

Lake Jackson Ecopassage Feasibility Study Scope-of-Services

PURPOSE

Concerns regarding wildlife kills and motorist safety along the North Monroe Street Corridor between Old Bainbridge Road and Clara Kee Boulevard prompted citizens of Leon County to forward an initiative to Leon County leaders and the Florida Department of Transportation (FDOT). The FDOT took on that initiative by providing funding for a study to assess the opportunities that exist within the corridor to supply a safe passage for wildlife while creating a safer environment for the traveling public. This study, known as the Lake Jackson Ecopassage Feasibility Study, will provide key existing environmental, wildlife and vegetative habitat, land use and public access, and roadway conditions to decision-makers for an implementation strategy. Other major components of the projects include public involvement, addressing permitting issues, habitat enhancement and protection alternatives, conceptual alternatives, and an implementation strategy to re-establish an ecological connection within the Lake Jackson ecosystem for areas separated by North Monroe Street (US 27), and minimize the effects of the roadway on the ecosystem. Ultimately, this project will be seeking funds from the Federal government and therefore all actions completed under this study will be meet or exceed those standards so as not to jeopardize additional funding.

LAKE JACKSON

Lake Jackson is a 4,000-acre sinkhole lake in northwestern Florida located seven (7) miles north of Tallahassee, Florida in the Ochlockonee River basin and is considered one of Leon County's most precious natural resources and is designated as an Aquatic Preserve by the State of Florida. Having a rich variety of wildlife is an integral part of Lake Jackson's ecosystem and should be protected in standing with Lake Jackson's designation as Florida's only lake Aquatic Preserve. This ecosystem was designated in 1974 as the Lake Jackson Aquatic Preserve "for the primary purpose of preserving and maintaining the biological resources in their essentially natural condition."

The water level of Lake Jackson fluctuates widely and is controlled naturally by rainfall and by two primary sinkholes (Porter Hole and Lime Sink). During drought conditions, a lowering of the water table causes leakage into the groundwater through the sinkholes and most of the lake bottom dries, an event that occurred eight (8) times during the 20th century (1907, 1909, 1932, 1935, 1936, 1957, 1982, and 1999) and once during the 21st century (2002), drying on average every 12.5 years. Normal annual water level fluctuations and periodic natural drydowns cause wildlife to attempt to migrate across the road.

During the drought of 1999-2000 in North Florida, Lake Jackson dried completely causing a mass exodus of thousands of animals that attempted to migrate to Little Lake Jackson which is directly across North Monroe Street (US 27). Since February of 2000 over 9,200 vertebrate animals of 57 different species (not including birds) have been documented attempting to cross the 3/4-mile section of North Monroe Street (US 27) at Lake Jackson.

In order to prevent a massive road mortality of migrating animals, a temporary fence using silt fence material was constructed that directed animals into an existing culvert under the road. A 3,000-foot fence along North Monroe Street (US 27) North was completed in April 2000 and has been monitored 2-4 times a per day since construction. A second fence, (2,000 feet in length) was constructed along North Monroe Street (US 27) South to intercept animals that attempted to

migrate across the road when Lake Jackson refilled. It too has been monitored 2-4 times per day since construction. Animals were hand-collected as they moved along the fences, measured, transported by hand across the highway, and released into the water. In 33 months, over 8,000 reptiles and amphibians were saved from a potential deadly situation trying to cross North Monroe Street (US 27) by these temporary fences. However, more than 600 reptiles and amphibians were still road-killed during this period.

Turtles and other wildlife play an important role in lake ecosystems by consuming invasive species of plants like *Hydrilla* and scavenging on dead material. These animals maintain proper ecosystem functioning in Lake Jackson and are important in the lake food web as both predators and prey. Losses of large numbers of these animals to road mortality will compromise the viability of populations and negatively impact the overall ecosystem.

Wildlife that attempts to cross the road represents a major threat to motorist safety. Many adult turtles weigh at least 5 to 10 pounds and are essentially "rocks in the roadway", acting as dangerous projectiles, causing serious damage to vehicles and injury to occupants. On North Monroe Street (US 27), there have been many near misses where vehicles have stopped to help animals or have attempted to veer around animals in the roadway. In addition, there have been at least two recent vehicle crashes involving wildlife including a three (3)-car crash when the driver of a vehicle stopped to move a softshell turtle, and a collision with a 7-ft alligator. Peak migration days can result in hundreds of animals trespassing on to the highway.

NORTH MONROE STREET (US 27)

North Monroe Street (US 27) is a four-lane road that was built directly across a 3/4-mile portion of northwest Lake Jackson, isolating part of the lake to the west now known as Little Lake Jackson, and creating a barrier to movements of a wide range of wildlife. This road connects North Florida and South Georgia to Interstate 10 and into Tallahassee and points south with approximately 23,000 vehicles per day utilizing the corridor in the study project area. The project area is defined as a 4,000-foot section of US 27 that was built across the Lake Jackson basin including all adjacent wetland and upland habitats.

FEASIBILITY STUDY

To address the wildlife mortality, habitat fragmentation, and traffic safety concerns, the Florida Department of Transportation (FDOT) has provided the funding to prepare a Lake Jackson Ecopassage Feasibility Study (hereafter known as Feasibility Study) to lay the groundwork (including conceptual plans) for the development of an ecopassage where North Monroe Street (US 27) crosses the Lake Jackson basin.

The end product of this project will provide the necessary documentation to the FDOT and Federal Highway Administration, that ensures this project complies with all Florida and Federal codes and regulations as they pertain to environmental, transportation, and public involvement. The project will require coordination between several Federal, State and local agencies and departments to adequately address the needs of all interested parties to the fullest extent possible.

STUDY COMPONENTS

Task 1: Goals and Objectives

The Consulting Team in coordination with the MPO, Lake Jackson Ecopassage Advisory Group and FDOT will establish a set of Feasibility Study Goals and Study Objectives. These may be subject to revision as the Feasibility Study process proceeds, however, they are necessary as a starting point. Goals of the Feasibility Study will be developed to address solutions to identified problem areas as much as possible to the benefit of native flora and fauna. Study objectives will likely include developing the data necessary to implement enhancement projects and apply for environmental permits.

Subtask 1.2 Products

A Feasibility Study Goals and Study Objectives statement will be prepared in a memoranda report. A draft version of the aforementioned shall be submitted, reviewed and finalized. The memoranda will become a chapter in the Final Lake Jackson Ecopassage Feasibility Study.

Task 2: Public Involvement

Concurrent with Tasks 3, 4, 5, and 6 Task 2 will proceed with a series of community workshops and meetings aimed to integrate community concerns into the Feasibility Study (including Focus Workshops, Community Meetings, and Lake Jackson Ecopassage Advisory Group Meetings). These meetings will be organized, conducted and documented as a collaborative effort between the Consulting Team, MPO, and the FDOT.

The Consulting Team will coordinate this effort, organizing and documenting the Focus Workshops (mailing lists, participant organization, meeting room setup). A summary of meeting results shall be compiled after each meeting and circulated for review. The workshop summaries will be posted on the project web-site.

Subtask 2.1 Focus Workshops

Focus Workshops will occur in the early phases of the project and will involve the collection of information regarding problem identification, surveys for information and setting objectives.

The purpose of the Focus Workshops is to introduce existing conditions, present the Feasibility Study structure and development process, present the results of previous Focus Workshops, receive community feedback, and to present and receive feedback on a preliminary set of goals and objectives.

Subtask 2.2 Community Meetings

Community Meetings will be held as follows unless modified by the client team:

1. Community Meetings will be held during Task 3 with the purpose of presenting Opportunities and Constraints for the overall Feasibility Study and projects and to gain support for alternative development criteria (Task 3);
2. Community Meetings will be held during Task 4, the Identification of Potential Alternatives to present and receive comment on developed alternatives and to present the Draft Lake Jackson Ecopassage Feasibility Study recommendations, and
3. Community Meetings will be held during Task 6 to collect and address comments for preparation of the Draft Lake Jackson Ecopassage Feasibility Study.

Subtask 2.3 Lake Jackson Ecopassage Advisory Group

The Lake Jackson Ecopassage Advisory Group will meet, as necessary, during key components of the project.

Subtask 2.4 Products

Records and Summary of each meeting results (written notes and audio) will be prepared in a memoranda report. A draft version of the aforementioned shall be submitted, reviewed and finalized. The memoranda will become a chapter in the Final Lake Jackson Ecopassage Feasibility Study.

Task 3: Historical and Existing Conditions Database

The objective of this task is to develop a working understanding of how current conditions developed historically and how hydrologic and physical conditions affect natural resources.

Subtask 3.1 Characterization of Historical Conditions and Changes

The relationship between the historical and current distribution of wetlands and uplands will be documented and displayed in successive overlays of time periods. Key hydraulic structures will be mapped, documented and entered into a GIS database.

To estimate historic wildlife habitat conditions, the study will require an assessment of the potential and actual occurrences of all species and/or habitats within the project area. Additionally, historic accounts for incidental sighting of rare, threatened or locally unique species/resources in the project area will be documented.

A series of maps will be prepared depicting changes in habitat types. Existing data on the biological resources in project area and surrounding areas will be reviewed as a basis for

understanding of historical and existing conditions and understanding of the region-wide implications of any future recommended enhancement objectives.

Subtask 3.2 Characterization of Existing Conditions

Physical Conditions: Hydrology and Geomorphology

Existing physical conditions will be documented using existing information supplemented with new data collected at key sites. The purpose will be to develop relations between wetland hydrology, geomorphology, vegetation occurrence, and aquatic and upland habitats.

Detailed topographic data and survey data will be collected at key points as part of this study at locations such as highway right-of-way, wetland delineation boundaries, key hydraulic control structures, and/or where enhancement projects could occur.

Data collection will focus on obtaining key pieces of hydrologic data including wetland hydroperiod (the spatial and temporal characteristics of inundation); exceedance tables for water levels at North Monroe Street (US 27), watershed hydrology (the quantity and distribution of water in the surface and subsurface) and hydraulics (the characteristics of flow in channels and marshes). This data will be used to correlate vegetative and habitat conditions to land/water interactions. The approach will be a combination of data collection:

- a. Collect water surface elevation data using continuously recording gauges at key points of interest and/or from historic data at the North Monroe Street (US 27)/ Lake Jackson gauge,
- b. Topographic surveys will be conducted at key locations where local hydraulic conditions are important to understanding hydrology and/or where enhancement projects could take place,
- c. Topographic data shall be collected to the extent possible given the objective of developing "conceptual plans" and available project resources,
- d. Basic water quality data will be collected periodically as opportunities arise during field monitoring to document basic parameters. A water quality database will be assembled in the GIS system using data from previous studies and newly collected data from this project. All resources will be compiled and added, including existing databases, and
- e. Key physical elements, including but not limited to bridges, roads, storm drains, and ditches, will be mapped on aerial photographs, documented in the field to the extent possible and added to a GIS database. Soils and geology will be mapped as resources.

Vegetation and Wildlife Habitat

Current aerial photos of the project area will be reviewed to ascertain the type and distribution of vegetation types within the project area. The available aerial photos will be

examined to determine which existing set best serves the purpose. The selected aerial photograph will be used as a base GIS layer upon which information will be added. Habitat types, plant communities (and distributions), land uses, and hydrologic features within the area will be mapped and depicted as a GIS map layer. The mapping from aerial photos will be refined through field checking at publicly accessible locations as described below.

Habitats identified during the aerial photo review will be ground-truthed during the field surveys. Occurrence data of known and/or suitable habitat for all species, sensitive habitats, as well as migration corridors for wildlife, will be collected in field surveys or from existing databases. These resources will be depicted on GIS-derived project base maps. Areas of concern may be problem areas prioritized for enhancement or existing valuable habitat areas to be preserved/managed.

Special Status Species

The project area will be evaluated for the known occurrence and potential for special status species (listed rare, threatened and endangered species and sensitive habitats). Special status plant and animal species identified as occurring in the region will be searched for in the field. Special status species will include those listed by Federal or State agencies, and species of special concern. Habitats of importance will also be identified. Known occurrences (based on previous data and/or observations) as well as potential habitat will be demarcated onto the GIS-based maps.

The project area will be evaluated for the known occurrence and potential for invasive, non-native species. Plant and animal species identified as occurring in the region and as observed during field reconnaissance surveys will be identified and depicted in a GIS-layer. Vegetation and habitat conditions will be examined in relationship to hydrologic and land use changes.

Common Species

The previous section spoke to Special Status Species, and not to common species. It needs to be clear that any potential mitigative action(s) will likely target common species. Therefore, the same level of detail needs to be made towards gathering information regarding common species within the corridor.

Aquatic and Fisheries Habitat

Existing data on fisheries and aquatic habitat within the project area will be compiled. This would result in a species list, including rare, threatened and endangered species.

Land Use and Public Access

Land use mapping depicting urban uses will be drawn from current aerial photography added to the vegetative mapping. In addition, cultural resources and public access will be mapped

from existing sources and added as GIS layers. Existing public access will be mapped for comparison with land ownership.

A broad overview of land use, land ownership and leasing, and economics will be prepared for the project area. This will help identify opportunities for cooperative partnerships for multi-benefit projects involving enhancement and restoration projects.

Roadway Conditions

The Feasibility Study will include a historical account of the North Monroe Street Corridor. This includes an evaluation of the exterior stability of the current roadbed and core samples. Additional information regarding the roadway should include the effects of the roadway on the ecosystem. The information gathered in this effort will be incorporated into a series of maps for Existing Conditions Database.

Subtask 3.3 GIS Analysis

The preparation of GIS maps and analyses as necessary to accomplish planning tasks and to develop enhancement strategies. All relevant data shall be added to the GIS database including but not limited to those features described including historical data, soils, infrastructure, biological data, parcel maps, land ownership, and roadway geometry and conditions. The format of the GIS database shall be coordinated with the Tallahassee-Leon County Metropolitan Planning Organization (MPO) and the FDOT. At a minimum, it is anticipated that maps depicting historical data, soils, infrastructure, biological data, parcel information, land ownership, hydrology, vegetation, water quality and habitat maps will be compiled.

Subtask 3.4 Identify Additional Studies

Compilation of existing data could create a need for new data. As soon as feasible, a recommendation for additional data should be made to the client team.

Subtask 3.5 Products

The Historical and Existing Conditions Database covering topics listed and discussed above shall be compiled into an Existing Conditions document. This document will include supplemental maps, charts, tables, photographs and graphs. The document shall be distributed in draft form and then finalized to become a technical appendix to the Feasibility Study. It is envisioned that the Feasibility Study will be a concise document readable to decision makers and laypersons; detailed information would be available in the Technical Appendices. The GIS database elements and maps can be made available over the Internet or on CD-ROM (downloadable PDF files).

Task 4: Analysis of Stresses, Opportunities and Constraints**Subtask 4.1 Physical, Social and Economic Conditions**

Stresses (*i.e.* factors that cause degraded conditions), opportunities for mitigation and constraints related to physical, social, economic and/or regulatory conditions and the project goals will be developed. Specific problems will be defined and documented. Key issues will be migratory and hydrologic needs of wildlife, habitat restoration, and water quality protection and flood control needs of surrounding land uses. Economic analysis is an essential component to this assessment.

Subtask 4.2 Environmental Resources

Environmental problems that currently occur in the project area will be identified. Possible stresses in the project area include: inadequate setbacks/ buffer between land uses and sensitive habitats, fragmentation of wildlife habitats and migration corridors by the roadway, degradation of sensitive species habitat and erosive/substrate conditions that are not conducive to vegetation establishment/wildlife habitat enhancement. Opportunities for enhancement for stressed areas will be identified and may include: structures to reduce wildlife road-kill, reestablishment of the ecological connection with under-roadway passages, reestablishment of native vegetation to restore connectivity with off-site habitat corridors, improvement of hydrologic conditions through drainage modifications and/or earthwork, and expansion of habitat and buffer areas in a manner compatible with both current land use and the aesthetic character of Lake Jackson vistas

Subtask 4.3 Land Use and Public Access

The Consulting Team will analyze opportunities and constraints related to land use, zoning infrastructure and public access. These will be related and considered with wildlife and habitat enhancement and resource management.

Subtask 4.4 Products

An "Opportunities and Constraints Report" shall be prepared in draft and final form by the Consultant through the MPO and the FDOT. The report will become a chapter in the Final Lake Jackson Ecopassage Feasibility Study.

Task 5: Identification of Potential Enhancement and Protection Alternatives

Using the available data generated in Tasks 1, 2, and 3 the Consulting Team will identify critical areas, solutions and alternatives for implementation resource protection and enhancement actions. The entire Consulting Team will identify physical, engineering, land use and economic strategies for establishing feasible wildlife and habitat protection and restoration with multiple benefits for other concerns, such as agriculture, agencies and the community.

As described above, the alternatives will likely be a compilation of management measures, specific restoration projects, programs and other actions. These must be described and assessed for impacts and benefits on an individual and cumulative basis. The Consulting Team, MPO, and the FDOT will prepare a matrix of the individual Feasibility Study elements versus Feasibility Study Goals for analysis. Unknown factors will be presented as possible limitations, such as funding sources or remediation costs. These factors will be defined with recommended measures to improve understanding for decision makers.

Subtask 5.1 Products

The Consulting Team, working with the MPO and the FDOT, shall prepare a draft and final "Alternatives Considered and Preferred Alternative" document.

Task 6: Recommendations For Enhancement and Protection

Subtask 6.1 Recommended Wildlife and Habitat Enhancement Projects and Measures

The Consulting Team will identify specific projects and management measures that are most beneficial, based on the analysis in Task 4. The projects will likely draw resources from other agencies and available research programs from this and other sites, including existing data on effectiveness of such projects and designs at other sites with similar species compositions. An implementation strategy will be developed for each project and management measures.

Site-specific hydrologic enhancement and restoration of degraded habitat areas will be developed, including conceptual plans for wildlife passages, guidewall structures, earthwork, construction, hydraulic structures, and other options for reconnecting fragmented aquatic and terrestrial habitats. Such plans will include enhancement measures and design alternatives for all wildlife species identified at this site while maintaining the aesthetic quality of lake vistas. Overall post-construction guidelines for long-term maintenance requirements of enhancement measures and monitoring guidelines shall also be included. The plans must have credible engineering logic with local, state, and Federal institutions having the resources to implement and maintain the projects.

Subtask 6.2 Environmental Compliance and Permitting Issues

The Feasibility Study will include a discussion of the necessary Federal, state, and local permits required for implementation of the enhancement alternatives identified in Task 5.1.

Subtask 6.3 Implementation Strategy

The enhancement alternatives identified in Task 5.1 will be prioritized using a balance of considerations including: Lake Jackson Ecopassage Advisory Group and community input, economic viability and landowner cooperation. Priority projects involving construction will be developed to a conceptual level. Any additional studies necessary for preparation of

detailed design of enhancement will be identified. The strategy for implementation will include a proposed schedule and preliminary cost estimates.

Subtask 6.4 Products

The Draft and Final Lake Jackson Ecopassage Feasibility Study will describe projects, best management practices, policies, and to the extent feasible a set of enhancement projects, developed to the conceptual level. The report shall include a written summary of regulatory and permitting issues for the overall Feasibility Study and the set of enhancement projects. An implementation plan will be developed to provide direction for implementing the management measures.

Task 7: Lake Jackson Ecopassage Feasibility Study

The Feasibility Study will be a concise document and will be targeted to the decision maker and layperson audience. It will be supported by technical appendices and will include the elements listed above.

The anticipated Feasibility Study chapters are as follows:

Executive Summary

Problem Statement

Lake Jackson Ecopassage Feasibility Study Goals and Objectives

Study Methodology used for the Lake Jackson Ecopassage Feasibility Study

Physiographic and Biological Setting

Opportunities and Constraints Report

Alternatives Considered and Identification of Preferred Alternative Description of Enhancement Projects

Implementation Plan

Environmental Review Process

Technical Appendices will be developed to provide backup data and information in more detail for those who desire deeper understanding. The Technical Appendices shall also provide the details and technical basis for environmental review and permitting.

Subtask 7.1 Prepare Draft Lake Jackson Ecopassage Feasibility Study

The Feasibility Study will be prepared in administrative and public draft versions by the Consulting Team. It is anticipated that the MPO, FDOT and Lake Jackson Ecopassage Advisory Group will review and approve the Draft Lake Jackson Ecopassage Feasibility Study. As described above, the Feasibility Study will be a concise document; the technical appendices will contain detailed information.

Subtask 7.2 Prepare Final Lake Jackson Ecopassage Feasibility Study

The Final Feasibility Study will be prepared after administrative and public review. A master copy and a digital copy shall be provided to the MPO and the FDOT. The MPO and the FDOT will approve the Final Lake Jackson Ecopassage Feasibility Study.

Subtask 7.3 Products

Draft and Final Lake Jackson Ecopassage Feasibility Study reports and appendices will be provided in both paper and digital format. The digital format documentation includes an interactive CD for use by both public and private organizations and citizens.

MAJOR RESPONSIBILITIES

1. Department Responsibilities

The Department will have the following responsibilities:

- a. Appoint a Project Manager to work on the update with the MPO and Consultant,
- b. Provide timely review of all materials and documents as submitted by the Consulting Team through the MPO,
- c. Provide complete documentation (to the extent that it exists), in a timely manner, on past experiences on wildlife passage projects, including reports, memoranda, datasets, computer input, maps, and other information deemed necessary by both the MPO, the Consultant and the Department for the completion of this contract,
- d. Assist in developing the Goals and Objectives,
- e. Assist in the development of alternatives, and
- f. Assist in the development of the recommended plan.

2. Metropolitan Planning Organization Responsibilities

The MPO will have the following responsibilities:

- a. Appoint a Project Manager for all Consultant and Department contact,
- b. Provide coordination and communication with other agencies,
- c. Provide the Consultant with all available documentation (data base, maps, etc.) in the area,
- d. Assist in conducting the public meetings, including the public hearing,
- e. Provide timely reviews of all material and documents as submitted by the Consultant as specified herein,
- f. Assist in developing the Goals and Objectives,
- g. Assist in the development of alternatives, and
- h. Assist in the development of recommended plan.

3. Consultant Responsibilities

The Consultant will have the following responsibilities:

- a. Appoint a Project Manager for all MPO and Department contact,
- b. Refining the Scope of Services during negotiations,
- c. Coordinate the scheduling of advertising, identifying meeting locations, copying handouts for the various technical meetings and the citizen's involvement process meetings and public hearing including transcripts of those meetings and hearings,
- d. Draft and develop graphics, write and edit the required technical memoranda and reports concurrent with the project progress,
- e. Coordination with the Federal Highway Administration, Florida Department of Transportation, Metropolitan Planning Organization, Northwest Florida Water Management District, Leon County Growth Management, U.S. Fish and Wildlife Service, Army Corps of Engineers, Florida Fish and Wildlife Conservation Commission, and other effected federal, state and local agencies.
- f. Develop, evaluate, and recommend the Draft Lake Jackson Ecopassage Feasibility Study to the MPO, FDOT and the Lake Jackson Ecopassage Advisory Group,
- g. Refine the Draft Lake Jackson Ecopassage Feasibility Study and submit the Final Lake Jackson Ecopassage Feasibility Study to the MPO and FDOT for approval,
- h. Document the procedures and techniques used by all involved participants in the study,
- i. Ensure compatibility with TEA-21 Enhancement Project requirements,
- j. Make presentations with applicable graphics to local communities and the public for input in plan evaluation and for plan selection and adoption,
- k. Provide the MPO technical memoranda and reports and all final products on CD(s) in word processing software currently in use for the MPO staff and the Department,
- l. Develop and maintain the project web-site for the duration of the project, and
- m. Prepare the mail-outs for the public information meetings. This includes the photocopying, folding, and stuffing of the documents necessary for public review and the files necessary for up-loading to the project web-site.

4. Other Local, State, and Federal Responsibilities

- a. Provide timely review of all materials and documents as submitted by the Consulting Team through the MPO,
- b. Provide complete documentation (to the extent that it exists), in a timely manner, on past experiences on wildlife passage projects, including reports, memoranda, datasets, computer input, maps, and other information deemed necessary by both the MPO, the Consultant and the Department for the completion of this contract,
- c. Assist in developing the Goals and Objectives,
- d. Assist in the development of alternatives, and
- e. Appoint a *single point of contact* for the responsible agency, department or organization.