e. camping, walking, hiking, biking, boating, fishing, hunting, wildlife viewing, etc.) and facilities (i.e. campsites, picnic facilities, overlooks, all types of trails, boat ramps, courtesy docks, interpretive signs/exhibits, and parking lots).	*		*		
Improve, modernize, and implement sustainability measures into day use and campground facilities through addition and repair of amenities, including, but not limited to: road improvements, sewer hook ups, increased electrical service, concrete or asphalt recreational vehicle pads, tent pads, restrooms, trails, pavilions, and improved park entrances.	*		*		
Monitor public use levels and evaluate potential impacts from overuse and crowding. Take action to prevent/remediate overuse, conflict, and public safety concerns.	*		*		
Evaluate recreational use zoning and regulations for designated quiet water or no-wake areas with emphasis on natural resource protection, quality recreational opportunities, and public safety concerns.	*				
Follow the Environmental Operating Principles associated with recreational use of waterways for all water-based management activities and plans.		*	*		*
Increase universally accessible facilities on Town Bluff lands.	*		*		*
Evaluate established permits/outgrants to determine impacts on public lands and waters. Sustain the Shoreline Management Program in order to balance private shoreline uses (such as mowing or vegetation removal requests along the Federal property boundary, or paths to the shoreline) with habitat management and impacts to the general public.	*		*		
Consider pool operation to address potential impact to recreational facilities (i.e. campsites, boat ramps, courtesy docks, etc.), primarily related to extended drawdowns.	*	*	*	*	
Consider long-term sustainable operational and maintenance costs when planning future new recreational facilities or upgrading and expanding existing facilities.					
Ensure consistency with USACE Recreation Strategic Plan.					*
Monitor the TCAP, the TORP, and adjacent municipality plans to insure that USACE is responsive to outdoor recreation trends, public needs, and resource protection within a regional framework. All plans by others will be evaluated in light of USACE policy and operational aspects of Town Bluff.					*

*Denotes that the objective helps to meet the specified goal.

Table 3.2 Natural Resource Management Objectives

Natural Resource Management Objectives Goals:	A	B	C	D	E
Consider pool levels to ensure that natural resources are managed in ways that are compatible with primary project purposes of flood risk management and water supply.	*	*		*	
Ensure project lands are managed with preservation and conservation of natural habitat and open space as a primary objective in order to maintain the public open space.	*			*	
Actively manage and conserve fish and wildlife resources, with a focus on special status species, by implementing ecosystem management principles. Key among these principles is the use of native species adapted to the ecological region in restoration and mitigation plans.	*	*		*	*
Consider watershed approach during decision-making process.					*
Optimize resources, labor, funds, and partnerships for protection and restoration of fish and wildlife habitats.		*			*
Conduct forest management activities to produce a sustained yield of timber to the extent compatible with ecosystem management principles and public recreational use. Continue ongoing coordination with TPWD and USFWS to review proposed timber sales.	*	*		*	*
Sustain the Town Bluff public hunting program as a habitat and species management tool that maintains sustainable game populations, reduces invasive species such as feral hogs, improves habitat conditions and carrying capacity, maintains project lands and waters as a wildlife travel corridor and resting location, and considers public safety relative to proximity and density of adjacent development.	*	*	*	*	*
Minimize activities that disturb the scenic beauty and aesthetics of the lake.	*	*	*	*	
Continually evaluate erosion control and sedimentation issues at Town Bluff and develop alternatives to resolve the issues.	*	*			*
Address unauthorized uses of public lands such as off-road vehicle use, trash dumping, unauthorized fires, fireworks, poaching, clearing of vegetation, unauthorized trails and paths, and placement of advertising signs that create negative environmental impacts.	*	*	*	*	*
Monitor lands and waters for invasive, non-native, and aggressively spreading native species and take action to prevent and/or reduce the spread of these species. Invasive species of great concern are red imported fire ants, feral hogs, crazy ants, giant/common salvinia, water hyacinth, alligator weed, hydrilla and zebra mussels (potential). Implement control methods (chemical, biological, mechanical, fire) to manage the spread of noxious plants and animals, and to promote the vigor of the Piney Woods ecoregion.	*	*		*	*

Natural Resource Management Objectives Goals:	A	B	C	D	E
Protect and/or restore important native habitats such as longleaf pine, riparian zones, saline prairies and wetlands where they occur, or historically occurred, on project lands. Special emphasis should be taken to protect and/or restore special or rare plant communities, to include actions that promote butterfly and/or pollinator habitat, migratory bird habitat, and habitat for birds listed by USFWS as Birds of Conservation Concerns. Some of these habitats may be designated as Environmentally Sensitive Areas.	*	*	*	*	*

*Denotes that the objective helps to meet the specified goal.

Table 3.3 Visitor Information, Education, and Outreach Objectives

Visitor Information, Education & Outreach Objectives Goals:	A	B	C	D	E
Provide more opportunities for communication with agencies, special interest groups, and the general public (i.e. comment cards, updates to County officials and City Managers, web page).	*			*	*
Implement more educational, interpretive, and outreach programs at the lake office and around the lake. Topics to include: history, lake operations (flood risk management and water supply), water safety, recreation, nature, cultural resources, ecology, and USACE missions.	*	*	*	*	*
Enhance network among local, state, and federal agencies in order to exchange lake-related information for public education and management purposes.	*			*	*
Increase public awareness of special use permits or other authorizations required for special activities, organized special events, and commercial activities on public lands and waters of the lake.	*	*	*		
Capture trends concerning boating accidents and other incidents on public lands and waters and coordinate data collection with other public safety officials.	*		*	*	*
Promote USACE Water Safety message.	*		*	*	*
Educate adjacent landowners on shoreline management policies and permit processes in order to reduce encroachment actions.	*	*	*	*	*

*Denotes that the objective helps to meet the specified goal.

Table 3.4 General Management Objectives

General Management Objectives Goals:	A	B	C	D	E
Maintain the public lands boundary line to ensure it is clearly marked and recognizable in all areas to reduce habitat degradation and encroachment actions.	*	*		*	
Secure sustainable funding for the shoreline management program.	*	*	*	*	*
Ensure consistency with USACE Campaign Plan (national level), IPlan (regional level), OPlan (District level).					*
Reference Recreation Infrastructure Investment Strategy (RIIS) if funding levels change in future years.					*

General Management Objectives Goals:	A	B	C	D	E
Ensure green design, construction, and operation practices, such as the Leadership in Energy and Environmental Design (LEED) criteria for government facilities, are considered as well as applicable Executive Orders.					*
Carefully manage non-recreation outgrants such as utility and road easements in accordance with national guidance set forth in ER-1130-2-550 and applicable chapters in ER 405-1-12.	*	*			*
Manage project lands and recreational programs to advance broad national climate change mitigation goals in accordance with national USACE policy.					*

*Denotes that the objective helps to meet the specified goal.

Table 3.5 Cultural Resources Management Objectives

Cultural Resources Management Objectives Goals:	A	B	C	D	E
Monitor and coordinate lake development and the protection of cultural resources with appropriate entities.	*	*		*	*
Complete an inventory of cultural resources.	*	*		*	*
Increase public awareness and education of regional history.		*		*	*
USACE will ensure any future historical preservation is fully integrated into the Town Bluff Master Plan and planning decision making process (Section 106 and 110 of the National Historic Preservation Act; the Archeological Resources Protection Act; and the Native American Graves Protection and Repatriation Act on public lands surrounding the lake).		*		*	*
Develop partnerships that promote and protect cultural resources at Town Bluff.		*	*	*	*
Stop unauthorized use of public lands as it pertains to the illegal excavation and removal of cultural resources.		*		*	*

*Denotes that the objective helps to meet the specified goal.

CHAPTER 4 – LAND ALLOCATION, LAND CLASSIFICATION, WATER SURFACE, AND PROJECT EASEMENT LANDS

4.1. LAND ALLOCATION

All lands at USACE water resource development projects are allocated by USACE into one of four categories in accordance with the congressionally authorized purpose for which the project lands were acquired: Operations, Recreation, Fish and Wildlife, and Mitigation. At Town Bluff Project, the only land allocation category that applies is Operations, which is defined as those lands that are required to operate the project for the primary authorized purposes of flood risk management, hydroelectric power, and water conservation. The remaining allocations of Recreation, Fish and Wildlife, and Mitigation would apply only if lands had been acquired specifically for these purposes. The entire fee simple federal estate at Town Bluff Project is 21,424 acres, of which approximately 6,865 acres are inundated at conservation pool.

4.2. LAND CLASSIFICATION

The previous version of the Town Bluff Project Master Plan included some land classification criteria that were similar to the current criteria. These prior land classifications were based on predicted projected need rather than actual experience, which resulted in some areas being classified for a type of use that has not or is not likely to occur. Additionally, in the 52 years since the previous Master Plan was published and 20 years since the Master Plan Supplement, wildlife habitat values, surrounding land use, and regional recreation trends have changed giving rise to the need for revised classifications. Refer to Table 8.1 and Table 8.3 in Chapter 8 for a summary of land classification changes and the justification for the specific changes.

4.2.1 Current Land and Water Surface Classifications

USACE regulations require project lands and waters to be classified in accordance with the primary use for which project lands are managed. USACE EP 1130-2-550 defines the following five land classification and three subclassifications, as well as four water designations:

- Project Operations
- High Density Recreation
- Mitigation
- Environmentally Sensitive Areas
- Multiple Resource Management Lands
    - Low Density Recreation
    - Wildlife Management
    - Vegetative Management
    - Future/Inactive Recreation
- Water Surface

- Restricted Areas
- Designated No Wake Areas
- Fish and Wildlife Sanctuary
- Open Recreation

The revised land and water surface classifications for Town Bluff Project were established after considering public comments, key stakeholder's input, lessees operating on USACE land, and USACE expert assessment. Additionally, wildlife habitat values and the trends analysis provided in TPWD's TORP and TCAP were used in decision making. Maps showing the various land classifications can be found in Appendix A. Each of the land classifications, including the acreage and description of allowable uses, is described in the following paragraphs.

4.2.2 Project Operations

This classification includes the lands managed for operation of the dam, project office, and maintenance yards, all of which must be maintained to carry out the authorized purpose of flood risk management. In addition to the operational activities taking place on these lands, limited recreational use may be allowed for activities such as public access to roads, fishing areas, or other recreation spots near the dam. Regardless of any limited recreation use allowed on these lands, the primary classification of Project Operations will take precedent over other uses. There are 127 acres of Project Operations land specifically managed for this purpose.

4.2.3 High Density Recreation (HDR)

These are lands developed for intensive recreational activities for the visiting public including day use areas, campgrounds, marinas and related concession areas. Recreation development by lessees operating on USACE lands must follow policy guidance contained in USACE regulations at ER 1130-2-550, Chapter 16. That policy includes the following statement:

> *The primary rationale for any future recreation development must be dependent on the project's natural or other resources. This dependency is typically reflected in facilities that accommodate or support water-based activities, overnight use, and day use such as marinas, campgrounds, picnic areas, trails, swimming beaches, boat launching ramps, and comprehensive resort facilities. Examples that do not rely on the project's natural or other resources include theme parks or ride-type attractions, sports or concert stadiums, and standalone facilities such as restaurants, bars, motels, hotels, non-transient trailers, and golf courses. Normally, the recreation facilities that are dependent on the project's natural or other resources, and accommodate or support water-based activities, overnight use, and day use, are approved first as primary facilities followed by those facilities that support them. Any support facilities (e.g., playgrounds, multipurpose sports fields, overnight facilities, restaurants, camp*

stores, bait shops, comfort stations, and boat repair facilities) must also enhance the recreation experience, be dependent on the resource-based facilities, and be secondary to the original intent of the recreation development…

Lands classified for High Density Recreation are suitable for the development of comprehensive resorts. The regulation cited above defines Comprehensive Resort as follows:

Typically, multi-faceted developments with facilities such as marinas, lodging, conference centers, golf courses, tennis courts, restaurants, and other similar facilities.

At Town Bluff Project, prior land classifications included a number of areas under the recreation classification. Several of these areas include Martin Dies Jr. State Park, Magnolia Ridge Park, Sandy Creek Park, and East End Park which were developed for recreation. Using public, agency, and lessee input, the planning team revised the classification of some of these lands to reflect current and projected outdoor recreation needs and trends. At Town Bluff Project, there are 2,012 acres classified as High Density Recreation land. Each of the High Density Recreation areas is described briefly in Chapter 5 of this Plan.

Prior land classifications at Town Bluff Project identified several tracts for future high density recreation development but included them all as Intensive Recreation. However, much of that land is not suitable for recreation or would be better classified to protect natural resources such as Environmentally Sensitive Areas, Wildlife Management, or Vegetation Management. Several areas of existing parks are less developed but will remain HDR, which will allow the USACE or lease holders to further develop them as needed in the future.

4.2.4 Mitigation

This classification is used only for lands set aside for mitigation for the purpose of offsetting losses associated with the development of the project. This is not the same as allocated lands that are purchased for the purpose of mitigation. There are no lands at Town Bluff Project with this classification.

4.2.5 Environmentally Sensitive Areas (ESA)

These are areas where scientific, ecological, cultural, and aesthetic features have been identified to be protected or preserved. At Town Bluff Project several distinct areas have been classified as Environmentally Sensitive Areas (ESA), primarily for the protection of sensitive and unique habitats. Each of these areas is discussed in Chapter 5 of this Plan and illustrated on the maps in Appendix A. There are 5,456 acres classified as ESA at Town Bluff Project.

4.2.6 Multiple Resource Management Lands (MRML)

This classification is divided into four sub-classifications identified as: Low Density Recreation, Wildlife Management, Vegetative Management, and Future/Inactive Recreation Areas. A given tract of land may be classified using one or more of these sub-classifications, but the primary sub classification should reflect the dominant use of the land. Typically, Multiple Resource Management Lands support only passive, non-intrusive uses with very limited facilities or infrastructure. Where needed, some areas may require basic facilities that include, but are not limited to minimal parking space, a small boat ramp, and/or primitive sanitary facilities. There are 6,964 acres of land under this classification at Town Bluff Project. The following paragraphs list each of the sub-classifications, and the number of acres and primary uses of each.

Low Density Recreation (LDR)

These are lands that may support passive public recreational use (e.g., fishing, hunting, wildlife viewing, natural surface trails, hiking, etc.). Under prior land classifications, numerous areas were classified to support “low use” recreation and wildlife management. The planning process resulted in most of these areas being reclassified as either LDR or Wildlife Management. In general, the relatively narrow tracts that have shoreline along the main body of the lake and are located immediately adjacent to residential areas have been reclassified as LDR. There are no acres under this classification at Town Bluff Project.

Wildlife Management (WM)

This land classification applies to lands managed primarily for the conservation of fish and wildlife habitat. These lands generally include comparatively large contiguous parcels, most of which are located within the flood pool of the lake. Passive recreation uses such as natural surface trails, fishing, hunting, and wildlife observation are compatible with this classification unless restrictions are necessary to protect sensitive species or to promote public safety. There are 6,915 acres of land included in this classification at Town Bluff Project.

Vegetative Management (VM)

These are lands designated for stewardship of forest, prairie, and other native vegetative cover. Passive recreation activities previously described may be allowed in these areas. There are 49 acres of land included in this classification at Town Bluff Project.

Future or Inactive Recreation

These are lands with site characteristics compatible with High Density Recreation development but have been undeveloped or planned for very long-range recreation needs. There are no acres classified as Future or Inactive Recreation.

4.2.7 Water Surface

USACE regulations specify four possible sub-categories of water surface classification. These classifications are intended to promote public safety, protect resources, or protect project operational features such as the dam and spillway. These areas are typically marked by USACE or lessees with navigational or informational buoys, signs, or are denoted on public maps and brochures. The land and water surface classification map can be found in Appendix A of this Plan. The four sub-categories of water surface classification are Restricted, Designated No Wake, Fish and Wildlife Sanctuary, and Open Recreation.

Restricted.

Restricted water surface includes those areas where recreational boating is prohibited or restricted for project operations, safety, and security purposes. The areas include the water surface immediately surrounding the gate control tower upstream of the Town Bluff Project Dam as well as around the water intake towers. There are 7 acres of restricted water surface at Town Bluff Project.

Designated No-Wake

Designated No-Wake areas are intended to protect environmentally sensitive shorelines and improve boating safety near key recreational water access areas such as boat ramps. There are seven boat ramps at Town Bluff Project where no-wake restrictions are in place for reasons of public safety and protection of property. There are 114 acres of designated no-wake water surface at Town Bluff Project.

Fish and Wildlife Sanctuary

This water surface classification applies to areas with annual or seasonal restrictions to protect fish and wildlife species during periods of migration, resting, feeding, nesting, and/or spawning. Town Bluff Project has no water surface areas designated as a Fish and Wildlife Sanctuary.

Open Recreation

Open Recreation includes all water surface areas available for year-round or seasonal water-based recreational use. This classification encompasses the majority of the lake water surface and is open to general recreational boating. Boaters are advised through maps and brochures, or signs at boat ramps and marinas, that navigational hazards may be present at any time and at any location in these areas. Operation of a boat in these areas is at the owner's risk. Specific navigational hazards may or may not be marked with a buoy. There are 6,744 acres of open recreation water surface at Town Bluff Project.

Future management of the water surface includes working with TPWD on the maintenance of warning, information, and regulatory buoys as well as routine water safety patrols during peak use periods.

4.3. PROJECT EASEMENT LANDS

Project Easement Lands are primarily lands on which easement interests were acquired. Fee title was not acquired on these lands, but the easement interests convey to the federal government certain rights to use and/or restrict the use of the land for specific purposes. Easement lands are typically classified as Operations Easement, Flowage Easement, and/or Conservation Easement. Flowage easement lands are the only easements that exist at Town Bluff Project. A flowage easement, in general, grants to the government the perpetual right to temporarily flood/inundate private land during flood risk management operations and to prohibit activities on the flowage easement that would interfere with flood risk management operations such as placement of fill material or construction of habitable structures. There are approximately 1,157 acres of flowage easements lands at Town Bluff Project.

CHAPTER 5 – RESOURCE PLAN

5.1. RESOURCE PLAN OVERVIEW

This chapter describes in broad terms how each land classification within the Master Plan will be managed. The classifications that exist at Town Bluff Project are Project Operations (PO), High Density Recreation (HDR), Environmentally Sensitive Area (ESA), and Multiple Resource Management Lands (MRML), which consist of Vegetative Management (VM) and Wildlife Management (WM). The water surface is also classified into sub-classifications of Restricted, Designated No Wake, and Open Recreation. The management plans describe how the project lands and water surface will be managed in broad terms. A more descriptive plan for managing these lands can be found in the Town Bluff Project Operations Management Plan (OMP). Acreages shown for the various land classifications were calculated using satellite imagery and GIS technology and may not agree with lease documents, prior publications, or official land acquisition records.

5.2. PROJECT OPERATIONS

Project Operations is land associated with the dam, spillway, levees, lake office, maintenance facilities, and other areas solely for the operation of the project. There are 127 acres of lands under this classification, all of which are managed by the USACE with the exception of water intake structures (there are currently no water intake structures at Town Bluff). The management plan for the Project Operations area is to continue providing physical security necessary to ensure sustained operations of the dam and related facilities including restricting public access in hazardous locations near the dam and spillway.

5.3. HIGH DENSITY RECREATION

Town Bluff has 2,012 acres classified as High Density Recreation (HDR). These lands are developed for intensive recreational activities for the visiting public including day use and campgrounds. Several of the HDR areas include areas that are not currently fully developed but are available to be developed if the need arises. National USACE policy set forth in ER 1130-2-550, Chapter 16, limits recreation development on USACE lands to those activities that are dependent on a project's natural resources and typically include water-based activities, overnight use, and day use such as campgrounds, picnic areas, trails and boat launching ramps. Examples of activities that are not dependent on a project's natural resources include, theme parks or ride-type attractions, sports or concert stadiums, and stand-alone facilities such as restaurants, bars, motels, hotels, and golf courses.

The USACE operates and manages numerous areas designated as HDR areas. The following is a description of each park operated by the USACE along with a conceptual management plan for parks by classification groups. Groups include Class A (highly developed listed in section 5.3.1) and Class C (basic facilities listed in section 5.3.2). Maps showing existing parks and facilities managed by USACE can be found in

Appendix A. In addition to the USACE managed and operated HDR areas, one (1) HDR area that is leased by the USACE and managed by a recreation partner. Section 5.3.3 includes a brief description of these parks and notes the recreational partners who manage them. Table 2.15 found in Chapter 2 of this document summarizes each park and associated amenities.

The Texas and Louisiana state regional recreation plans express an increase in demand for outdoor recreational activities in the region including around Town Bluff. The USACE can only achieve this through partnerships with other agencies and is open to such partnerships to build on the existing recreational opportunities at the Project.

5.3.1 Class A Parks

As noted in Chapter 2, visitation continues to be strong at Class A parks at Town Bluff. The USACE defines Class A parks as those that are more developed with amenities including some or all of the following: flush toilets, water, showers, boat ramp, dump station, pavilion, and recreational vehicle electrical hookups. Facilities provided are sufficient in some parks, while at others demand exceeds available resources during peak use periods.

The USACE intends to continue to operate the Class A campgrounds and day use areas by maintaining and improving existing facilities, but has no long range plans to add additional campsites or amenities. In response to trends documented in the TORP, the USACE will endeavor to improve and develop multipurpose trails in or adjacent to some park areas as funding permits. The USACE encourages partnerships with agencies who lease and manage parks to respond to increasing demands and build on the current quality of existing parks for present and future visitors.

Magnolia Ridge Park

Magnolia Ridge Park spans 570 acres and is open year-round. This park, located on the northeast side of the lake, features the following facilities and amenities:

- 41 campsites (32 sites with 30-amp electric and water; eight sites without water or electric; and one site with screened shelter, 30-amp electric and water)
- 1 vault toilet and 2 Waterborne restrooms with showers
- 3 one-lane boat ramps
- Kids Fishing Pond (Photo 5.1)
- Group shelter
- Playground and volleyball court
- Dump station
- Magnolia Ridge Park multiuse trail system

Future plans for this park include maintaining existing infrastructure and sustaining operations, as well as developing primitive group camping loops.

Photo 5.1 Youth Fishing Pond at Magnolia Ridge Campground

Sandy Creek Park

The 395-acre Sandy Creek Park is located on the southeast shore of Town Bluff Project on County Road 155. The park contains the following amenities and features:

- 78 campsites (35 sites with 50-amp electric and water; 34 sites with 30-amp electric and water; six sites without water or electric; and two sites with screened shelters)
- 3 One-lane boat ramps
- 2 Fishing piers
- 1 Vault restroom and 3 waterborne restrooms (two with showers)
- 1 Group shelter
- Playground (Photo 5.2) with Volleyball Court
- Dump station
- Hiking and cycling trail that connects to the Slough Trail in Martin Dies Jr. State Park.

Future plans for this park include maintaining existing infrastructure and sustaining operations.

Photo 5.2 Playground at Sandy Creek Park

5.3.2 Day Use Parks

The management plan for all the parks listed below is to continue to operate them as day use areas and access points by maintaining and improving existing facilities. Similar to Class A parks, emphasis will be placed on improvements such as upgrading aging water and electrical infrastructure, repairing or replacing outdated restrooms, paving gravel roads in some parks and installing site amenities such as fire rings, lantern posts and cookers. Trails within parks will be considered.

Campers Cove Day Use Area

Campers Cove Day Use Area is currently closed for renovation, but the boat ramp, several day use picnic sites, and a walking trail are available for use. This park encompasses approximately 81 acres and features picnic tables shaded with large pine trees, convenient access to a boat ramp with parking lot and courtesy dock. Future plans include maintaining existing infrastructure and sustaining operations.

Bluff View Day Use Area

Bluff View Day Use Area encompasses approximately 16 acres and features a large group picnic shelter with electric hookups that can accommodate up to 100 guests, as well as a scenic overlook of the southern portion of the lake. Amenities include flush toilets, picnic sites (Photo 5.3), a walking track, exercise equipment,

access to a fishing area on the west side of the gated spillway and a playground. Future plans include maintaining existing infrastructure and sustaining operations.

Photo 5.3 Group Picnic Area at Bluffview Park

East End Day Use Area

East End Day Use Area encompasses approximately 5 acres and features several covered picnic tables, parking lot and convenient access to the eastern portion of the of the uncontrolled spillway and fishing platforms at R. D. Willis Powerhouse and the east side of the gated spillway. Future plans include maintaining existing infrastructure and sustaining operations.

5.3.3 Leased Parks

USACE currently has one (1) recreational outgrant issued in the form of permits or leases to recreational partners, referred to as lessee. Each lessee is responsible for the operation and maintenance of their leased area, and although USACE does not provide direct maintenance within any of the leased locations, it may occasionally lend support where appropriate. The USACE reviews requests and ensures compliance with applicable laws and regulations for proposed activities in all leased and USACE-operated HDR areas. USACE works with partners to ensure that recreation areas are managed and operated in accordance with the objectives prescribed in Chapter 3. The following are leased areas at Town Bluff.

Martin Dies Jr. State Park

Martin Dies Jr. State Park sites at the edge of the Big Thicket Nation Preserve within the Town Bluff Project. This 705-acre is managed by TPWD and consists of three units; Hen House Ridge, Walnut Ridge, and Cherokee Unit (see Figure 5.1). See Appendix A for the current State Park maps, or visit the TPWD Martin Dies Jr. State Park website for updated maps, news, and other information about the park.

The Hen House Ridge Unit is a multipurpose, Class A park that includes camping, picnicking, multi-use trails, boat ramps, fishing piers, and the Martin Dies, Jr. State Park headquarters. There are two climate-controlled cabins with no beds or bathrooms on this site, 21 campsites with 50-amp hookups and water, 33 sites with 30-amp hookups and water, and additional sites with no electrical hookups. This Unit also contains a designated swim beach. Canoe and kayak rentals are available at the headquarters office. The challenging 5.4-mile Sandy Creek Paddling trail is within this Unit, as are the multiuse 1.0-mile Forest Trail, 2.2-mile Slough Trail, and the 0.8 Mile Sandy Creek Trail.

The Walnut Ridge Unit is also a multiuse, Class A park that includes camping, picnicking, boat ramps, multipurpose trails, a dining hall, and a nature center. There are five climate-controlled cabins with no beds or bathrooms on this site, 68 campsites with 50-amp hookups and water, and additional sites with no electrical hookups. There are two moderately difficult paddle trails within this Unit; the 2.8-mile Neches Paddling Trail, and the 2.7-mile Walnut Paddling Trail as are the multi-use 0.8-mile Island Trail, 1.4 mile Wildlife Trail, the 0.3 mile Shelter Trail, and the 0.7 mile Whitetail Trail.

The Cherokee Unit is a day use only park off HWY 190. The Unit consists of picnic areas, two boat ramps, a fishing pier, and a parking area. A 3.0 mile moderately difficult paddle trail loops around the Unit.

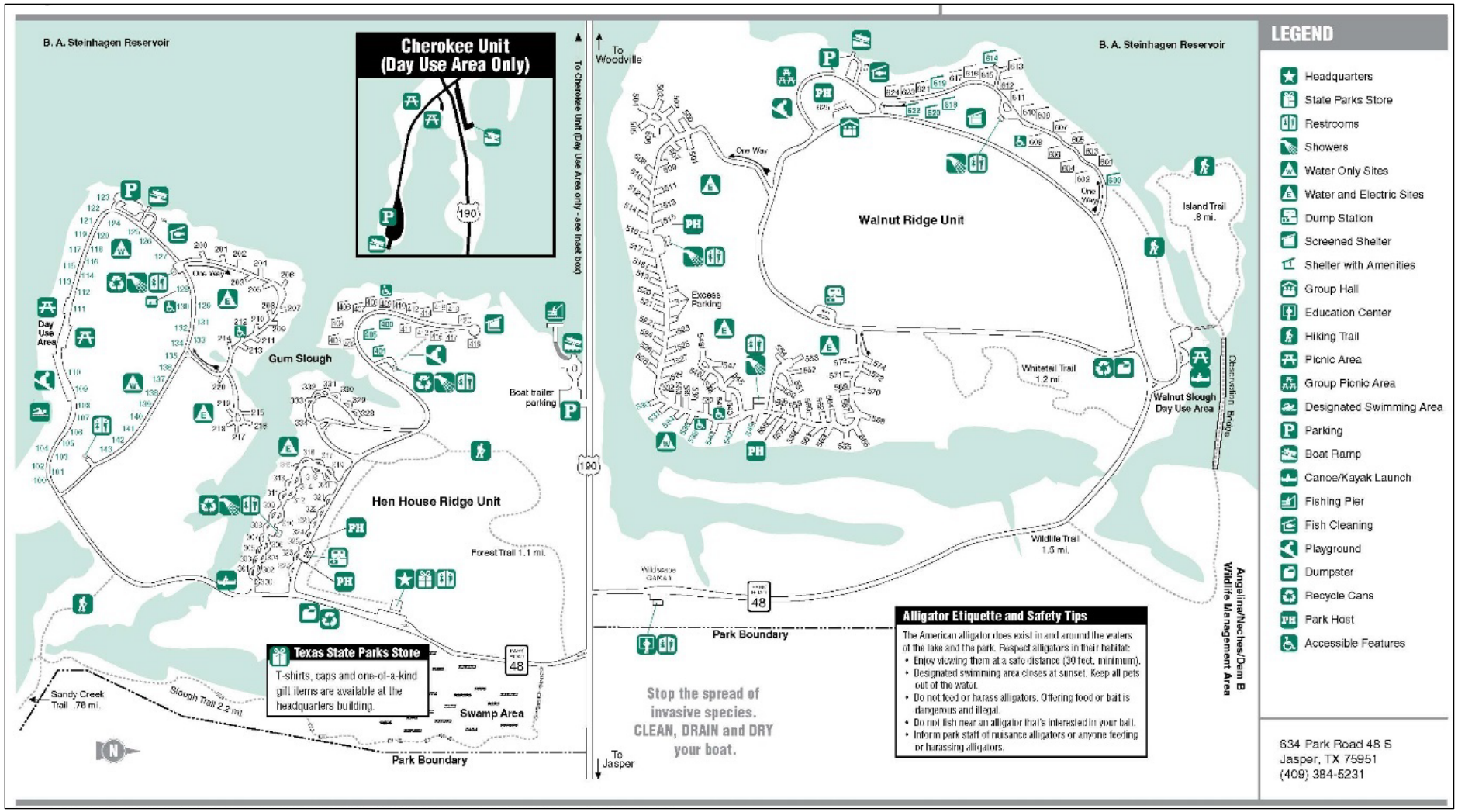

Figure 5.1 Martin Dies, Jr. State Park Unit Map

5.3.4 Boat Ramps

Boating and fishing access to Town Bluff Dam/B. A. Steinhagen Lake is provided by USACE and TPWD (Table 5.1 and Photo 5.4). There are currently 3 boat ramps operated by USACE, 4 boat ramps operated by TPWD and one operated by Jasper County. Additionally, there are three (3) courtesy fishing docks and five (5) courtesy loading docks operated by USACE, as well as two (2) courtesy loading docks and two (2) fishing piers operated by TPWD. Launch fees are charged in the leased area; however, all current USACE ramps are free (fees may be charged in the future, depending on use trends and management goals). The location of the boat ramps can be found in the map section of this plan in Appendix A.

Table 5.1 Boat Ramps at Town Bluff Project

Name	Location	Restrooms	Cleaning Station	Parking	Courtesy Docks	Picnic Areas	Camping
Walnut Ridge Unit-TPWD	North of US 190	X	X	X		X	X
Tidelands Ramp-TPWD	South of US 190			X			
Hen House Unit-TPWD	South of US 190	X		X	X	X	X
Sandy Creek-USACE	Sandy Creek Park West of CR 155	X		X	X	X	X
Campers Cove-USACE	Campers Cove Park East of FM 92			X	X	X	
Cherokee Unit-TPWD	US 190	X		X		X	
Magnolia Ridge-USACE	Magnolia Ridge Park East of FM 92	X		X		X	X
Bevilport Boat Ramp-Jasper CO.	End of FM 2799			X			

The USACE works with communities where a new ramp would be beneficial. A new ramp in an unincorporated area/subdivision would require authorization under a license with a county and must be open to the public. New ramps would need to be located in areas classified as HDR. If a new boat ramp were to be proposed in an area not designated as HDR, it would require a master plan supplement and need to follow NEPA guidance to change the land classification to HDR. New ramps may qualify for funding assistance through TPWD's boating access grants.

Photo 5.4 Boat Ramp at Town Bluff Project

5.3.5 Primitive Camping

To accommodate the more adventurous campers, there are thirteen primitive campsites available along the Neches and Angelina Rivers at the north end of the project. These sites are located in the Angelina-Neches/Dam B Wildlife Management Area and currently offer no facilities, consisting of only a cleared designated campsite on the riverbank. Camping in this area is limited to these thirteen sites only. Access is by boat only, with the primary launch site at the Bevilport boat ramp on the Angelina River. Some campsites include simple amenities including picnic tables and fire rings. There is currently no charge for using the campsites, however a permit is required. For more information or to obtain a permit, campers should visit the USACE project website or contact the Town Bluff Project office.

5.3.6 Trails

Trails of all type are in high demand across the nation, including the Town Bluff Project region. Town Bluff Project has several to accommodate the recreating public offering easy to difficult hiking, cycling, and paddling trails throughout the site. These trails are managed by USACE (Table 5.2 and Appendix A), TPWD (Table 5.3 and

Figures 5.2) and Jasper County (Figure 5.3). Partnerships are key to developing and maintaining trails throughout USACE. Trail users should pay attention to signs and warnings, as some trails are one-direction only, and some trail availability may change based on site conditions.

Table 5.2 USACE Managed Trails

Trail	Distance in Miles	Use	Description
Bluffview Park Trail	0.3	Hiking	Paved walking track with parking areas and picnic tables nearby.
Magnolia Ridge Park Trail System (MRPTS)	1.9	Hiking	Reestablished after Hurricanes Rita and Ike destroyed the original trail system in 2005 and 2008, the trail system consists of 4 trails of varying lengths and difficulties. This trail system meanders through a remnant of the old growth hardwood forest that once covered the area and allows for both short walks and long hikes throughout the park.
Pond Loop Trail - MRPTS	0.5	Hiking	Located ½ mile from the Kid's Fishing Pond, the trail makes a loop that connects to the Walnut Trail and Magnolia Trail.
Magnolia Trail - MRPTS	0.67 (one way)	Hiking	Located 2/3 mile from the Pond Loop, the trail stretches across the park, connecting with the Beech Trail and the trailhead on Camping Loop Road near campsite 29.
Walnut Trail - MRPTS	0.4 (one way)	Hiking	Located 4/10 mile from the trailhead off Camping Loop Rd near site campsite 21, this trail winds its way southeast and connects with Pond Loop Trail.
Beech Trail - MRPTS	0.3 (one way)	Hiking	Located 1/3 mile from Magnolia Trail near campsite 29, this trail connects to the trailhead at Back Road about a mile south of the Camping Loop Road intersection.
Sandy Creek Park Trail	0.78 (one way)	Hiking	Sandy Creek Trail connects from Old Folks Loop at Sandy Creek to the Slough Trail in Martin Dies Jr. State Park.
Magnolia and Sandy Creek Parks	Varies	Cycling	While no designated cycling trails exist, the road system at Sandy Creek and Magnolia Parks offer excellent family cycling opportunities.

Table 5.3 TPWD and Jasper County Managed Trails

Trail	Distance in Miles	Use	Description
Island Trail - Walnut Ridge Unit	0.8	Hiking/Cycling	Moderately difficult, this trail's curves and hills through giant beech and pine trees can be challenging. The trail connects with the Wildlife Trail.
Wildlife Trail – Walnut Ridge Unit	1.5	Hiking	Moderately difficult, this trail travels both the park and the adjoining wildlife management area, connecting with the Island and Whitetail Trails.
Whitetail Trail – Walnut Ridge Unit	1.2	Hiking	Easy hike along cypress slough and hardwood forests, connecting with the Wildlife Trail.
Shelter Trail – Walnut Ridge Unit	0.3	Hiking	This short corridor connect the Shelter Loop to the day-use area on the Walnut Ridge Unit.
Forest Trail – Hen House Unit	1.1	Hiking	Easy hike through forested areas, connecting to the more challenging Slough Trail in the Hen House Ridge Unit.
Slough Trail – Hen House Unit	2.2	Hiking	Challenging trail with sixteen bridges over wetlands, proving views of many marsh plant species. The trail connects to the easier Forest Trail.
Walnut Slough Paddling Trail	4.3	Paddling	Designed for the beginning or novice paddler, this moderately difficult trail has a shore access in at the Walnut Boat Ramp and connects to the Neches Paddling Trail.
Sandy Creek Paddling Trail	4.9	Paddling	Designed for the beginning or novice paddler, this challenging trail has shore access points at Hen House Boar Ramp, Sandy Point Park (Cox Ramp), and Sandy Point.
Neches Paddling Trail	3.2 - 16	Paddling	This moderately difficult trail is marked by a series of 8 buoys, offering options in the route taken to the Neches River and back to the park that can add up to 16 miles of paddling depending on routes taken. The connects to the Bevilport and Walnut Slough Paddling Trails.
Cherokee Paddling Trail	3.0	Paddling	This moderately difficult paddling trail travels around the Cherokee Unit.

Trail	Distance in Miles	Use	Description
Bevilport Paddling Trail	9.6 or 12	Paddling	This trail connects to the Neches Paddling Trail and utilizes the flow of the Neches and Angelina Rivers flowing beyond USACE fee property.

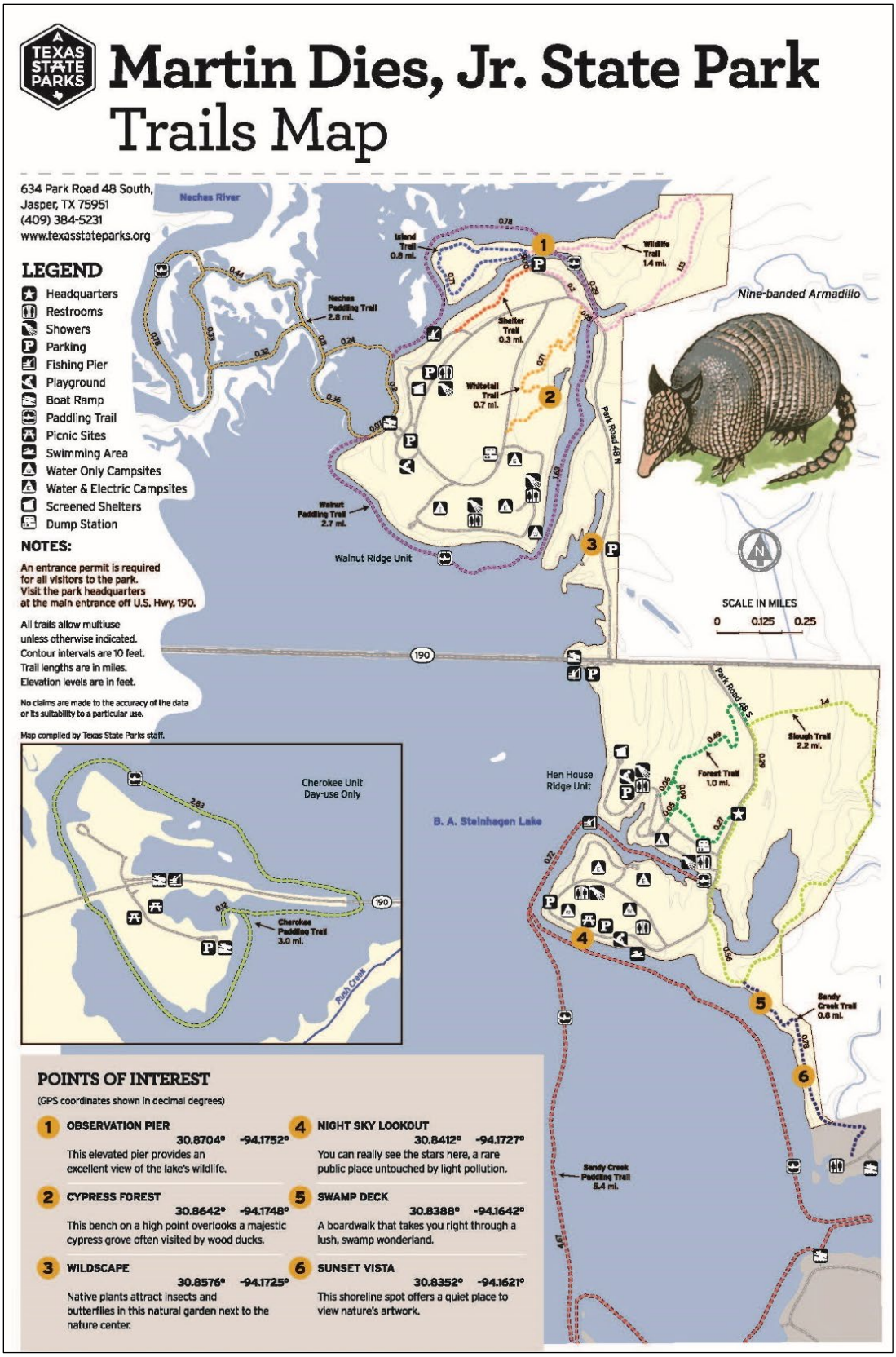

Figure 5.2 Martin Dies, Jr State Park Trails Map

Jasper County manages the Bevilport Paddling Trail (Figure 5.3), which runs along the Angelina and Neches Rivers 9.6 miles with the short-cut and 12 miles without the short cut. The Bevilport Paddling Trail begins at Bevilport Boat Ramp, an historic riverboat landing site and location of the first cattle drives from Texas, and flows through pristine, old growth river-bottom hardwood forests. The Bevilport Paddling Trail utilizes the flows of both rivers, with minimal paddling experience needed. The paddle trail connects to the north side of the Walnut Ridge Unit at the Walnut Boat Ramp.

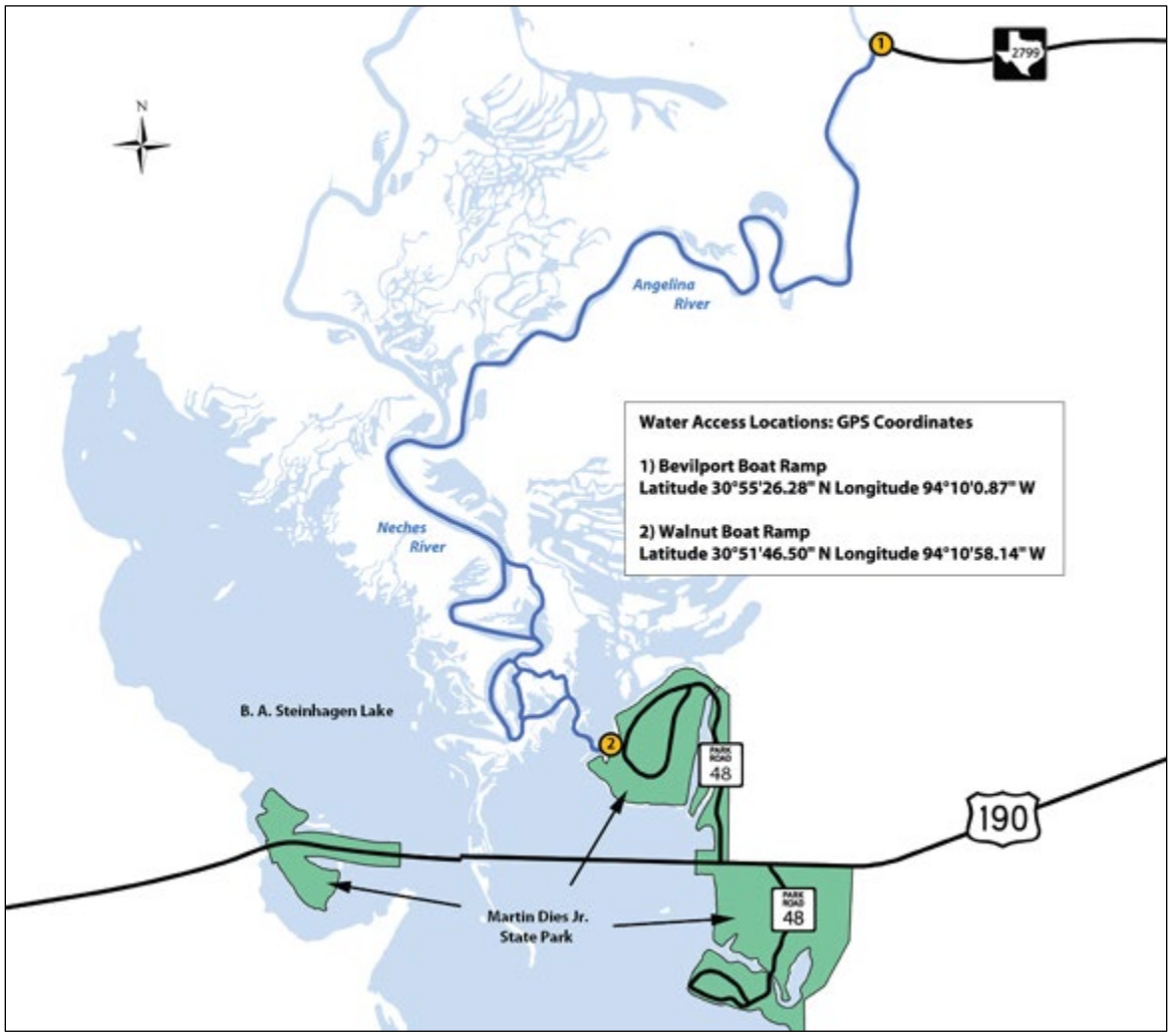

Figure 5.3 Bevilport Paddling Trail

5.4. MITIGATION

The Mitigation classification is applied to lands that were acquired specifically for the purpose of offsetting losses associated with the development of the project. There are no acres at Town Bluff Project under this classification. USACE lands at Town Bluff Project where environmental mitigation activities have taken place in association with real estate easements or other outgrants are not included in lands classified for Mitigation.

5.5. ENVIRONMENTALLY SENSITIVE AREAS (ESA)

ESAs are areas where significant scientific, ecological, cultural or aesthetic features have been identified to be protected or preserved. Designation of these lands is not limited to just lands that are otherwise protected by laws such as the Endangered Species Act, the National Historic Preservation Act, or applicable state statues. These areas must be managed to ensure they are not adversely impacted. Typically, limited or no high intensity, developed recreation is allowed on these lands. No agricultural or grazing uses are permitted on these lands unless necessary for a specific resource management benefit, such as prairie restoration and management or wildlife management. These areas are typically distinct parcels located within another, and perhaps larger, land classification area.

Five areas totaling approximately 5,456 acres at Town Bluff Lake were selected by the planning team for classification as ESA. The results of the Wildlife Habitat Appraisal Procedure conducted in October 2022, were used to assist in determining which areas should be classified as ESA. Other factors such as public and stakeholder comment; the presence of cultural resources; presence of species of conservation concern; and visual esthetics were also included in the selection of ESA areas. By definition, these areas are to be protected from development or disturbance from future land use actions such as utility or road easements. Passive low impact public use such as natural surface trails, fishing, hunting, and nature study are appropriate for these areas.

Each of these areas are numbered on the land classification maps in Appendix A. Table 5.1 provides a listing of the ESAs, acreage, WHAP scores, and a location description. Each area, including future management priorities, is briefly described as follows:

Table 5.1 ESA Listing

ESA#	Acres	Location and Description
1	452	Rush Creek South ESA – This 452-acre area occurring primarily south of Rush Creek and north of Campers Cove Park that represents high quality bottomland hardwood forest and highly diverse riparian habitat with unique palmetto flats and stands of Horsetail (*Equisetum* spp.) found along the creek banks. The various and quite diverse tree species found in this area exude a unique growth habit not seen in other typical bottomland hardwood forests in the area. This ESA is managed by USACE staff and provides for passive use activities open to the public like fishing, hunting, hiking, and wildlife viewing.

ESA#	Acres	Location and Description
		 **Photo 5.5 The Bank of Rush Creek ESA**
2	275	Magnolia Ridge Swamp ESA – This 275-acre area consists of high-quality cypress-tupelo swamp situated within Magnolia Ridge Park. This ESA is situated between a high ridge to the west and a low alluvial sand deposit to the east that was created by cut and fill alluviation many years ago. This ESA provides unique unaltered hydrology as the water still flows contiguously through the swamp. The area is managed by USACE staff and provides for passive use activities open to the public, like hiking and wildlife viewing. Most of this area is barely above conservation pool, causing it to be inundated much of the year and making it difficult to distinguish what is water or land. TPWD classifies this area as seasonally flooded deciduous hardwood and bald cypress swamp and wetlands.
3	4,100	The Forks ESA – ESA 3 is made of two distinct sections, separated by a bend in the Neches River, and are managed holistically. The smaller, western area is 93 acres, while the larger eastern area is 4,007. These ESAs are located between the forks of the Angelina River and the Neches River in the northern reaches of the Town Bluff Project. This area is one of the least impacted major river confluences in the State of Texas and represents high-quality bottomland hardwood forests, as well as native pine stands found along upland ridges created by cut and fill alluviation in the river floodplain many years ago. Topography in this area is generally flat with many sloughs and ridges throughout. Numerous oxbow lakes are present in this area, and the majority are interconnected with both rivers, as well as the lake itself. Unique saline prairies (Ozark Sandstone Glade) are present in the far northeast portion of ESA 3. These saline prairies are quite rare and support numerous plant species that

ESA#	Acres	Location and Description
		would normally only occur closer to the Texas Gulf Coast. This particular saline prairie complex may be the most northern extent of these types of habitats within the State. The area also provides some unique cultural resource features, most notably a historic narrow-gauge railroad trams that provided access for the initial logging of virgin timber stands in the area at the beginning of the 20th century. This ESA is managed by Texas Parks and Wildlife Department (TPWD), in coordination with USACE staff, for wildlife management and provides for passive use activities open to the public like fishing, hunting, hiking, and wildlife viewing. ESA 3 was designated as a slightly larger ESA in the 2003 Master Plan Supplement, but this Master Plan revision reduced the size to account for existing disturbances including utilities that cross the area.  **Photo 5.6 Saline Prairies in The Forks ESA**
4	629	Spring Creek ESA – This 629-acre area is located along Spring Creek northeast of Martin Dies Jr. State Park – Walnut Ridge Unit. This area represents a mature seasonally flooded bottomland hardwood forest. Spring Creek provides an unaltered and now rare continuous flowing spring fed black water creek containing tannin and supporting diverse habitat and plant associations throughout. The area provides some unique cultural resource features as well, most notably narrow-gauge railroad

ESA#	Acres	Location and Description
		trams that provided access for the initial logging of virgin timber stands in the area at the beginning of the 20th century. The southern portion of this ESA contains a portion of the Martin Dies Jr. State Park hiking trail system. This ESA is managed by TPWD in coordination with USACE staff, as a Wildlife Management Area and provides for passive use activities open to the public like fishing, hunting, hiking, and wildlife viewing.  **Photo 5.7 Spring Creek ESA**

5.6. MULTIPLE RESOURCE MANAGEMENT LANDS

Multiple Resource Management Lands (MRML) at Town Bluff Project are organized into three sub-classifications. These sub-classifications are Low Density Recreation, Wildlife Management, and Vegetative Management. The following is a description of each sub-classification's resource objectives, acreages, and description of use.

5.6.1 MRML – Low Density Recreation

These lands have minimal development or infrastructure that support passive public use such as hiking, nature photography, bank fishing, and hunting. Since these lands are typically adjacent to private residential developments, hunting is only allowed in select areas that are a reasonable and safe distance from adjacent residential properties. These lands are typically open to the public, including adjacent landowners, for pedestrian traffic and are frequently used by adjacent landowners for access to the shoreline near their homes. Prevention of unauthorized use on this land, such as trespassing or encroachment, is an important management and stewardship objective

for all USACE lands but is especially important for lands in close proximity to private development. Future management of these lands calls for maintaining a healthy, ecologically adapted vegetative cover to reduce erosion and improve aesthetics. Maintenance of an identifiable property boundary is also a high priority in these areas. There are no acres of MRML – Low Density Recreation at Town Bluff Project.

5.6.2 MRML – Wildlife Management

These are lands designated primarily for the stewardship of fish and wildlife resources but are open to passive recreation use such as natural surface trails, hiking, hunting, bank fishing, equestrian use, and nature study. There are currently 6,915 acres under this classification, which are managed by TPWD and the USACE.

5.6.3 MRML – Vegetative Management

These are lands that have native vegetative types considered to be sensitive or needing special classification to ensure protection or management. Efforts to date have required clearing of woody species that are good candidates for prairie restoration. Some of these areas are periodically burned to promote the native grasses and forbs already present on the sites as well as promote a healthy forest understory. Parcels were selected that were contiguous to Environmentally Sensitive Areas but were deemed less unique or valuable than those ESAs. Currently there are 49 acres classified for the primary use of Vegetative Management.

5.6.4 MRML – Future/Inactive Recreation Areas

These are areas with site characteristics compatible with potential future recreational development or recreation areas that are closed. Until there is an opportunity to develop or reopen these areas, they will be managed for multiple resources. There are no acres classified under this sub-classification at Town Bluff Project.

5.7. WATER SURFACE

At conservation pool level of 83.0 feet NGVD29 there are 6,865 acres of water surface. The precise water surface at Town Bluff is often difficult to define due to the quantity of wetlands and swamps and the shifting shorelines due to erosion and deposition. As such, the water surface and shoreline represent a “snapshot” at a single measurement when LiDAR data was recorded. Classifying the water surface is intended to ensure the security of key operations infrastructure, promote public safety and protect habitat. In accordance with national USACE policy set forth in EP 1130-2-550, the water surface of the lake at the conservation pool elevation may be classified using the following classifications:

- Restricted
- Designated No-Wake
- Fish and Wildlife Sanctuary

- Open Recreation

Some areas are designated with buoys which are managed by the USACE with close coordination with the TPWD. These buoys help mark hazards, swim beaches, boats keep-out and no-wake areas. The following water surface classifications are defined by EP 1130-2-550.

5.7.1 Restricted

Restricted areas are around swim beaches, public water supply intakes and near the USACE gate control tower on the dam. Vessels are not allowed to enter Restricted water surface. Water surface zoned as Restricted totals approximately 7 acres at Town Bluff Project.

5.7.2 Designated No-Wake

Designated No-Wake areas are intended to protect environmentally sensitive shorelines and improve visitor safety near key recreation water access areas such as marinas, boat ramps, and swim beaches. There are 14 boat ramp areas at Town Bluff Project where no-wake restrictions are in place for public safety and protection of property. Future management of these areas rests with the USACE and TPWD. Specific measures to be taken include placement of buoys, placement of signs near boat ramps, and describing the areas on maps available to the public. Boaters must also comply with TPWD personal watercraft regulations for requiring headway speeds in other areas including within 50 feet of another personal watercraft, vessel, platform, person, or shoreline.

TPWD currently manages approximately 14 miles of paddling trails at Martin Dies, Jr. State Park. Growing interest in kayaks and paddle boats indicates a possible future need for designated no-wake areas where kayaks or paddle boats can be operated without competing with motorized vessels. USACE is open to the concept of paddling trails and will work with TPWD and interested parties to fulfill this need. Currently these areas have not been designated as No-Wake, as many of the areas are inaccessible to larger vessels, and personal watercraft operators must comply with TPWD safety regulations when operating around kayaks and other vessels. Approximately 114 total acres of water surface at Town Bluff Project is designated as No-Wake.

5.7.3 Fish and Wildlife Sanctuary

Fish and Wildlife Sanctuary areas are managed with annual or seasonal restrictions to protect fish and wildlife species during periods of migration, resting, feeding, nesting, and/or spawning. There are no water surface acres under this classification at Town Bluff Project.

5.7.4 Open Recreation

Open Recreation includes all water surface areas available for year-round or seasonal water-based recreational use. Signs at boat ramps warn boaters that navigation hazards such as standing dead timber, shallow water, and floating debris may be present at any time and location and it is incumbent upon boat operators to exercise caution. Boating on the lake is in accordance with USACE and TPWD regulations and water safety laws of Texas. The USACE encourages all boaters and swimmers to wear their lifejackets at all times and to learn to swim well. Approximately 6,744 acres of Town Bluff Project is classified for Open Recreation.

5.7.5 Future Management of the Water Surface

Future management of the water surface includes the maintenance of warning, information, and regulatory buoys as well as routine water safety patrols during peak use periods. Currently, water safety patrols are conducted by TPWD and USACE Park Rangers.

5.7.6 Recreational Seaplane Operations

Seaplane restrictions are part of Title 36 Code of Federal Regulations. At Town Bluff Project and other USACE lakes across the nation, areas where recreational seaplane operations are prohibited were established through public meetings and environmental assessments circa 1980. The seaplane policy for USACE Fort Worth District is found in the Notice to Seaplane Pilots (see Appendix E), which lays out the general restrictions as well as lake-specific restrictions for seaplane operation. Due to potential hazards from sub-surface tree stumps and fluctuating water levels; seaplane operations at Town Bluff Project are generally prohibited in all areas.

CHAPTER 6 – SPECIAL TOPICS/ISSUES/CONSIDERATIONS

6.1. COMPETING INTERESTS ON THE NATURAL RESOUCES

Town Bluff Project is a large, multi-purpose project with numerous authorized purposes. The authorized purposes accommodate the needs of federal, state, and municipal users which have developed over time and have contractual rights that must be honored. The benefits provided by virtue of authorized purposes are critical to the local and regional economies and are of great interest to the public. Aside from operating the reservoir to meet the needs of those entities with contractual rights, there are many competing interests for the utilization of federal lands including recreational users, adjacent landowners, those who own mineral rights, utility providers, and all entities that provide and maintain public roads. A growing population places additional stresses on these competing interests through increased demand for water resources and recreation spaces as well as diminishing quality and space for natural habitat and open spaces. Balancing the interests of each of these groups to ensure that valid needs are met while at the same time protecting natural and cultural resources is a challenge. The purpose of this Plan is to guide management into the foreseeable future to ensure responsible stewardship and sustainability of the project's resources for the benefit of present and future generations.

6.2. UTILITY CORRIDORS

USACE policy encourages the establishment of designated corridors on project lands, where feasible, to serve as the preferred location for future outgrants such as easements for roads or utility lines. The USACE considered any public input and examined the location of existing roads and utility lines on project lands and as well as those located nearby to the project. The USACE project team determined that there should be minimal demand for any future utilities that might want to cross USACE property and that utility corridors would not be designated at Town Bluff Project.

Even though no utility corridors have been designated, there may be future demand for a utility or regional arterial road or highway to cross USACE land. In those cases, any future utility or road must follow USACE guidance including those in ER 1130-2-550 and the USACE Non-Recreation Outgrant Policy.

6.3. SHORELINE MANAGEMENT POLICY

6.3.1 Shoreline Policy as directed by the USACE

On December 13, 1974 the USACE published a regulation, ER 1130-2-406, in the Federal Register entitled "Civil Works Projects: Lakeshore Management." This regulation was published as Part 327.30 of Chapter III, Title 36 of the Code of Federal Regulations. A subsequent change to the regulation was published in the Federal Register on October 31, 1990, incorporating the results of recent legislation and changing the name to "Shoreline Management at Civil Works Projects." The focus of

this regulation is to establish national policy, guidelines, and administrative procedures for management of certain private uses of Federal lands administered by USACE. A key requirement in the regulation is that private shoreline uses, as defined in the regulation, are not allowed at lakes where no such private uses existed as of December 13, 1974. No private shoreline uses such as private docks have been permitted since the changes to the Federal Register, and as such, private docks will not be allowed on Town Bluff Project.

The private uses described in the regulation primarily include privately-owned floating facilities such as floating boat docks, fixed or movable piers, and vegetation modification activities such as plantings, mowing, and selective removal of shrubs and trees to the extent that exclusive benefits accrue to an individual or group and the general public is denied use of public lands or waters. Not included in the above definition are certain limited private activities that do not provide exclusive benefits to an individual or group, nor preclude general public use. These limited private activities may be allowed at Town Bluff Project by written shoreline use permit for reasons of public safety, erosion control, benefits to wildlife, or to provide reasonable pedestrian access to the shoreline. USACE regulations in ER 1130-2-406 requires the preparation of a Shoreline Management Policy Statement (SMPS). In response to this requirement a SMPS was prepared for Town Bluff Project in 1975 and is available for review at the Town Bluff Project Office.

6.3.2 Town Bluff Shoreline Management Policy Statement

Limited vegetation management activities may be granted to neighboring land owners by permit only and are subject to USACE conditions or restrictions. Neighboring land owners are not entitled to any lease, license, or permit; and are only approved on a case-by-case basis. The following types of vegetation management permits are occasionally granted including mowing for wildfire prevention, woody vegetation management of dead or dying trees or those on the invasive or exotic species list, and pedestrian access paths. These permitted activities must abide by the rules and conditions in the Town Bluff SMPS available for review at the Town Bluff Project Office and additional guidance from USACE personnel.

6.4. AQUATIC INVASIVE SPECIES MANAGEMENT

The Environmental Stewardship Business Line at Town Bluff Dam/B.A. Steinhagen Lake maintains a robust program for aquatic invasive species management, working closely with our local and state partners and stakeholders. This program began in earnest in 2007 and is cooperatively managed under a Memorandum of Understanding between the LNVA (water owner), TPWD, and USACE. Control efforts for species currently present (such as giant salvinia, common salvinia, water hyacinth, alligator weed, Cuban nutsedge, and others) involve an integrated pest management strategy utilizing biological, mechanical and chemical best practices to achieve maintenance control. Eradication of these species is likely unattainable, thus management efforts revolve around maintenance control at the most reasonable level

possible to achieve recreation, water supply, ecosystem and hydropower mission goals, given resource constraints such as available budget and personnel.

6.5. TIMBER MANAGEMENT PROGRAM

As described in previous sections of this Plan, the majority of project lands above the conservation pool elevation of 83.0 feet NGVD29 are forested with a mix of tree species representative of the Piney Woods ecoregion. More specifically at Town Bluff Project are bottomland hardwood forests, upland forests, and forested swampland. This forested land, consisting of approximately 7,943 acres, is managed for multiple uses, one of which is a sustainable supply of timber. Management of forests on USACE lands nationwide is guided, in part, by policy set forth in Public Law 86-717, the Forest Cover Act, which states that "…project lands shall be developed and maintained to assure a future supply of timber through sustained yield programs to the extent that such management is practicable and compatible with other uses of the project." Additional forest management guidance is set forth in USACE regulations ER and EP 1130-2-540, which specifies that stewardship of project land shall be ecosystem based. Meeting the intent of the Forest Cover Act, USACE regulations, and the public interest expressed in the formulation of the Master Plan has resulted in management objectives that are set forth in Chapter 3 of this Plan.

The harvesting of timber on USACE lands at Town Bluff Project has occurred on an infrequent basis since impoundment, primarily as a result of significant weather events. The damage and subsequent timber salvage operations resulting from hurricanes Rita (2005) (Photo 6.1) and to a lesser extent Ike (2008) profoundly impacted all forest resources at the Project and has been the primary influence on timber management since. Timber salvage operations in the five year period from 2005 to 2009, following the two major hurricanes, produced approximately 94,000 tons of pine and hardwood timber. A significant portion of the Project's forest resources currently consist of young timber that was naturally regenerated following these disturbances, that is just beginning to reach a merchantable size. Timber harvest operations over the next decade will focus on thinning these young stands to reduce density and improve species composition and overall ecosystem health. Remnants of the previous mature pine and hardwood forest will be retained wherever possible, when doing so is consistent with other Project needs and forest management objectives.

Photo 6.1 Post Hurricane Rita debris cleanup.

Timber harvested on USACE lands is sold through a competitive bidding process. In general, timber harvest plans are prepared by project staff and forwarded to the Fort Worth District office where an invitation for bids is prepared and administered. In most cases revenue generated from the sale of timber is returned to the USACE for conducting land management activities on the project area where the revenue was generated. In times of national emergency or urgent, unplanned repair of critical USACE infrastructure, timber sale revenue could be diverted to higher priority needs. Future planned timber harvests will be scheduled within the 5-year Operational Management Plan, which is updated annually.

In addition to occasional timber harvests, prescribed burns (Photo 6.2) have been used at Town Bluff Project within both prairies and forest understories. After many years without fires or mechanical maintenance, forests can become overcrowded, flammable fuels can build up and become hazardous, and some species that rely on fires reduce in number. Periodic prescribed burns are used to control invasive species, promote native vegetation, clear understories for ecological succession, and promote vigorous habitat while reducing the risk for dangerous wildfires in the future. Burn intervals typically range from two to five or more years, based on timber type, management objectives, and resource availability, with the goal of mimicking what would have been a historical fire regime. Burn prescriptions, including season and

weather parameters, are tailored to each site based on timber type and size, understory conditions, and other factors, in order to achieve the desired objectives.

Photo 6.2 Prescribed burn at Magnolia Ridge

In summary, the timber resource on USACE lands is managed for multiple purposes including wildlife habitat, recreational activities in parks, landscape aesthetics, and timber, as well as for overall ecosystem health and diversity.

6.6. PUBLIC HUNTING PROGRAM

Details and regulations governing hunting at Town Bluff Project may be found by visiting the Town Bluff Project website and viewing the Fort Worth District Hunting Guide. Additional hunting information and regulations can be found at the TPWD website. The Town Bluff Project is divided by the Neches River, with the western half in Tyler County and the eastern half in Jasper County. State of Texas hunting regulations may vary in each county, so hunters should be aware which county they are hunting in, and follow the regulations for that county.

Whitetail deer, feral hogs, squirrels, rabbits, and waterfowl are the most popular game animals around the project. Please note that on USACE managed land

(approximately 875 acres of land and 5,000 acres of water), rifles and pistols are prohibited for hunting, and hunting is prohibited within 600 feet of a dwelling, farm yard, roadway, or park boundary. Both rimfire and centerfire weapons are allowed on the Angelina-Neches/Dam B Wildlife Management Area (approximately 13,000 acres of land and water) managed by TPWD as Unit 707 to the Public Hunting Lands program. Please refer to the Town Bluff Hunting Map on the USACE Town Bluff Project website for a map of the hunting areas around the project.

A unique hunting opportunity is currently offered each September at Town Bluff Project by the TPWD. Due to ideal habitat, there is a very healthy population of American alligators found on the project, allowing a limited number of permits to be offered each year (historically between 25 and 40, depending on that year's alligator population census). This hunting opportunity is dependent upon the population of American alligators at the project and is subject to changes or cancellation based on population needs.

It is the policy of the USACE to provide the public with safe, healthful, and varied outdoor recreation opportunities; promote the enhancement of fish and wildlife resources; protect endangered species and their habitats; assure aesthetically and culturally pleasing surroundings; maintain an environment which supports diversity; and strive for a balance between public use and maintenance of a quality environment. Public hunting at Town Bluff Project is utilized by the USACE as a management tool to obtain natural resource goals while providing recreational opportunities to the public. Ultimately, stewardship (management) of forest, range, wetland, and vegetation resources and the population of various wildlife is essential to achieve these management goals. The USACE natural resource management goal is to ensure the conservation, preservation, protection, and enhancement of those resources so present and future generations may use and enjoy them.

The USACE Public Hunting Program continues to evolve based on input from the public and as the State of Texas Laws and Regulations change for their hunting program. Changes to the USACE hunting program are made in an effort to provide the best possible cost efficient and safe public hunting opportunity while continuing to preserve natural resources. Each hunting program is developed at the lake site in close coordination with TPWD Biologists to achieve management goals. Restrictions placed on the hunter are necessitated by reason of public health, public safety, maintenance, conservation of our Natural Resources, and/or to provide a safer hunt to the hunter and other visitors. Hunters who want further information about hunting at Town Bluff Project should visit the USACE Town Bluff website or contact the Town Bluff Project Office.

CHAPTER 7 – PUBLIC AND AGENCY COORDINATION

7.1. PUBLIC AND AGENCY COORDINATION OVERVIEW

The USACE is dedicated to serving the public interests in support of the overall development of land uses related to land management for cultural, natural, and recreational resources of Town Bluff Project. An integral part of this effort is gathering public comment and engaging stakeholders in the process of planning. USACE policy guidance in ER and EP 1130-2-550 requires thorough public involvement and agency coordination throughout the master plan revision process including any associated NEPA process. Public involvement is especially important at Town Bluff Project to ensure that future management actions are both environmentally sustainable and responsive to public outdoor recreation needs in a region which is experiencing rapid population growth. The following milestones provide a brief look at the overall process of revising the Town Bluff Project Master Plan.

The USACE began planning to revise the Town Bluff Project Master Plan in the summer of 2022. The objectives for the Master Plan revision are to (1) revise land classifications to reflect changes in USACE land management policies since the previous Master Plan and Supplement, (2) prepare new resource objectives, and (3) revise the Master Plan to reflect new agency requirements for Master Plan documents in accordance with ER 1130-2-550, Change 7, January 30, 2013 and EP 1130-2-550, Change 5, January 30, 2013.

7.2. INITIAL STAKEHOLDER AND PUBLIC PRESENTATION

A public information meeting was held for the Town Bluff Dam and B.A. Steinhagen Lake Master Plan revision at the Jasper County Courthouse Annex in Jasper, Texas on September 15, 2022. The purpose of this meeting was to provide attendees with information regarding the revision content, process, and general schedule on the proposed revision to the Town Bluff Project Master Plan as well as to provide them the opportunity to provide comments on the Master Plan.

The presentation included a description and definition of a master plan, descriptions of the new land use classification options, and instructions on providing comments. Presentation topics included:

- Public involvement process
- Project overview
- Overview of the National Environmental Policy Act (NEPA) process
- Existing Master Plan and current land classifications
- Instructions for submitting comments

The public input period remained open for 30 days from September 16 ,2022 through October 16, 2022. During the 30-day public comment period, the USACE received one comment from a member of the public and did not receive any comments

from Agencies or Tribal Nations. The comment period began September 16, 2022 and ran through October 16, 2022.

Federal agencies are required to consult with affiliated Native American Tribes on activities that take place on federal land under federal guidance including but not limited to Sections 106 and 110 of the National Historic Preservation Act (NHPA) of 1966 (as amended); Archaeological Resources Protection Act (ARPA) of 1979; Native American Graves Protection and Repatriation Act (NAGPRA); and 36 CFR Part 79, Curation of Federally owned and Administered Archeological Collections. Implementing regulations for Section 106 of the NHPA and NAGPRA are 36 CFR Part 800 and 43 CFR Part 10, respectively. All cultural resources laws and regulations should be addressed under the requirements of the National Environmental Policy Act (NEPA) of 1969 (as amended), as applicable. USACE summarizes the guidance provided in these laws in ER and EP 1130-2-540. Additionally, Executive Order 13007 states that each federal agency with responsibility for the management of Federal lands shall accommodate access to and ceremonial use of Native American sacred sites by religious practitioners and avoid adversely affecting the physical integrity of such sacred sites.

The Fort Worth District takes its responsibilities for consultation on a government-to-government basis very seriously and consulted with Native American Tribes on the Town Bluff Project Master Plan. The Fort Worth District consulted with all known Native American Tribes with an historical presence and/or cultural interest in the area represented in the Master Plans. The consultation process will include contacting the tribes about the draft Master Plan, explaining the revision process and comment period, and inviting them to comment on the draft Master Plan. In terms of cultural resources, tribes are also able to ask that a cultural monitor from their tribe be present during any cultural resource survey. Though not part of the Master Plan Revision it may be part of a future Cultural Resources Management Plan Revision. Tribes are welcome to provide comments on ESAs, resource management goals and objectives, and other topics in the Master Plan. This exchange of knowledge from developing the Master Plan will allow USACE staff to better engage with Tribes on future projects and will likely lead to more efficient reviews and better outcomes meeting objectives for both parties.

Table 7.1 Public Comments from Initial Public Scoping Presentation

Comment	USACE Response
One comment received from a member of the public describing interest in widening the “Dam-B Bridge” but wants to ensure the historic nature of the bridge, environmental concerns, and wildlife impacts are considered.	Approval of the bridge and its impact is outside the scope of the Master Plan. However, the Master Plan does recognize both the regional demand and the proposed project by TXDOT to replace the US 190 bridge that crosses B.A. Steinhagen Lake (Dam B). The land classification needed for any bridge widening or replacement project should not disturb any environmentally sensitive areas, and the project would need to consider the historic nature of the existing bridge and impacts to wildlife and the environment as well as any additional NEPA requirements.

7.3. PUBLIC AND AGENCY REVIEW OF DRAFT MP, EA, AND FONSI

This section will be completed following the draft release, public input process, and 30-day comment period. Any comments received and government responses will be included here.

CHAPTER 8 – SUMMARY OF RECOMMENDATIONS

8.1. SUMMARY OVERVIEW

The preparation of this Master Plan for the Town Bluff Project followed USACE master planning guidance in ER 1130-2-550 and EP 1130-2-550, both dated 30 January 2013. Three major requirements set forth in the guidance include the preparation of contemporary Resource Objectives, Classification of project lands using the approved classification standards, and the preparation of a Resource Plan describing in broad terms how the land in each of the land classifications will be managed into the foreseeable future. Additional important requirements include rigorous public involvement throughout the process, consideration of regional recreation and natural resource management priorities identified by other federal, state, and municipal authorities, and consultation with local Tribal Nations.

The study team endeavored to follow this guidance to prepare a Master Plan that will provide for enhanced recreational opportunities for the public, improve environmental quality, and foster a management philosophy conducive to existing and projected USACE staffing levels at Town Bluff Project, as also reflected in ER-1130-2-540 change 2 dated July 2005. Factors considered in the Plan development were identified through public involvement and review of regional and statewide planning documents including the TORP, regional Mobility Plans, EPA Ecoregion Handbook and descriptions, and the USFWS IPAC website. This Master Plan will ensure the long-term sustainability of the outdoor recreation program and natural resources associated with Town Bluff Project.

8.2. LAND CLASSIFICATION PROPOSALS

A key component in preparing this Master Plan was examining prior land classifications and addressing the needed transition to new land classification standards that reflect current and anticipated land management practices for the foreseeable future. The land classification standards will also comply with all current USACE standards and regulations. Public and agency comments were solicited to assist in making these land reclassification decisions. Consultation was conducted with Tribal Nations to provide input on cultural and natural resources to help inform the land classification decisions. Chapter 7 of this Plan describes the public involvement process and provides a summary of public comments received. After analyzing public comment, examining recreational trends, and accounting for regional natural resource management priorities, the USACE team members reclassified the Federal lands and water surface associated with Town Bluff Project as described in Table 8.1. Changes from the previous Master Plan Supplement and proposed Master Plan are described in more detail in Table 8.2.

Table 8.1 Changes from Prior Classification (2003 Supplement) to Proposed Classification (2023)

Prior Land Classifications (2003 Supplement)	Acres*	Proposed Land Classifications (2023)	Acres
Project Operations (Class 1 Land)	101	Project Operations	127
Intensive Recreation with Wildlife and Vegetative Management (Class 2)	2,291	High Density Recreation	2,012
Environment Sensitive Area (Class 4)	3,390	Environmentally Sensitive Areas	5,456
Multiple Resource Management (Class 5)	2,564	Multiple Resource Management – Wildlife Management	6,915
--	--	Multiple Resource Management – Vegetation Management	49
TOTAL Land Acres	14,568	TOTAL Land Acres	14,559
Prior Water Surface Classifications (2003 Supplement)	**Acres**	**New Water Surface Classifications (2023)**	**Acres**
Water Surface (Class 1 Lake)	6,856	Permanent Pool	6,865
--	--	– Restricted	7
--	--	– Designated No Wake	114
--	--	– Open Recreation	6,744
TOTAL Water Surface	6,856	TOTAL Water Surface	6,865

* Some acreage differences are due to improvements in mapping and measurement technology, deposition/siltation, and erosion. Note that acres are from existing GIS data and may not match current REMIS data which is under review.

There are several major differences in the acres between the 2003 Master Plan Supplement and the 2023 Draft Master Plan which are not accounted for in Table 8.1, Table 8.2, or the maps in Appendix A. These differences are due to the following:

- Current mapping and measuring technology have improved since the 2003 Master Plan Supplement, providing more precise measurements. The current Plan uses GIS computer software, LiDAR spatial mapping, and updated boundary surveys.
- Since the 2003 Master Plan Supplement, erosion and deposition/siltation have led to changes in the water surface acres and land acres, with some areas increasing and other areas decreasing the total acres.
- The large number of acres of wetlands and swamps at Town Bluff Project make it difficult to define precise boundaries between land and water due to shifting waterways and fluctuating water level. As such, the acres used in the Master Plan represent a “snapshot” at the time of writing the document.

- Because the current measurements rely on current GIS data, they do not match data within the USACE Real Estate system which is currently under review for greater accuracy.

Table 8.2 Reclassification Description

Proposal	Justification
Project Operations (Class 1 Land) to Project Operations	Approximately 92 acres of Class 1 Land Project Operations has remained Project Operations. This is a change in name from the prior Master Plan and is still being managed primarily for the operations and maintenance of Town Bluff Dam and B.A. Steinhagen Lake as well as safety and security of users and facilities.
Project Operations (Class 1 Land) to Open Recreation Water Surface	Eight (8) acres were changed from Class 1 Project Operations to Open Recreation water surface. This change reflects better imagery and mapping technology to correctly classify water surface that was previously classified as land.
Project Operations (Class 1 Land) to Restricted Water Surface	One (1) acre was changed from Class 1 Project Operations to Restricted water surface. This change reflects better imagery and mapping technology to classify water surface that was previously classified as land.
Intensive Recreation with Wildlife and Vegetative Management (Class 2) to Environmentally Sensitive Area	Approximately 275 acres of Class 2 Intensive Recreation with Wildlife and Vegetative Management were reclassified to Environmentally Sensitive Areas. These areas include wetlands and sensitive habitats that are not suitable for intensive recreation and include sensitive or unique habitat. See Section 5.5 for detailed description of each Environmentally Sensitive Area.

Proposal	Justification
Intensive Recreation with Wildlife and Vegetative Management (Class 2) to High Density Recreation	Approximately 2,012 acres of Class 2 Intensive Recreation with Wildlife and Vegetative Management were reclassified to High Density Recreation. This is mostly just a name change, as the old classification allows intensive recreational facilities and activities with a secondary management priority of wildlife and vegetation management. This is most similar to the current High Density Recreation land classification which also allows intensive recreational facilities and activities. These areas have historically been used for intensive recreation as well as areas that could see additional intensive recreation amenities and facilities including hard-surface trails (such as asphalt or concrete) which are typically not permitted in other land classifications. See Section 5.3 for detailed descriptions of each developed park classified as High Density Recreation.
Intensive Recreation with Wildlife and Vegetative Management (Class 2) to Project Operations	Four (4) acres of Class 2 Intensive Recreation with Wildlife and Vegetative Management were reclassified to Project Operations. This change reflects the current management practices in those areas that are required for operations and maintenance activities as well as safety and security of users and facilities.
Environmentally Sensitive Area (Class 4) to Environmentally Sensitive Area	Approximately 4,100 acres of Environmentally Sensitive Area (Class 4) from the previous Master Plan will remain as Environmentally Sensitive Area. These areas are still being managed primarily for the protection of sensitive habitats at Town Bluff Project. These areas also include the protection of known historical and cultural sites which have not been identified in the Master Plan to protect those resources. See Section 5.5 for detailed description of each Environmentally Sensitive Area.

Proposal	Justification
Environmentally Sensitive Area (Class 4) to Wildlife Management	Approximately 66 acres were changed from Environmentally Sensitive Area (Class 4) to Multiple Resource Management Land – Wildlife Management. These changes are due mainly to better mapping of sensitive areas and adjusting ESA boundaries to include the most sensitive areas. This change also includes existing utility easements that pass through ESAs to ensure any future easement changes are consolidated to those existing easements and prevent habitat fragmentation.
Multiple Resource Management (Class 5) to Environmentally Sensitive Area	Approximately 1,080 acres were changed from Multiple Resource Management (Class 5) to Environmentally Sensitive Area. These changes are due mostly to the creation of ESA 1, ESA 2, and ESA 4 to protect sensitive and unique habitat in those areas. The WMA areas that changed includes tupelo and bald cypress swamps, wetlands, and bottomland hardwood and riparian corridors. The change also includes the protection of known historical and cultural sites which have not been identified in the Master Plan to protect those resources. See Section 5.5 for detailed description of each Environmentally Sensitive Area.
Multiple Resource Management (Class 5) to Project Operations	Approximately 30 acres were changed from Multiple Resource Management (Class 5) to Project Operations. This change reflects the current management practices in those areas that are required for operations and maintenance activities as well as safety and security of users and facilities.
Multiple Resource Management (Class 5) to MRML – Vegetation Management	Approximately 50 acres were changed from Multiple Resource Management (Class 5) to MRML – Vegetation Management. This change is along the narrow shoreline between the Project Operations Area near the dam and project office at the south end of the lake and Campers Cove Park on the western side of the lake.
Multiple Resource Management (Class 5) to MRML – Wildlife Management	Approximately 6,849 acres were changed from Multiple Resource Management (Class 5) to MRML – Wildlife Management. This is mostly a change in name, as the area is still managed for multiple resources with a focus on Wildlife Management.

Proposal	Justification
Lake Area (Class 1 Lake) to No Wake Area	Approximately 114 acres were changed from Class 1 Lake Area to No Wake Area. This change is to protect shoreline and water recreators from large waves caused by boat wakes.
Lake Area (Class 1 Lake) to Open Recreation	Approximately 6,736 acres were changed from Class 1 Lake Area to Open Recreation. This is mostly a change in name, as this area remains open to recreation on the water surface of the lake.
Lake Area (Class 1 Lake) to Restricted	Six (6) acres were changed from Class 1 Lake Area to Restricted. These changes are for the safety and security of users and of project operation facilities.

Note: The land classification changes described in this table are the result of changes to individual parcels of land ranging from a few acres to more than 100 acres. Acreages were measured using GIS technology. The acreage numbers provided are approximate and used for planning purposes.

CHAPTER 9 – BIBLIOGRAPHY

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