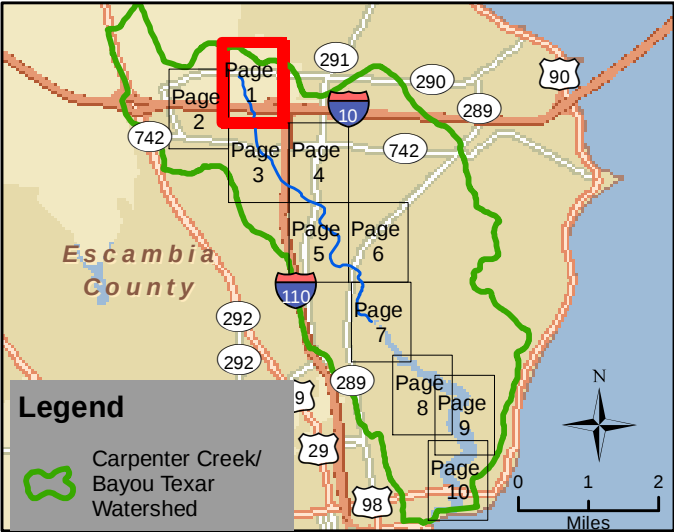
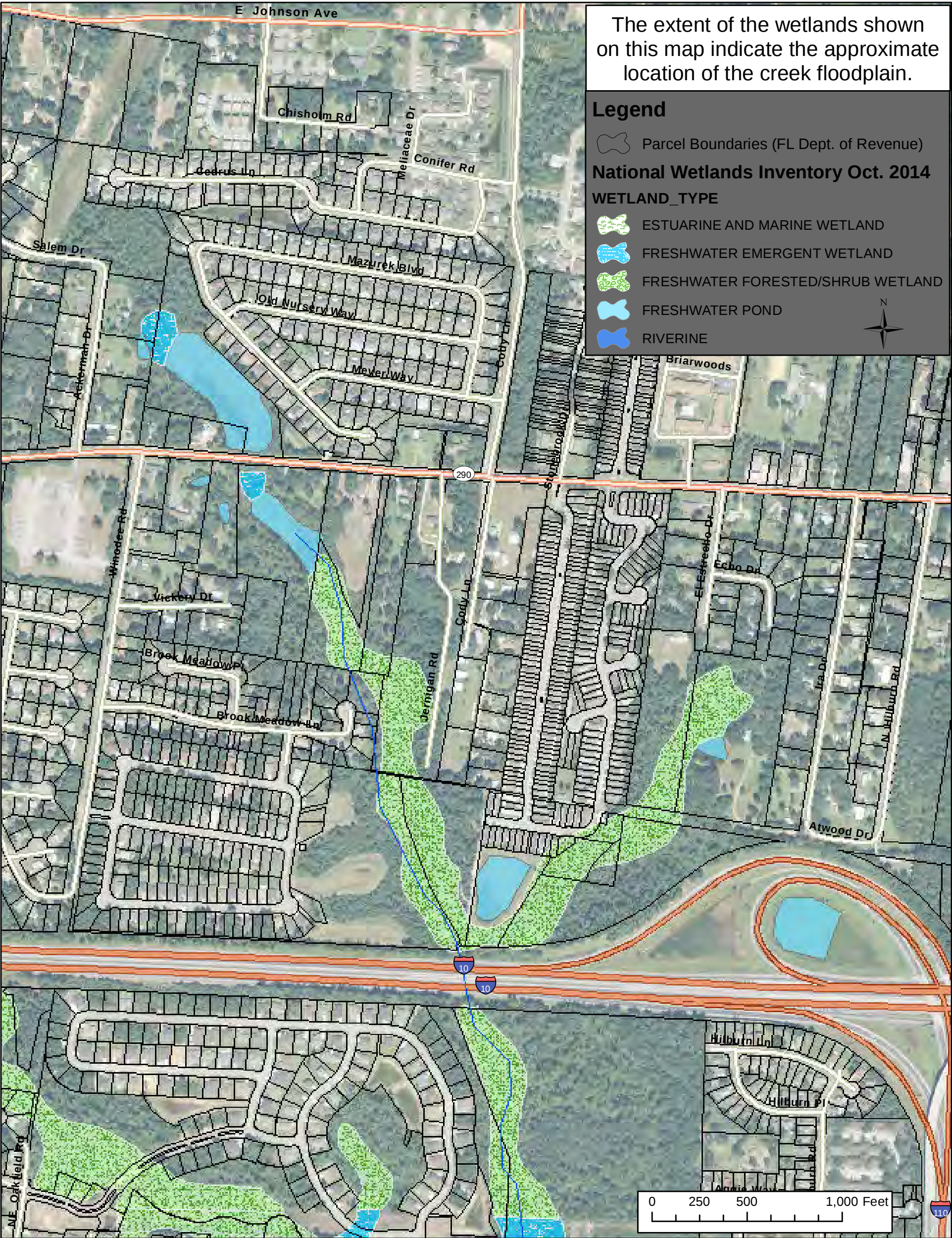
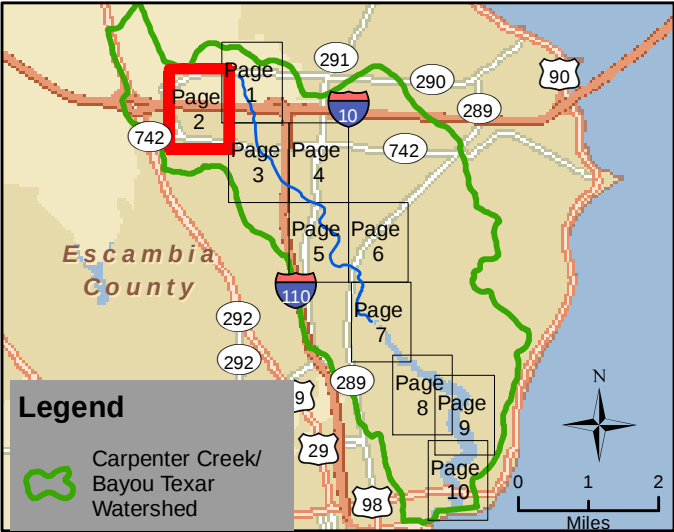


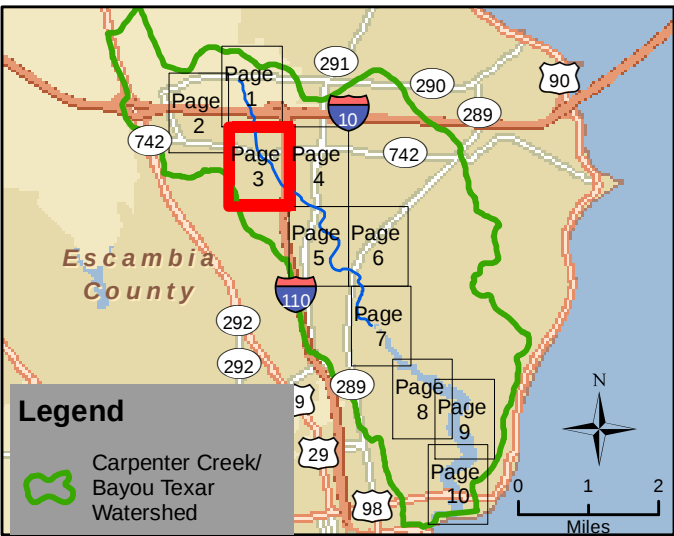
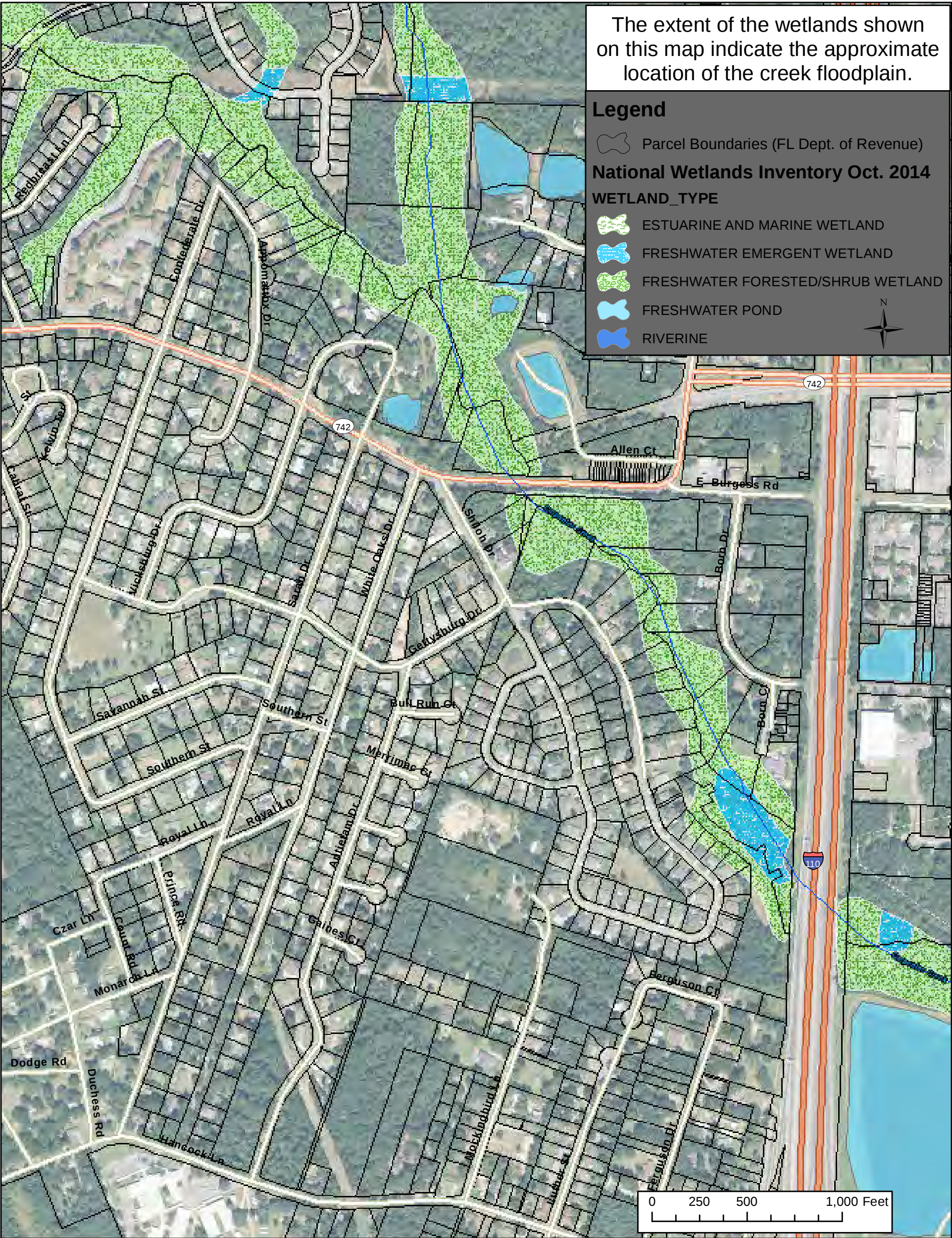


Wetlands Within Carpenter Creek and Bayou Texar

Page 1

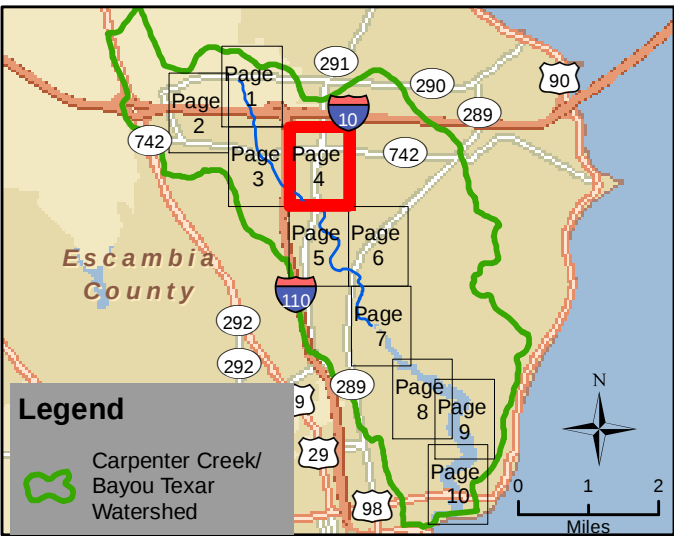
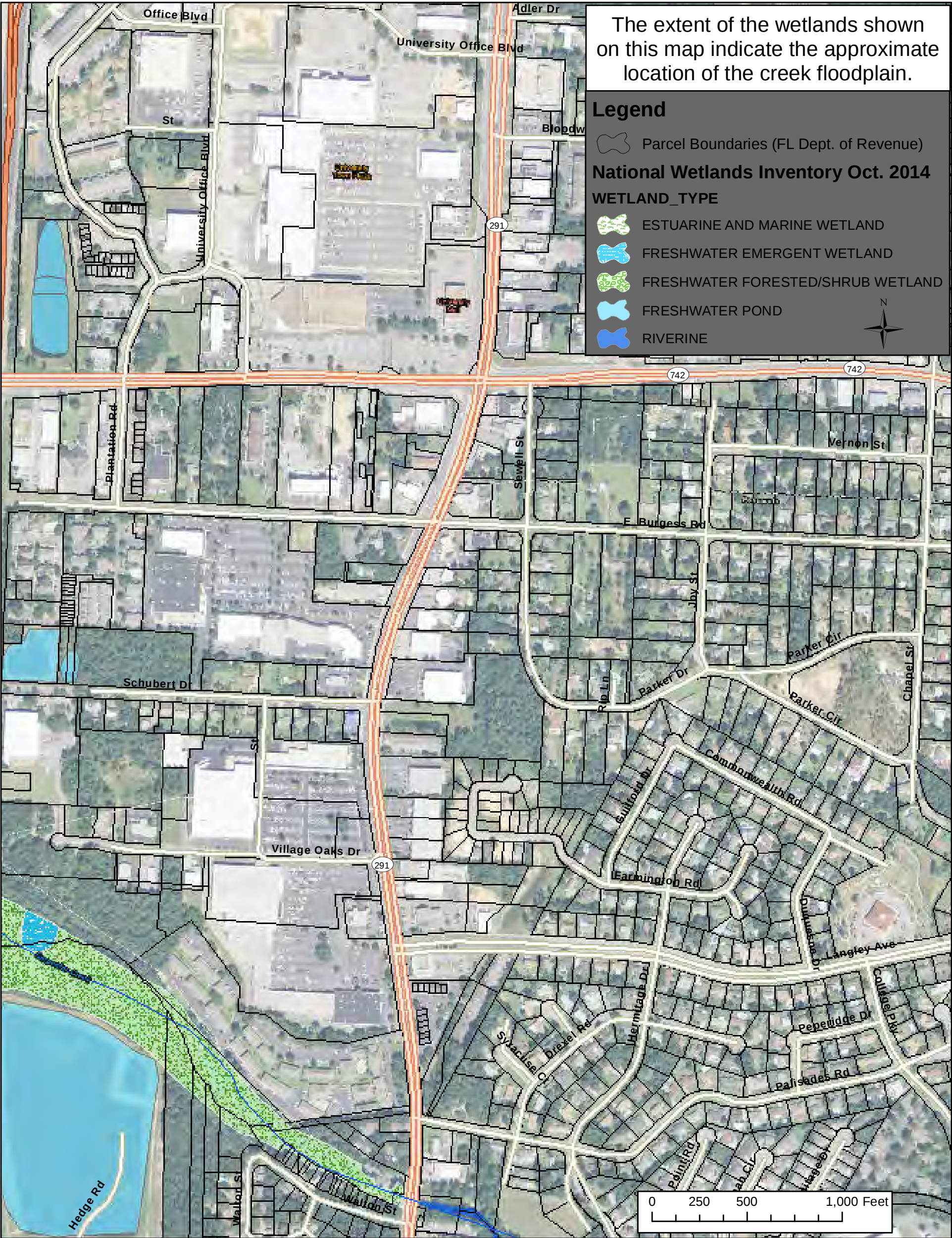


Wetlands Within Carpenter Creek and Bayou Texar



Wetlands Within Carpenter Creek and Bayou Texar

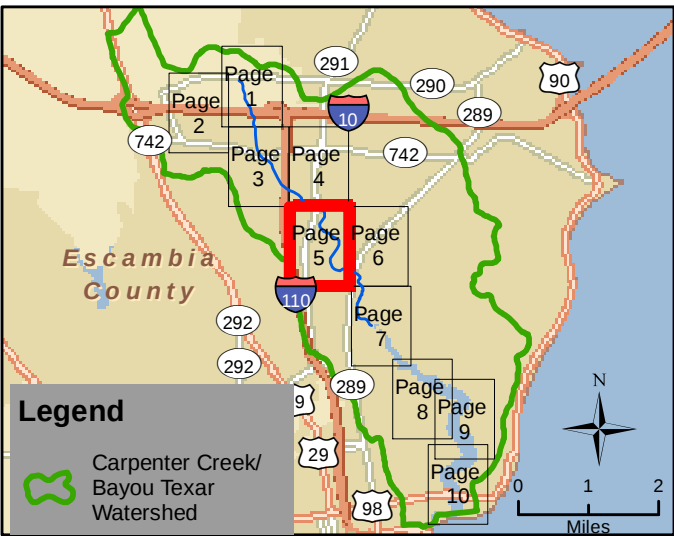
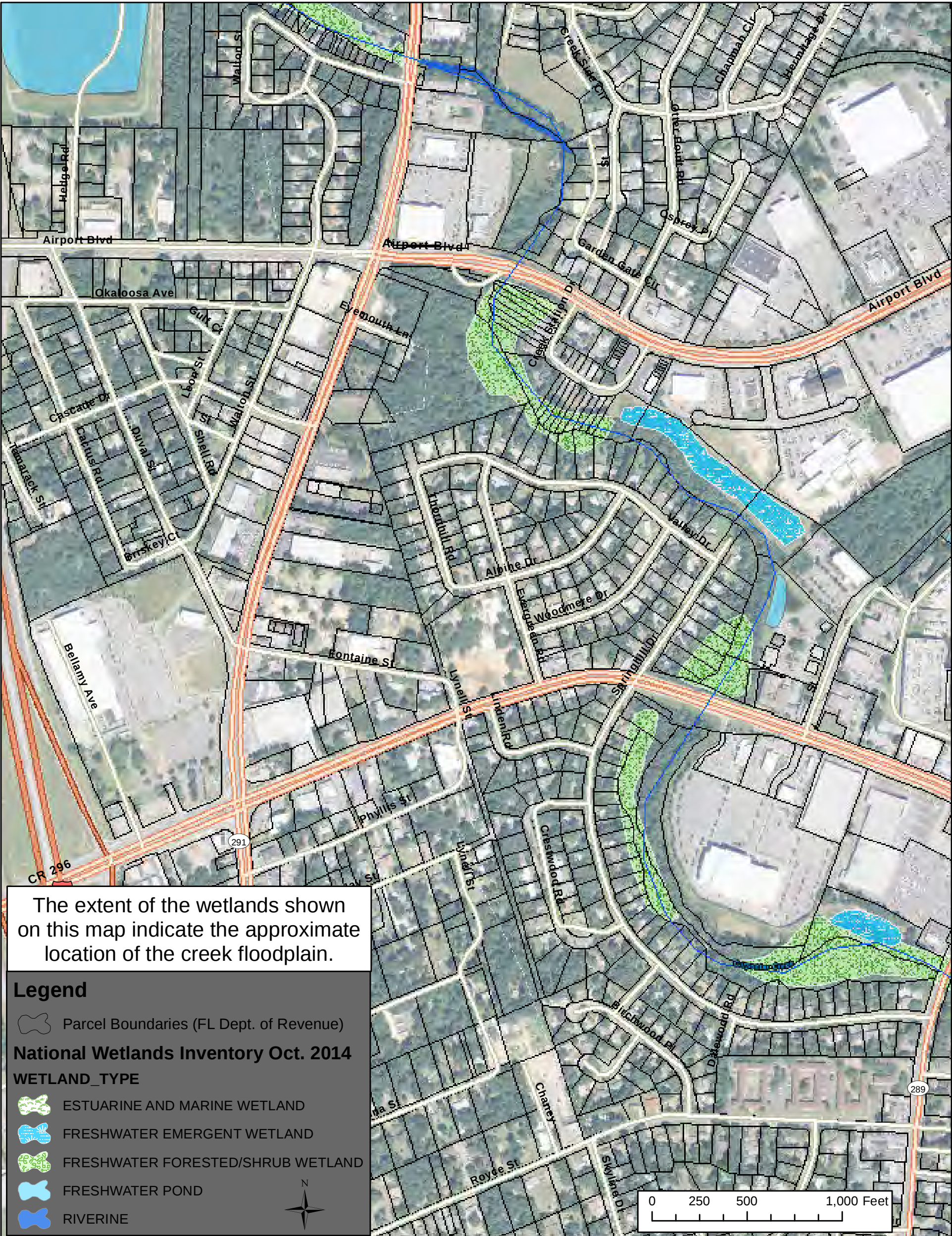
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Wetlands Within Carpenter Creek and Bayou Texar

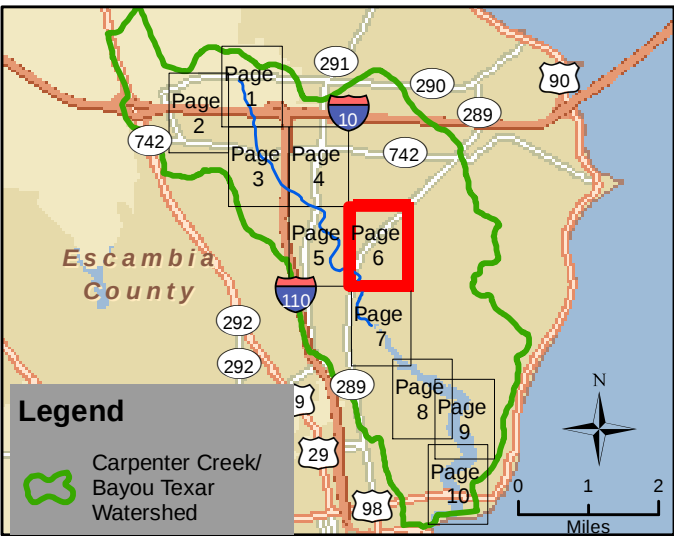
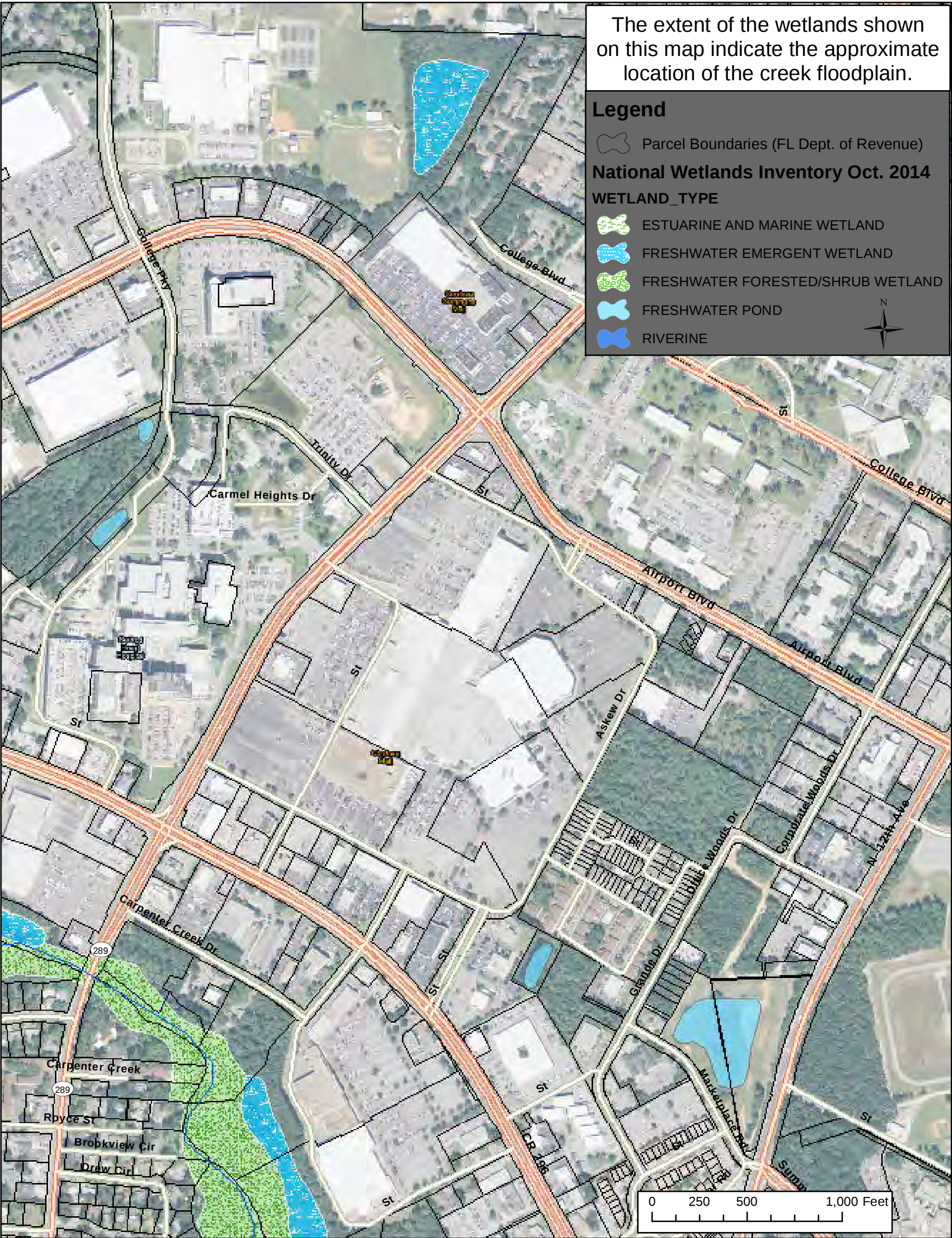
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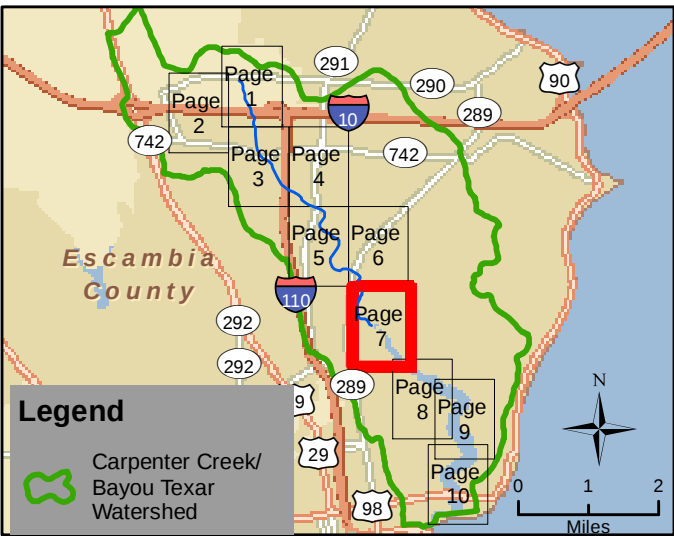
Wetlands Within Carpenter Creek and Bayou Texar



Wetlands Within Carpenter Creek and Bayou Texar

Page 6



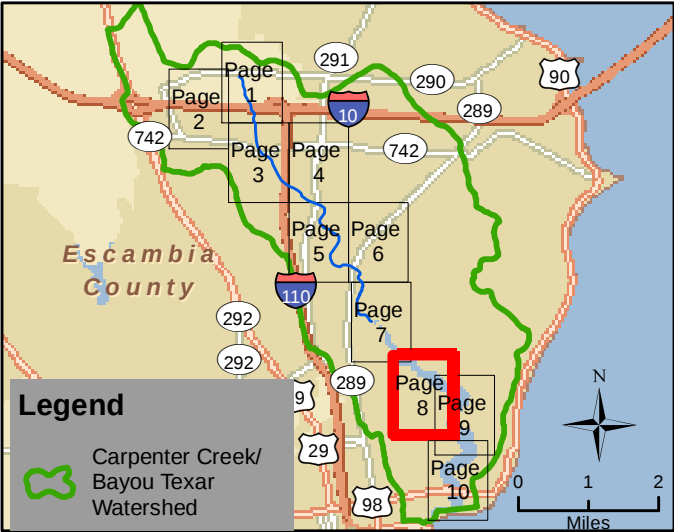


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Wetlands Within Carpenter Creek and Bayou Texar

Page 7



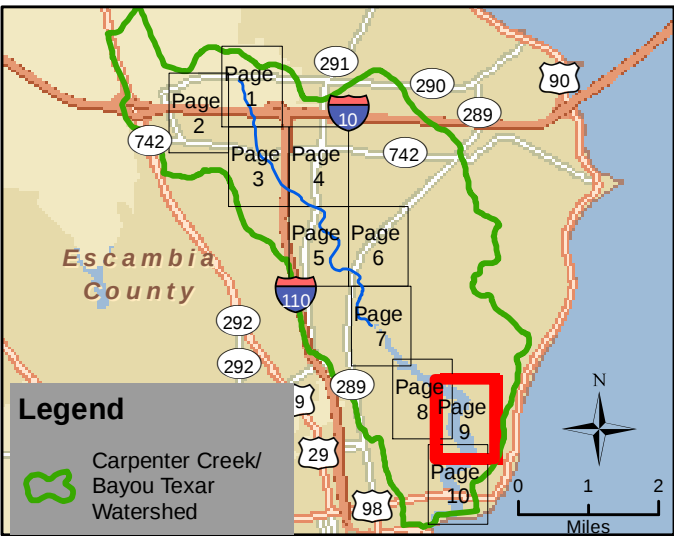
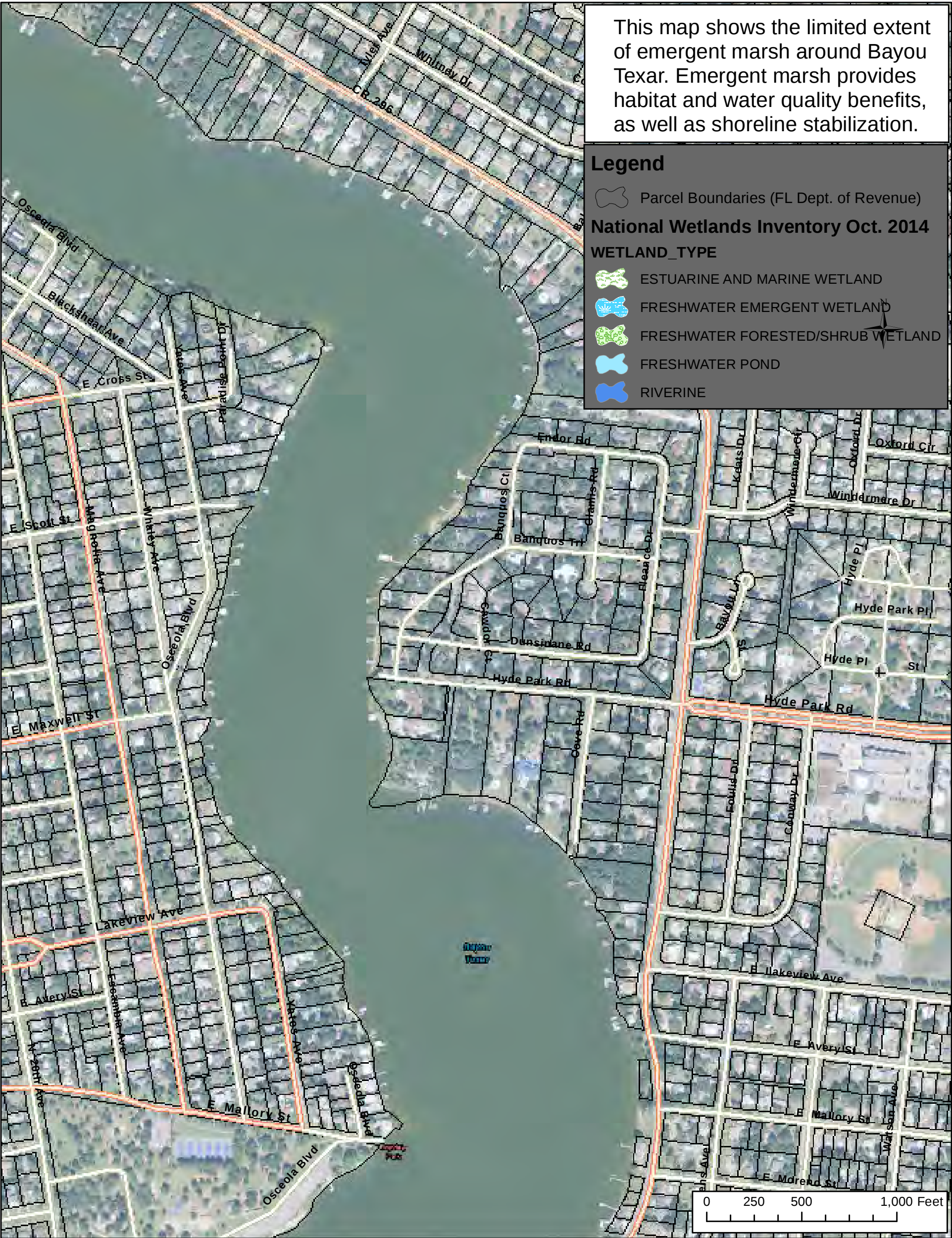


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Wetlands Within Carpenter Creek and Bayou Texar

Page 8

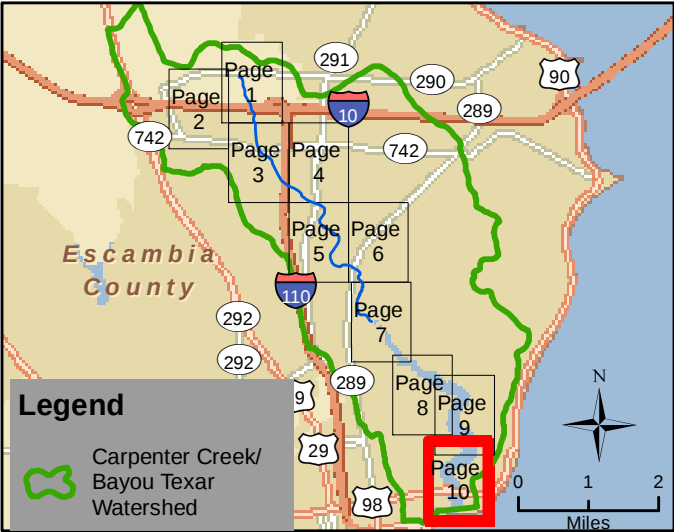




Wetlands Within Carpenter Creek and Bayou Texar

Page 9





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Wetlands Within Carpenter Creek and Bayou Texar

Proposal for Escambia County RESTORE Act Funds:

Carpenter Creek and Bayou Texar Economic and Environmental Revitalization Plan

Proposed by



in collaboration with



and



Other partners/supporters include:

University of West Florida
Escambia County
Bay Area Resource Council
Escambia County UF IFAS
Washington High School
Marine Science Academy
Pensacola Rowing Club
YMCA of NW Florida
Bream Fishermen Association
East Hill Neighborhood Association
Florida Native Plant Society
Scenic Highway Foundation
and many others

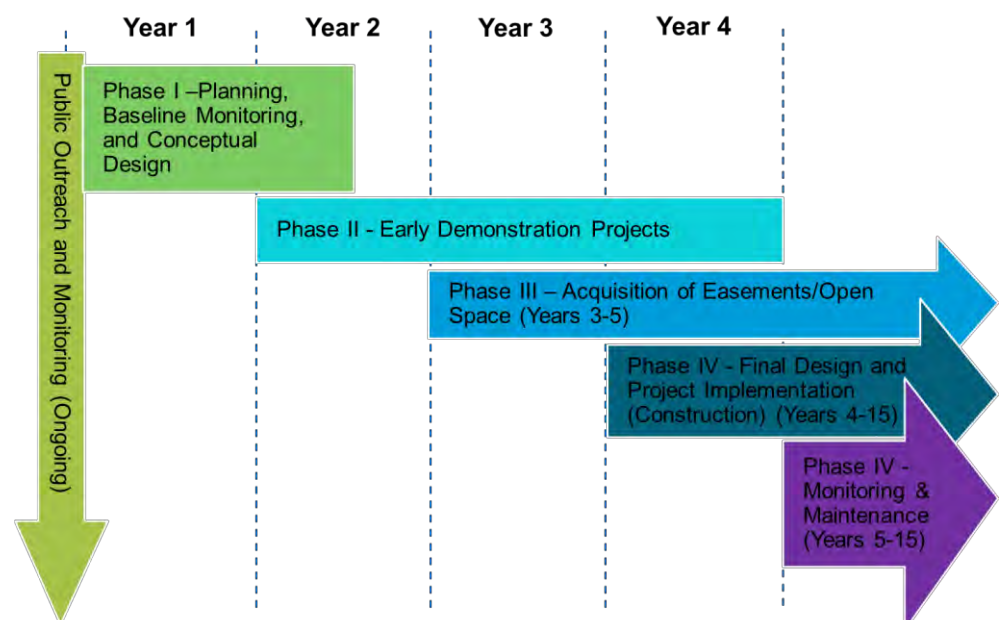
Vision

Carpenter Creek is a hidden treasure in the landscape of urban Pensacola and is the key to restoring the vitality of Bayou Texar. For the past several decades, the Creek's ecological significance has been neglected as development has continued to sprawl along its banks. The purpose of this proposal is to create and implement a foundational approach for revitalizing this urban creek environment. With RESTORE funds as seed money, we have an opportunity to leverage multiple public and private grants and other funding sources to create a sustainable long-term restoration effort with the vision of improving water quality in Bayou Texar and stimulating economic development along the banks of Carpenter Creek. Now is the time to help the community see the potential for Carpenter Creek to become a greenway in the midst of urban development and centerpiece of economic opportunities. Our vision is a corridor of flowing water with healthy populations of fish and birds; a meandering greenway with trails, footbridges, and boardwalks; lush vegetation, gurgling riffles and inviting pools; as well as streamside dining and entertainment.

Proposed Project

The West Florida Regional Planning Council, in collaboration with the Panhandle Watershed Alliance, and Ecology and Environment Inc., is developing a proposal to create a master plan for the long-term, comprehensive, economic and environmental revitalization of Carpenter Creek and Bayou Texar. By taking a watershed approach and weaving natural spaces and processes into the built environment, our project aims to restore ecosystem functionality and improve water quality.

Our Approach



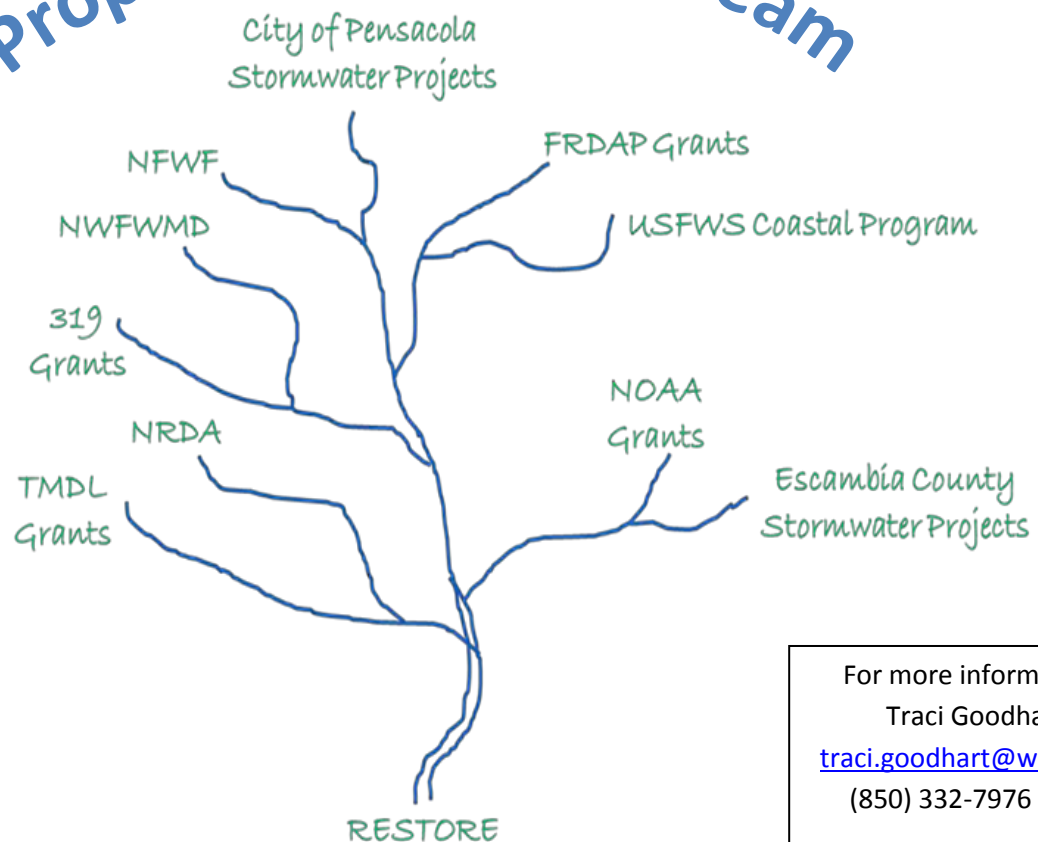
For more information: Traci Goodhart, traci.goodhart@wfrpc.org, (850) 332-7976 x 222

Benefits

1. Community resilience by reducing risks from flooding/erosion
2. Community health via:
 - a. Enjoyable, green spaces and infrastructure that are accessible to all, potentially including those undergoing nearby healthcare;
 - b. Cleaner Bayou Texar for swimming, boating, and fishing; and
 - c. Cleaner air, through the expansion of open spaces and natural vegetative communities.
3. Economic revitalization, through:
 - a. Increased opportunities for employment, during the design, construction, and operation of the many improvements (e.g., community parks, stormwater treatment systems, trail systems, etc.) that come out of this planning process, as well as long term jobs associated with recreational opportunities;
 - b. Increased access to, and appreciation of, historical and cultural resources;
 - c. Increased visitation to the area for participation in low-impact recreation, including opportunities for ecotourism destinations;
 - d. Increased values of adjacent/nearby properties due to reduced flooding/erosion, enhanced commercial appeal of streamside businesses (either for recreation-related businesses or aesthetic appeal for outdoor dining or entertainment); and
 - e. Reduced frequency and cost for dredging Bayou Texar.
4. Recreational opportunities, including kayaking, canoeing, bird/wildlife observation, fishing, biking, hiking, walking, and geocaching.
5. Wildlife enhancement, through conservation easements, habitat restoration/preservation, and establishment of a wildlife corridor.
6. Abundant/healthy seafood within Bayou Texar.
7. Educational opportunities (e.g., students in STEM fields, environmental outreach, etc.).
8. Implementation of local plans.
9. Aggressive leveraging of funds, with a goal of 5:1 return on investment.



Proposed Funding Stream



For more information:

Traci Goodhart

traci.goodhart@wfrpc.org

(850) 332-7976 x 222

Proposed Schedule and Budget

Carpenter Creek and Bayou Texar Economic and Environmental Revitalization Plan

Phase	Description	Schedule	Funding Source	Year 1	Year 2	Year 3	Year 4	Year 5	Years 6-10 (5 years)	Years 11-15 (5 years)	Direct Component Request	Other Funding (including In- Kind Match)	Total Budget (including all funding sources)
I	Public Outreach, Planning, Baseline Monitoring, and Conceptual Design	Months 1-18	Escambia RESTORE	\$ 665,000	\$ 425,000						\$ 1,090,000	\$ -	\$ 1,090,000
			Other Funding (Including In-Kind Match)	\$ -	\$ -								
II	Early Demonstration Projects, Public Outreach (continued), and Monitoring	Months 12-48	Escambia RESTORE		\$ 300,000	\$ 450,000	\$ 600,000				\$ 1,350,000	\$ 1,355,000	\$ 2,705,000
			Other Funding (Including In-Kind Match)		\$ 150,000	\$ 275,000	\$ 330,000	\$ 600,000					
III	Acquisition of Easements/Open Space	Months 24-60	Escambia RESTORE			\$ 150,000	\$ 150,000	\$ 130,000	\$ -	\$ -	\$ 430,000	\$ 1,750,000	\$ 2,180,000
			Other Funding (Including In-Kind Match)			\$ 100,000	\$ 150,000	\$ 300,000	\$ 800,000	\$ 400,000			
IV	Final Design and Project Implementation (Construction)	Years 4-15	Escambia RESTORE				\$ 500,000	\$ 750,000	\$ 1,000,000	\$ 1,500,000	\$ 3,750,000	\$ 36,150,000	\$ 39,900,000
			Other Funding (Including In-Kind Match)				\$ 750,000	\$ 2,900,000	\$ 15,000,000	\$ 17,500,000			
V	Monitoring (continued), Public Outreach (continued), and Maintenance	Years 5-15	Escambia RESTORE					\$ 150,000	\$ 600,000	\$ 600,000	\$ 1,350,000	\$ 1,600,000	\$ 2,950,000
			Other Funding (Including In-Kind Match)					\$ 200,000	\$ 800,000	\$ 600,000			
Total				\$ 665,000	\$ 875,000	\$ 975,000	\$ 2,480,000	\$ 5,030,000	\$ 18,200,000	\$ 20,600,000	\$ 7,970,000	\$ 40,855,000	\$ 48,825,000

= Future Funding Request

Proposed Itemized Budget for Phases I and II
Carpenter Creek and Bayou Texar Economic and Environmental Revitalization Plan

Task	Title	Funding Source	Phase I			Phase II				Direct Component Request	Other Funding (including In-Kind Match)	Total Budget (including all funding sources)
			Labor	Expenses	Contractual Services	Labor	Expenses	Land	Contractual Services/ Construction			
1	Project Administration 1 Full-Time Employee (FTE)	Escambia RESTORE Other Funding (Including In-Kind Match)	\$ 60,000			\$ 66,000 \$ 26,400				\$ 126,000	\$ 26,400	\$ 152,400
2	Project Management 1FTE	Escambia RESTORE Other Funding (Including In-Kind Match)	\$ 60,000			\$ 66,000 \$ 26,400				\$ 126,000	\$ 26,400	\$ 152,400
3	Public Outreach 1 (Part-Time Employee) PTE and 2 interns	Escambia RESTORE Other Funding (Including In-Kind Match)	\$ 60,000	\$ 10,000	\$ 15,000	\$ 66,000 \$ 26,400	\$ 10,000		\$ 28,000 \$ 100,000	\$ 189,000	\$ 126,400	\$ 315,400
4	Stakeholder Involvement 1PTE	Escambia RESTORE Other Funding (Including In-Kind Match)	\$ 48,000	\$ 10,000	\$ 7,000	\$ 54,000 \$ 21,600	\$ 10,000		\$ 18,000 \$ 10,000	\$ 147,000	\$ 31,600	\$ 178,600
5	Baseline Assessment/Data Gap Analysis	Escambia RESTORE Other Funding (Including In-Kind Match)		\$ 25,000	\$ 150,000					\$ 175,000	\$ -	\$ 175,000
6	Supplemental Data Collection/Analysis	Escambia RESTORE Other Funding (Including In-Kind Match)		\$ 50,000	\$ 316,000	\$ 25,000	\$ 35,000		\$ 250,000 \$ 50,000	\$ 651,000	\$ 75,000	\$ 726,000
7	Draft & final Master Plan w/ project prioritization	Escambia RESTORE Other Funding (Including In-Kind Match)		\$ 15,000	\$ 219,000					\$ 234,000	\$ -	\$ 234,000
8	Early Demonstration Projects - land survey	Escambia RESTORE Other Funding (Including In-Kind Match)							\$ 40,000 \$ 40,000	\$ 40,000	\$ 40,000	\$ 80,000
9	Early Demonstration Projects - design	Escambia RESTORE Other Funding (Including In-Kind Match)							\$ 149,000 \$ 80,000	\$ 149,000	\$ 80,000	\$ 229,000
10	Early Demonstration Projects - permitting	Escambia RESTORE Other Funding (Including In-Kind Match)				\$ 5,000	\$ 1,200		\$ 36,000 \$ 48,000	\$ 41,000	\$ 49,200	\$ 90,200
11	Early Demonstration Projects - implementation (construction)	Escambia RESTORE Other Funding (Including In-Kind Match)				\$ 48,000	\$ 25,000	\$ 250,000	\$ 350,000 \$ 500,000	\$ 450,000	\$ 823,000	\$ 1,273,000
12	Performance Monitoring	Escambia RESTORE Other Funding (Including In-Kind Match)				\$ 2,000	\$ 6,000		\$ 14,000 \$ 49,000	\$ 22,000	\$ 49,000	\$ 71,000
13	Leveraging (grant writing)	Escambia RESTORE Other Funding (Including In-Kind Match)	\$ 15,000		\$ 30,000	\$ 15,000			\$ 30,000 \$ 28,000	\$ 90,000	\$ 28,000	\$ 118,000
Total			\$ 243,000	\$ 110,000	\$ 737,000	\$ 447,800	\$ 187,200	\$ 250,000	\$ 1,820,000	\$ 1,396,000	\$ 233,000	\$ 1,629,000
			RESTORE		\$ 1,090,000	Escambia RESTORE			\$ 1,350,000			
						MATCH			\$ 1,355,000			
						TOTAL			\$ 2,705,000			



IFAS Extension
Escambia County

3740 Stefani Road
Cantonment, FL 32533-7792
850-475-5230
850-475-5233 fax
<http://escambia.ifas.ufl.edu/>

Re: Carpenter Creek Watershed RESTORE Proposal Concept Paper

September 18, 2015

Dear RESTORE Committee Members,

We are writing to express support for the Carpenter Creek Watershed Restoration project submittal for RESTORE funding.

Pensacola is an old city with a long history of urban development and untreated non-point source pollution. While efforts have been made to retrofit the stormwater drainage system, a coordinated effort to educate the community and restore health to the largest of the city's urban creeks is a worthy idea. Preserving and expanding the immediate riparian buffers adjacent to the creek will improve water quality, provide more and better wildlife habitat, and reduce the risk of flooding for adjacent properties.

Creating public recreational space will help reconnect urban dwellers to the natural systems in their own backyards while educating them on the importance of these habitats to the health of the entire community. Ideally, visitors to the boardwalks and areas with signage will retain and put into practice some of the ideas advocated there.

In addition, our local Sea Grant program currently works with student and adult community volunteers to sample water quality in area water bodies. An expansion of these "citizen science" efforts will improve community awareness of how to proactively manage our valuable natural resources.

The University of Florida IFAS Extension faculty of Escambia County wholeheartedly support this proposal and look forward to seeing this project implemented. Please feel free to contact either of us if you have any questions.

Sincerely,

A handwritten signature in black ink that reads "Carrie T. Stevenson".

Carrie Stevenson
UF IFAS Escambia County Extension
Coastal Sustainability Agent
ctsteven@ufl.edu

A handwritten signature in black ink that reads "Rick O'Connor".

Rick O'Connor
UF IFAS Escambia County Extension
Sea Grant Agent
roc1@ufl.edu

September 23, 2015

Escambia County Board of County Commissioners

Wilson Robertson, Doug Underhill, Lumon May, Grover Robinson, Steven Barry

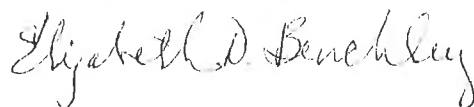
Dear Commissioners:

I am writing in support of the RESTORE Project titled: Carpenter Creek and Bayou Texar Economic and Environmental Revitalization Plan. The Carpenter Creek drainage flows through the heart of southern Escambia County ending at Bayou Texar. While this waterway is an important environmental corridor from Pensacola Bay into the interior of the County, it has also been important in the historical development of the Pensacola region. Native American groups settled along its shores and harvested the rich plant and animal resources that it supported. British colonists dammed its waters and built the first sawmill to cut up the yellow pine harvested from its slopes for miles around. Spanish settlers dug out its clayey soils to make bricks to build the region's towns and industries. Americans settled along its shores as Pensacola spread from the Bay to the interior after the Civil War. Revitalizing this important corridor, and stabilizing and improving its natural features, will also provide opportunities to discover remnants of its long history, and bring them into public view.

The University of West Florida Archaeology Institute will be pleased to cooperate with this effort. The Institute is part of the Division of Anthropology and Archaeology, which also includes the Department of Anthropology, the Florida Public Archaeology Network, and UWF's Marine Services Center. The Division provides education, research, professional services, and public outreach to the region through formal classes, public lectures, exhibits, and hands-on opportunities for students and the public.

We believe that restoring the Carpenters Creek and Bayou Texar waterway will play an important part in improving Escambia County's quality of life for future generations.

Sincerely,



Dr. Elizabeth D. Benchley, Director
UWF Archaeology Institute and
Division of Anthropology and Archaeology

ebenchle@uwf.edu

Escambia County Commissioners;
S. Barry, L. May, W. Robertson,
G. Robinson, and D. Underhill
Escambia County
221 Palafox Place
Pensacola, FL 32502

September 21, 2015

Dear Sirs,

This letter is in support of the Carpenter Creek Watershed Restoration proposal being submitted by Barbara Albrecht and the West Florida Regional Planning Council. The University of West Florida, including the Center for Environmental Diagnostics and Bioremediation (CEDB), has a long history of research in the Bayou Texar and the Pensacola Bay region. From the seminal papers of Moshiri and Hopkins in the 1970s to the comprehensive assessment of Bayou Texar through funding by the Partnership for Environmental Research and Community Health (PERCH), we have engaged in research to guide management of the region. This proposal will dovetail with existing activities and provide opportunities for CEDB researchers and students to develop new projects to assist restoration efforts.

A variety of ongoing and proposed activities would directly support the proposal with the monitoring plan and workforce development through the training of students at the University of West Florida. For example, students from the Aquatic Botany class that Caffrey teaches every spring examine phytoplankton abundance and diversity in Bayou Texar. Phytoplankton are the base of the food web and their abundance and species diversity reflect the environmental conditions. However, excessive growth shade seagrasses and can lead to eutrophic conditions such as harmful algal blooms, fish kills and hypoxia, all conditions that have occurred in Bayou Texar. Caffrey is also participating in an NSF GEOPATHS proposal led by Matthew Schwartz of the Department of Earth and Environmental Sciences to enhance interdisciplinary research in the Geosciences by undergraduates at UWF. This project would link how changes in land use influence nutrient inputs and the response of primary producers in the Bayou Texar system, an urban bayou in Pensacola, FL. Finally, Caffrey regularly works with 1-2 high school student volunteers on research projects each year. A recent student examined fall and winter nutrient distributions in Bayou Texar. Future students could develop research projects to evaluate the success of the restoration efforts.

We encourage the committee to select this proposal for RESTORE funding. It is a comprehensive, well-integrated project that has the potential to significantly improve water quality, resiliency, workforce training, and cultural resources. In addition to improving the Carpenter Creek watershed, it could serve as a model for restoration activities throughout the county and region.

Sincerely,



Wade H. Jeffrey PhD
Professor and Director



Jane M. Caffrey PhD
Professor

21 September 2015

Chairman Steven Barry
Vice Chairman Grover Robinson
Commissioner Wilson Robertson
Commissioner Doug Underhill
Commissioner Lumon May
Escambia County (FL) Board of County Commissioners

Chairman Barry and Escambia County Board of County Commissioners:

On behalf of the UWF Department of Earth and Environmental Sciences (E&ES), I submit this letter of enthusiastic support for the Carpenter Creek Watershed Restoration Project submitted by the West Florida Regional Planning Council, Panhandle Watershed Alliance, and Ecology and Environment, Inc. Having reviewed the proposal synopsis and met with Barbara Albrecht to discuss this project, I confirm that its goals align well with the teaching, research, and outreach goals of UWF E&ES. As such, department faculty, staff, and students can contribute both to the overall goals and to the mechanics of realizing those goals. From assisting with site characterization, to sample and data analysis and geospatial (i.e., GIS-based) assessment, restoration planning, and execution of planned restoration activities, through the post-project monitoring, E&ES expertise and interests match well with the project goals.

Specifically, I note that the Carpenter Creek area's proximity to the UWF campus provides ample opportunity for focusing academic activities on projects related to your project. Courses such as Biogeochemistry, Environmental Impact Assessment, Environmental Science, and Basic Hydrology could all use aspects of the proposed restoration effort as the focus of class activities. As an example, the Basic Hydrology lab is currently employing as a unifying theme a semester-long water quality research activity in Thompson's Bayou; such a project could readily be transferred to Carpenter Creek and Bayou Texar.

Additionally, the proposal contains a number of research opportunities for undergraduate and graduate student researchers working with E&ES faculty. Both Professor Johan Liebens and I have advised MS students conducting research in Carpenter Creek and the project opens new opportunities for continuing and new projects. Student engagement and research are at the heart of the UWF academic experience and the proposed carpenter Creek project provides ample opportunities for faculty to focus those engagement efforts on behalf of our students. E&ES faculty and students could use internal UWF research funds to support pilot research projects conducted in Carpenter Creek as preparation for externally-funded projects.

Finally, UWF E&ES prioritizes active engagement and outreach with our local and regional community. The proposal includes goals of investigating the possibility of, and implementing, an urban stream boardwalk and other interpretative educational goals that align perfectly with the departments outreach goals. UWF E&ES students (including the Student Environmental Action Society student group) could join with UWF faculty and staff to support these engagement efforts.

In summary, this proposal to investigate and effect restoration of the carpenter creek watershed and Bayou Texar is well-aligned with the mission of the UWF Department of Earth and Environmental Sciences. As chairperson of that department, I support these activities and look forward to identifying ways that our faculty and students can actively support the projects goals.

Regards,



Matthew C. Schwartz
Chairperson and Associate Professor

Phone 850.474.3377 Fax 850.857.6036

Web uwf.edu/environmental

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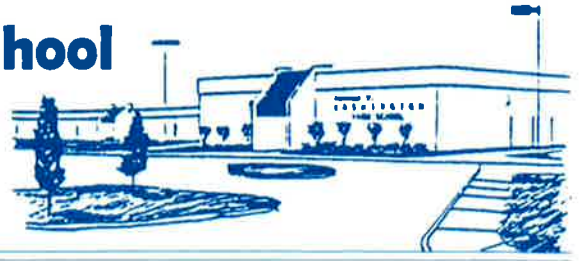
Booker T. Washington High School

6000 College Parkway
Pensacola, Florida 32504-7997
Telephone: 850-475-5257
Fax: 850-494-7297
www.btwash.org

Principal
Dr. Michael J. Roberts

Assistant Principal
Dawn Gibbs
Curriculum

Assistant Principal
Jeremy Tompkins
Facilities



September 14, 2015

Escambia County Board of County Commission
221 Palafox Place
Pensacola, Florida 32502

Re: Proposed Carpenter Creek RESTORE Proposal

Escambia County Board of County Commission,

Washington High School Marine Science Academy (MSA) is partnering to submit a RESTORE proposal for a Carpenter Creek Restoration Plan (CCRP). The proposed plan is a long term, multi-phased restoration effort with many goals, one of which is consistent with a current ongoing project called, "Bringing Back the Bayous". The objective of this MSA project became a two part process: Part one - to assess the status of water quality in one of several estuarine tributaries of the Pensacola Bay system; Bayou Texar. Working with scientists from the Environmental Studies program at UWF, students in Marine I and Marine II Honors courses continue collecting data on total nitrogen, phosphate, chlorophyll A and dissolved oxygen to determine where excessive nutrient loads may occur in the bayou, establish a link between the nutrient loads and low dissolved oxygen (a cause for "fish kills"), and suggest methods of how to reduce this impact to our ecosystem. Part two - the study will continue into the spring and incorporate rainfall data into their assessment.

The outcome of this community project seeks to accomplish the following: stimulate community interest /awareness and promote community action. This project also allowed the MSA students an opportunity to work with more advanced technologies. The sampling technologies were acquired by a grant from the Gulf of Mexico Alliance, the Foundation for Excellence and Posner Marine. We would like to add a part three and continue assessment and education into Carpenter's Creek.

Sincerely,

Edward J. Bauer
Marine Science Academy Director



"The Citadel of Learning"

Affirmative action / equal opportunity employer





4081 E Olive Road, Suite A
Pensacola, FL 32514

Robert Cole, Chair
Grover Robinson, Vice-Chair

September 15, 2015

Escambia County Board of County Commission
221 Palafox Place
Pensacola, Florida 32504

RE: Carpenter Creek RESTORE Proposal

Fellow Commissioners:

On behalf of Bay Area Resource Council (BARC) please accept this letter of support for the Carpenter Creek Economic and Environmental Restoration Plan.

The Bay Area Resource Council and its subcommittees support the proposal to restore the riparian zone of Carpenter Creek, improving water quality in Bayou Texar, while protecting and improving essential habitat for fish and bird populations.

The Bay Area Resource Council's Technical Advisory Committee (TAC) may serve in an advisory capacity for restoration efforts to ensure the best available science is used. In addition, Environmental Education Coordination Team (EECT) may support the public outreach and ongoing educational component of the project.

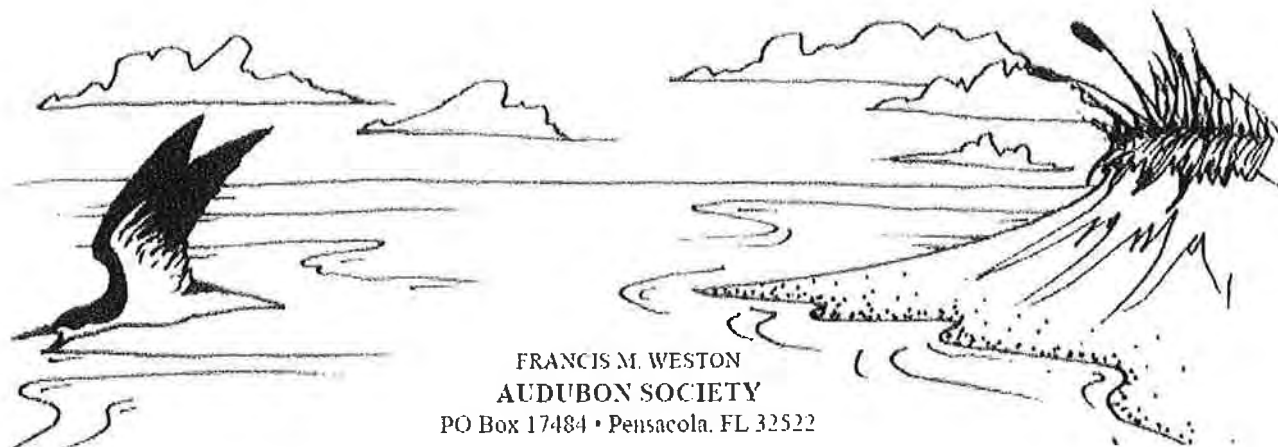
The BARC, its subcommittees, and Staff are dedicated to providing environmental awareness to the citizens of the Pensacola Bay Watershed.

Sincerely,

A handwritten signature in blue ink, appearing to read "Bob Cole", is written over a light blue circular stamp.

Commissioner Bob Cole
Santa Rosa County Commission
Bay Area Resource Council Chair

Committed to sharing and coordinating environmental information, the Bay Area Resource Council is comprised of Commissioners from Santa Rosa and Escambia Counties and Council Members from the municipalities of Gulf Breeze, Milton, and Pensacola.



September 23, 2015,

Dear Escambia County Commissioners (G. Robinson, S. Barry, W. Robertson, D. Underhill, and L. May.),

I am writing to support the Carpenter Creek Watershed Restoration Proposal as presented in the Concept Paper written by Barbara Albrecht .

The goals of this project include reducing pathogen and pollutant loads from entering this watershed system thus restoring the ecological function of this system. It will provide benefit to this 5-mile long urban creek and the urban bayou which the system feeds.

The vegetated buffers around the bayou and along the creek and been damaged from logging and development. This project will stabilize shorelines and creek banks through root systems as the vegetation matures thus managing the storm runoffs to avoid slit in the stream and bayou. The tree canopy will provide food sources to support the food webs to enhance aquatic ecosystems.

The Francis M. Weston Audubon Society believes that this project would produce a healthy creek and bayou supporting clean water, a healthy fishery and wildlife habitat. It will allow natural protection from flooding and can offer abundant recreational opportunities.

Please support this project as a very important part of Restore Pensacola.

Sincerely, *Peggy Baker*

Peggy Baker, Past President's Council

Francis M. Weston Audubon Society



WILDERNESS PROTECTION • WILDLIFE PRESERVATION • FISHING AND HUNTING CONSERVATION

25 September 2014

Escambia County Commissioners: Chairman Barry, Vice-Chair Robinson,
Commissioner May, Commissioner Robertson, and Commissioner Underhill.
221 Palafox Place,
Pensacola FL 32502

Dear Sirs,

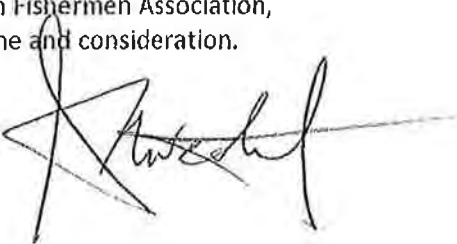
The Bream Fishermen Association have been dedicated to monitoring area creeks since 1968 (including this creek and bayou) during a time when this area experienced some of the worst fish kills across the nation. Our organization is very supportive of the Carpenter Creek – Bayou Texar Restoration Proposal and especially the application of a holistic approach to addressing impaired watersheds.

Our membership has watched and noted the change of our landscape over decades. We have valued the land and waters for their bounty. We have tried to educate young people to the concepts of Stewardship and Preservation. This proposal would serve to accomplish so much for our community and future generations.

We hope that the Escambia County Commissioners and the Escambia County Restore Act Committee will consider this project worthy of funding – to show the community and others how to care for our lands, and our waters.

On Behalf of the Bream Fishermen Association,
I thank you for your time and consideration.


Barbara Albrecht
President





FOR YOUTH DEVELOPMENT®
FOR HEALTHY LIVING
FOR SOCIAL RESPONSIBILITY

September 24, 2015

Commissioner Wilson Robertson, District 1
Commissioner Doug Underhill, District 2
Commissioner Lumon May, District 3
Commissioner Grover Robinson, District 4
Commissioner Steven Barry, District 5
221 Palafox Place
Pensacola, FL 32502

Dear Commissioners:

The YMCA of Northwest Florida supports the Carpenter Creek and Bayou Texar Economic and Environmental Revitalization Plan.

Our local Y has a 130-year history of strengthening the community through youth development, healthy living and social responsibility. This project aligns with all three pillars– providing residents with expanded venues for health and recreation, offering youth educational opportunities, and restoring a natural resource to its fullness – all while achieving economic goals.

Of primary interest to the Y are the recreational opportunities that this project will create. Our two-county area ranks last among 17 in the state in key indices of health and well-being. According to the Partnership for a Healthy Community assessment, health indicators declined from 2000 to 2005, and showed no improvement from 2005 to 2012. Of particular concern to our Y are key behavioral risk factors such as obesity. Two-thirds of Escambia County adults and 1/3 of children are classified as overweight or obese. Local residents are in desperate need of increased opportunities for safe, affordable recreation that is accessible to everyone. This project leverages RESTORE Act Funds to restore the Bayou Texar and Carpenter Creek area, opening these waters and the surrounding green space for expanded physical activity right in the heart of Pensacola.

At the Y, we are working to expand our footprint and build for the future so we can positively impact the health of as many residents as possible. But we are only one organization. We recognize the value of collaboration and partnerships to achieve common goals. Together, we can re-create the beauty of our region while investing in the wellness of our residents.

We encourage you to support this project for its long-term positive impact on the environment and health of our community.

Sincerely

Michael Bodenhausen
CEO

YMCA OF NORTHWEST FLORIDA

ADMINISTRATION
415B N. Tarragona St.
Pensacola, FL 32501
850 432 8327
FAX 850 465 9924

DOWNTOWN
410 N. Palafox St.
Pensacola, FL 32501
850 438 4406
FAX 850 465 0596

NORTHEAST
3215 Langley Ave.
Pensacola, FL 32504
850 478 1222
FAX 850 478 7255

BETTY J. PULLUM
2379 Pawnee Dr.
Navarre, FL 32566
850 936 0049
FAX 850 939 7447

www.ymcanwfl.org



Sept 22, 2015

Dear Escambia County Commissioners (Barry, May, Robinson, Robertson, and Underhill),

The Longleaf Pine Chapter of the Florida Native Plant Society is extremely supportive of the Carpenter Creek-Bayou Texar Restoration Proposal because it will help us to showcase the many beautiful and environmentally beneficial plants which are endemic to our region. Native plants, unlike plants introduced from other regions or countries, play a very important role in the food-web dynamics of our eco-region. Plants that have evolved in our climate are resistant to diseases, drought, and heat.

The University of West Florida houses a Herbarium with over 25,000 specimens, and has generated interest from other state universities that wish to follow this model. The Herbarium's curator is James Burkhalter, one of our chapter's main contributors and an expert taxonomist.

This project would bolster community involvement through learning and understanding the importance and beauty of native plants, and the important role they play in our environment and the ecosystem services they provide to our community. We hope to see this project funded, and look forward to being a part of this restoration in the future, for future generations.

Thank you for your consideration on behalf of the Longleaf Pine Chapter of the Florida Native Plant Society....

Cheryl Jones
President



Bayou
Texar

Foundation

September 21, 2015

Blair Little Stephenson
President, Bayou Texar Foundation
1907 E Gonzalez St.
Pensacola, FL 32501

Dear Barbara,

I'm writing to express the full support of the Bayou Texar Foundation for the Carpenter Creek and Bayou Texar Economic and Environmental Revitalization Plan.

Bayou Texar has been the unfortunate recipient of the erosion of the creek sides for years. This erosion happens every time there is a significant rain event. Sediment scoured from the sides is washed down the creek, scouring ever more as it goes, and settles at the bottom of the Bayou just south of the 12th Avenue bridge creating a large island similar to a dredge spoil island. The island soil is sent bit by bit, to some degree, further south but the most part remains until an expensive dredge effort is conducted to remove it and restore the flow of fresh water from the creek into the Bayou and we then start the process ALL OVER AGAIN! From these incoming soils, turbidity production is a big culprit which reduces the possibility of a healthy bayou.

However, I understand that there are also significant negative effects on properties which back up to Carpenter's creek from erosion which desperately need correction and remediation.

This proposed project supports both of these issues while also providing other tremendous potential benefits such as eco-tourism, property value increases, and employment for area residents.

We do so hope that this project is approved for RESTORE Act funds.

Yours truly,



September 23, 2015

To: G. Robinson, S. Barry, W. Robertson, D. Underhill, and L. May

Subject: Letter of Support: CARPENTER CREEK WATERSHED RESTORE PROPOSAL

Gentlemen:

The Pensacola Rowing Club is excited and eager to lend our support to this initiative of the Panhandle Watershed Alliance.

We use Bayou Texar exclusively for our rowing programs. These rowing programs are primarily recreational in nature and are for all ages. We have seen great interest in rowing here in Pensacola and the surrounding communities and our club has steadily grown in the three years.

We do have members who ask us about the health fears of rowing on the bayou. We respond that we monitor the county health updates regularly and notify our membership when warnings are issued. Some members elect not to participate during warning periods. Who could blame them? It would certainly be nice to see those water quality warnings eliminated.

As rowers, we get a great view of the bayou and know that it is a beautiful waterway on most occasions. We see lots of wildlife and make it a part of rows to point it out and discuss it. That is very relaxing. Unfortunately, we also see lost opportunities in that few of the residences along the bayou have people who actually use the waterway for more than a view and a boat launch. They don't get "into the water" because of health concerns. Again; who can blame them?

Please support this project. We have a nice, natural watershed in Carpenters Creek and Bayou Texar. Way too many of us in Pensacola and the Pensacola area avoid this because of health scares. How absolutely wonderful it would be alleviate those scares, enhance the access points, and provide a level of community pride in just "doing the right thing".

Thank you for your support to this vitally needed effort.

On behalf of the board and membership of the Pensacola Rowing Club,

A handwritten signature in blue ink, appearing to read "Steve Jackson". The signature is fluid and cursive, with the first name "Steve" being more prominent than the last name "Jackson".

Steve Jackson



East Hill Neighborhood Association
P.O. Box 6164
Pensacola, Florida 32501

EHNA 2014-2015
Board of Directors

Hilary Burkett
Bill Chavis
Richard Christine
Sharon Crane
David Del Gallo
Suzanne Lewis
Charlotte Northup
John Rickmon
Michael Ritz
Danielle Ross
Steven Shelley
James Singleton
Mike Thomas
Murray Turner

September 23, 2015

Escambia County Florida Commissioners:
Mr Steven Barry, Mr Lumon May, Mr Wilson Robertson Mr Grover Robinson
and Mr. Doug Underhill

Dear Sirs;

The East Hill Neighborhood Association (EHNA) Board of Directors is sending this letter to you as our demonstration of commitment to and strong support of "The Carpenter Creek Watershed Restoration Proposal Concept Plan (Carpenter Creek and Bayou Texar Economic and Environmental Revitalization Plan).

The East Hill Neighborhood Association is a non profit organization that was created in 2004. Our non profit organization works to better the greater East Hill Neighborhood through providing funds and in kind services and donations to improve neighborhood parks, neighborhood communications (website and Facebook), as well as support for many other neighborhood organizations and events.

The Carpenter Creek Watershed Restoration Proposed Concept Plan/Carpenter Creek and Bayou Texar Economic and Environmental Revitalization Plan would provide critically needed improvements to the East Hill area for water quality, water quantity, recreation and landscape preservation. These four benefits, along with several others outlined in the proposal, are essential to improving and maintaining the quality of life for more than 1000 residents in the East Hill Neighborhood, as well as many more located North, East and West of our area.

This proposal directly aims to not only meet, but exceed the purpose for which the Restore Act Funds were set aside to accomplish. We respectfully request that each of you give this Proposal the full attention and consideration it deserves.

Sincerely

Steven Shelly
President
East Hill Neighborhood Association



Scenic Highway Foundation Board	
President	Gena Buchanan
Vice President	Joan White
Treasurer	Frank Venable
Secretary	Jan Dobson
Honorary PR	Robert Roberts
Membership Chair	Jackie Andrews
Gift Donor Liaison	Mary Comerford

Wednesday, September 23, 2015

The Escambia County Commission
221 Palafox Place Ste 400
Pensacola, FL 32502

Dear Honorable Commissioners:

The Scenic Highway Foundation is pleased to offer our support to the "Carpenter Creek and Bayou Texar Economic and Environmental Revitalization Plan". There is probably no better way to use RESTORE funds, considering the size of the area that will be affected and the amount of good that it will do.

As you may know, many of our members live in East Pensacola Heights and East Hill, and are part of the watershed. I myself grew up on Texar Drive, just two blocks from the bayou. As children, we swam at Bayview Park and, even when I was in high school, my friends and I paddled canoes across the bayou. It breaks my heart to see the condition of Carpenters Creek and Bayou Texar today.

Thank you for considering this worthy project.

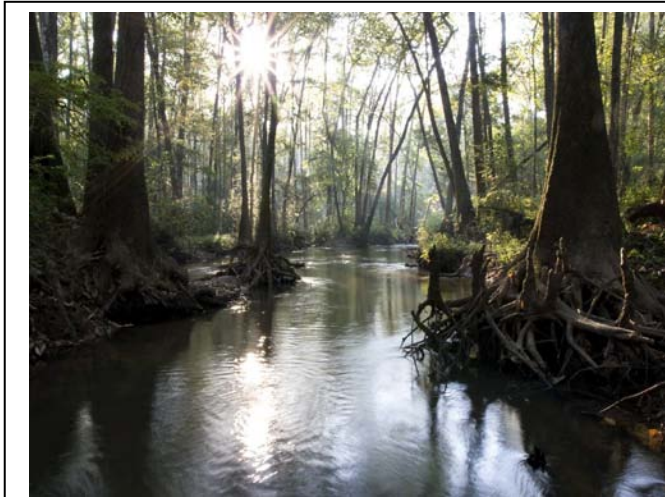
Sincerely,

Gena Buchanan
President, Scenic Highway Foundation



CARPENTER CREEK WATERSHED RESTORE PROPOSAL CONCEPT PAPER

*Restoring Escambia County's Watershed through a Community-
Based Approach*



ABSTRACT

Carpenter Creek Watershed Restoration offers the potential for an integrated science, education, and economic project that will positively impact a key part of the Escambia County watershed and the region's economic resiliency.

Barbara Albrecht

Aquatic Ecologist

OVERVIEW

Through citizens and academic involvement, this project will serve to restore a biological corridor which is currently an impaired urban creek. The goals of this project include reducing pathogen and pollutant loads from entering this watershed system. This watershed is currently impaired according to the CWA 303(d) list of impaired waters.

Another goal of this project is to initiate implementation of non-point source pollution best management practices to restore the ecological function, and thus the ecological services, back into this system.

The proposed project will provide direct benefit to a 5 mile-long, meandering urban creek and the 5 mile-long urban bayou which the system feeds. The creek is fragmented by more than ten culverts and five bridges. Non-point stormwater runoff carries a mixture of nutrients, sediments, invasive species (seeds) into each fragmented section. The development along this watershed predates the current science/land development codes towards development in low lying areas and riparian zones. This project will serve to restore the natural ecosystem by identifying upland stormwater storage/detention to allow stormwater run-off pre treatment, and increasing the vegetated buffer; thus making the community along the creek and bayou more resilient to extreme events.

This project has multiple phases which will serve to provide education and stewardship of the natural environmental systems to the local and interested public. The project offers the potential to incorporate a workforce development component to grow the environmental restoration workforce in Escambia County and Northwest Florida.

THE PROBLEM

Coastal resiliency and inland riparian zones depend on vegetated buffers to mitigate and attenuate not only sea level rise, but also stabilize shorelines and creek banks through root systems. Logging efforts during the early timber days served to shift the natural landscape from upland Longleaf Pine, American Beech, Cedars, Junipers, Sweet Gum, Sweet Bay, Black Gum, Gall Berry, and Dogwood to a mixture of invasive and low quality species found today which include a mixture of opportunistic Laurel and Water Oaks, Popcorn, Privet, and Slash & Sand Pine.

Habitat loss along the entire creek and bayou waterway (i.e., resilient canopy species and emergent grasses) have contributed to habitat degradation over time which have been documented as negative impacts on fisheries, impaired biological structure, reduction of property values during the 1970s through 2005 from fish kills, and the loss of recreation in the bayou, which once held annual ski competitions and other water sports.

The tree canopy within the entire watershed has remnant refugia of native mature species, but overall the current condition includes young trees which are not wind resistant and do not offer quality organic matter in the form of leaf matter or woody material to support vegetative energy vital in the support of food webs in the system. The value of the food web function has been diminished through the loss of native broadleaf wetland and riparian species. Restoring

this riparian canopy, while also developing an earthen berm planted with resilient native species would serve to sequester carbon, shade the watershed, and minimize non-point source storm waters from entering the watershed. Increasing by widening the vegetated buffer between upland and water will not only be cheaper in cost, this approach will allow the system to repair itself in the future when the next major weather event occurs, and will serve to implement natural approaches for improving water quality in the entire system.

THE SOLUTION

Water Quality Improvement

The redevelopment of a vegetated berm above the flood plain would serve the impaired watersheds capacity to slowly attenuate some nutrients, storm water runoff and any metals which originate from the roads which intersect this watershed throughout its entire reach.

Water quality improvement occurs when the buffer is reestablished and water conveyances are diverted away from the creek. Many of the water quality issues along the creek include nutrients, fecal coliform, mercury (atmospheric?) and sedimentation. Phase I data will serve to identify the constituents entering the system, measure riparian buffers (composition, width, and overall health) and slope of banks. Various plants are known have increased up take abilities (eg. Ferns have been known to take up metals, specifically arsenic; sunflowers are known to take up lead).

As contaminants are identified and isolated, species known to intercept these contaminants can be planted in the vicinity to intercept and slow the contaminants from entering the aquatic system (i.e., phytoremediation mitigation).

Habitat Restoration

This project when completed would improve water quality, fishery habitat, carbon sequestration and carbon storage, vegetation diversity, and restore natural hydrological function. The headwaters of the creek to the mouth of the bayou are fragmented by culverts and bridges. Many of the culverts and bridges have been reinforced by adding the equivalent of rock weirs to protect infrastructure, thus making any fish passages impossible. The system requires a watershed wide approach with the intent of reconnecting the hydraulic, as well as the hydrology to the ecosystem; ultimately this level of restoration would serve to tie the creek back into the flood plain.

In rural areas with dirt roads, counties often grade these road networks and develop turn-outs for water to leave the road bed before entering a low lying wetland or creek system. Equipment operators may grade a system monthly or bi-weekly depending on rainfall and usage. This approach may serve urban situations well if property is available for use and upland storm water can be diverted as a holding system. These holding systems should be planted swales for habitat, and not the retention/detention fenced areas seen too often in Escambia County.

The development of a well planted berm will serve to slow water entering a creek and potentially redirect runoff through vegetation thus capturing sediments and nutrients (and trash) before it enters the waterway. The berm-planted vegetation known to have strong roots and provide beneficial leaf matter (for ex, American Beech and Tulip Poplar) will serve to enhance soil composition over time, act as a wind shade, and develop rich soil composition. Recognizing the species composition of the riparian zone is equally important in attracting native insects, which in turn support birds, reptiles & amphibians, and small mammals.

Habitat Conservation, Wildlife Corridors and Ecological Restoration

The entire Carpenter Creek/Bayou Texar Watershed is impaired for fecal coliform and mercury in fish tissue, according to the FDEP NW FL Regional Monitoring Program (FDEP 2015). The decline in water quality can be directly correlated to the continued uncoordinated development within this watershed landscape.

The I-110 expansion, which lasted several years between 2004 and 2010, doubled the size of the north/south feeder arm to the main interstate system and created plumes in Pensacola Bay which were conveyed to that system through the Carpenter Creek Watershed. Although additional stormwater ponds were mandated and added due to the expansion, many of the ponds were located in low lying wetland areas, which if left in their natural condition would have benefitted the uptake of water through respiration, cooled the area through condensation, aided groundwater through infiltration, benefitted air quality by CO₂ uptake and O₂ release, and Carbon Sequestration.

These low lying areas were converted from natural vegetated systems into stormwater holding ponds (retention and detention) which have never functioned as well as the natural system. Additionally, the trees planted in the holding ponds directly adjacent to the I-110 interstate are not functioning as intended, as many are dead or their growth stunted.

- **For the wetland, creek, and bayou to flourish as a healthy ecosystem, a diverse vegetated buffer must be re-established to stabilize the banks, reduce nutrient runoff, and perhaps provide wildlife corridors for native fauna that are year-round residents, or migrate through the area at specified times of the year.**
- **The upland tree canopy should be re-established by individuals (ecologists, citizens involved with the Native Plant Society and academia) who understand the biological food web function and seasonal nuances in our region.**

Natural System Resiliency

The Carpenter Creek/Bayou Texar Watershed cannot function as intended because of the multiple fragmentations which have occurred throughout the system over the past six decades, thus compromising the integrity and ability of this watershed's ecological function. Healthy riparian buffers have the ability to slow water before it enters the stream channel. In addition, as science and research have advanced, ecologists and biologists better understand the impacts that land use changes have inflicted on aquatic ecosystems. Storm water and sedimentation

have contributed to the demise of water quality. Losses of riparian habitat and species composition have also impacted the biodiversity of many fauna, which have contributed to the impairment of the food web ecosystems ability to function.

The following figures provide aerial overviews of the entire watershed and visually illustrate the land use today. The head waters of Carpenter Creek were considered rural in 1960. The interstate (I-10) and south feeder (I-110) were built in early 1970's and fragmented the upper tributaries from the main channel. The University of West Florida opened in 1970, which also contributed to the shift from a rural to suburban landscape along the watershed through the mid 1980's. The development of University Mall, the expansion of Davis Hwy, addition of West Florida Hospital and the numerous subdivisions which popped up to accommodate growth were originally on septic systems. The headwaters of Carpenter Creek on Olive Road were also the site of a hog farm and slaughterhouse which contributed nutrients to the groundwater through the 1980s and still influences the surface water quality today with high nitrates.

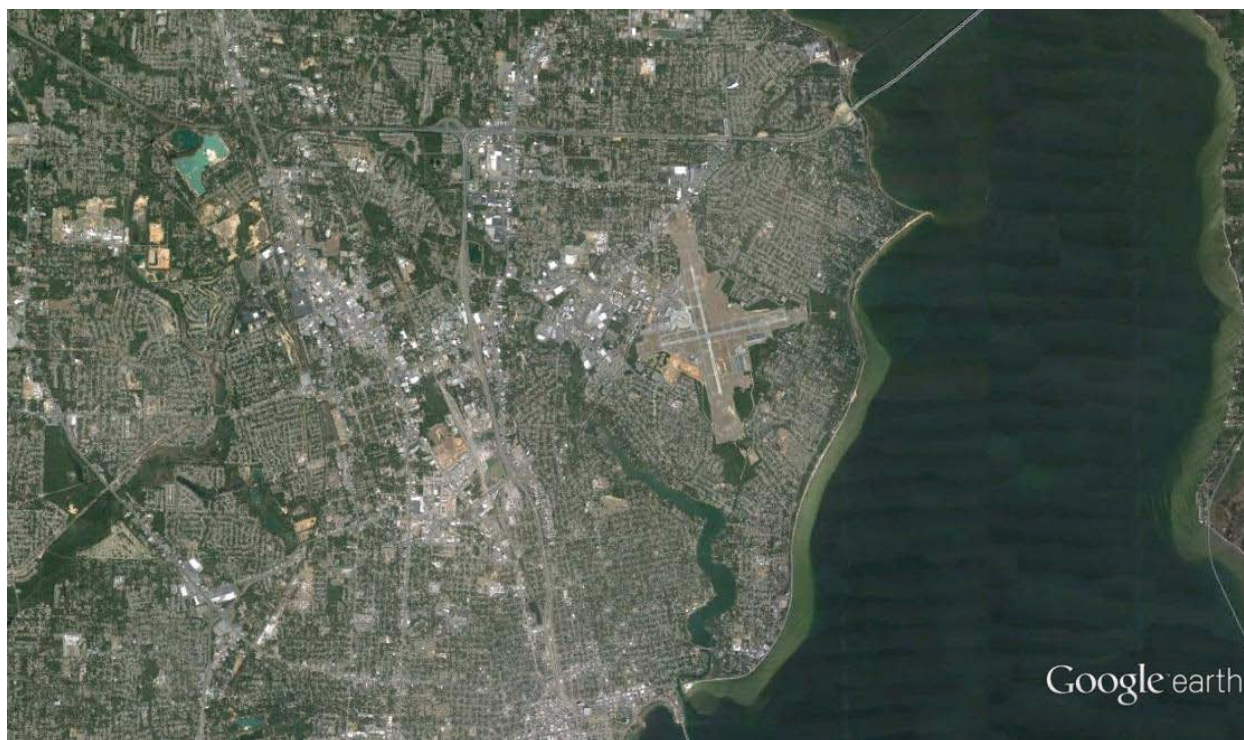


Figure 1. Aerial view of the Carpenter Creek/Bayou Texar Watershed. Note the airport is located within this watershed.

Figure 2. An Overview of the entire watershed visually orients the reader to the remnants of the upper fragmented watershed and the roadways which intersect the system. Each road acts as a conveyance of storm water during rain events and serves to carry anthropomorphic pollutants, trash, and invasive plant species seeds to the water body. In each instance, sediment is also carried towards the water by the velocity of storm water runoff. The remaining riparian zone buffer and plant species are not the quality once known to the creek, and as such species diversity of plants and animals have been compromised.

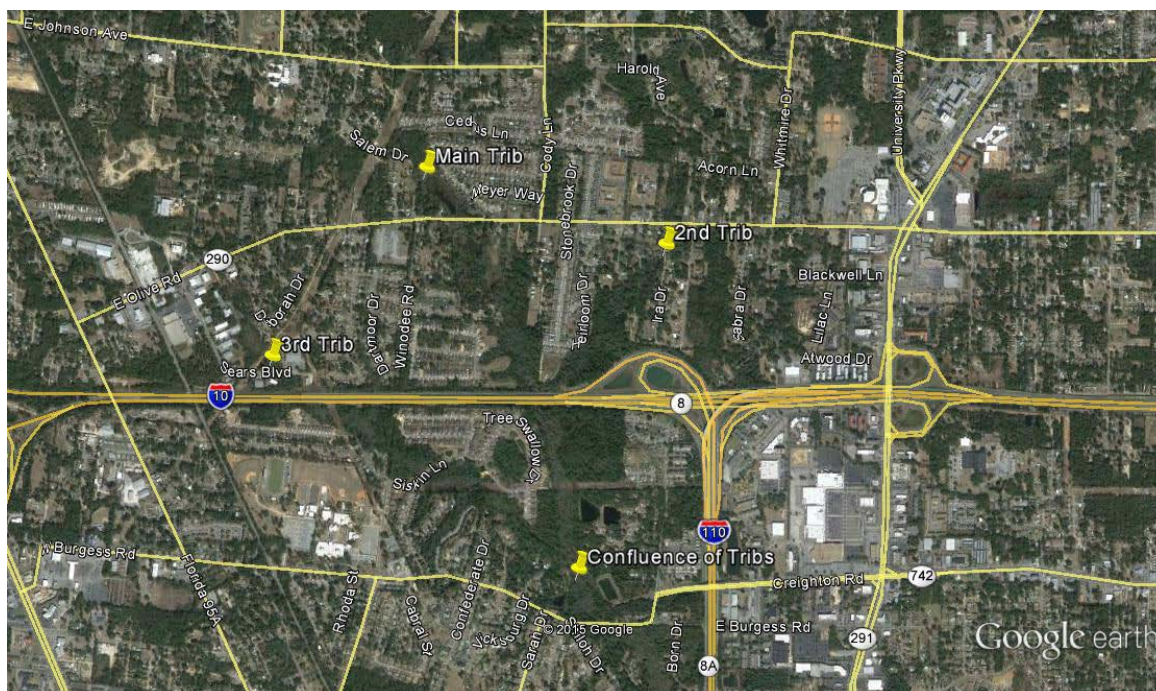


Figure 2. The upper creek head and tributaries as seen in a Google Earth image 2015. Note I-10, I-110 and other major corridors can be observed in gold.

Figure 3. Provides a bird's eye view of the journey this creek takes through an urban setting. In Figure 4, the creek has many commercial neighbors including apartment complexes, small nursing homes, doctor's offices, restaurants, strip malls, and several sizeable box stores. These facilities all contain large parking lots which contribute to the overall impairment of the creek during each rain event. A rain event consisting of a 1" rain on a 1-acre parking lot will produce 27,000 gal of water. Many of these box stores and larger businesses including Sacred Heart Hospital and Cordova Mall have been grandfathered in to past land development codes and are not required to capture, detain, or treat storm water from their property.

The creek runs through several areas with elevated topographic features, which in their natural state would have been vegetated ravines. Today these areas are parking lots or roads and have lost their continuity and stability, as well as vegetation to slow waters from entering these systems.

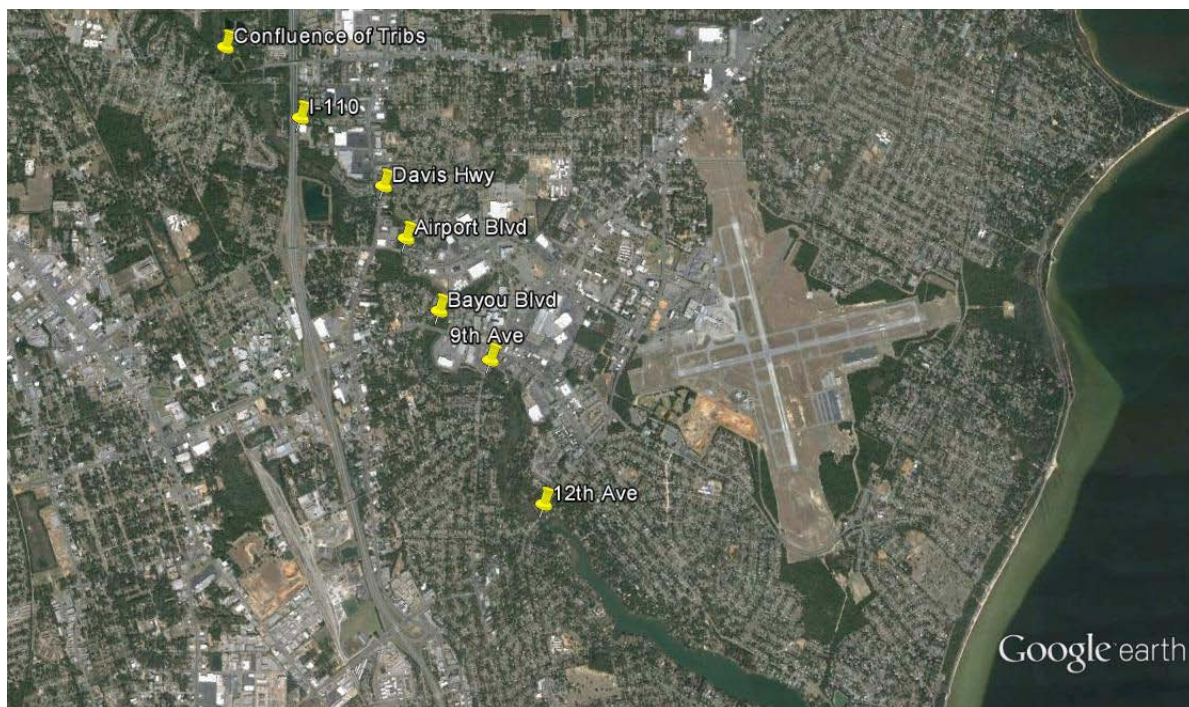


Figure 3. The urban journey of Carpenter Creek from the confluence of the three tributaries to 12th Ave, which marks the headwaters of Bayou Texar, where Carpenter Creek becomes a wider braided system.



Figure 4. Carpenter Creek from Davis Hwy to 12th Ave has many box stores as neighbors, including Lowes, portions of the Sacred Heart Hospital Complex, Rave Theater, Publix, Winn Dixie, Target, and many others.

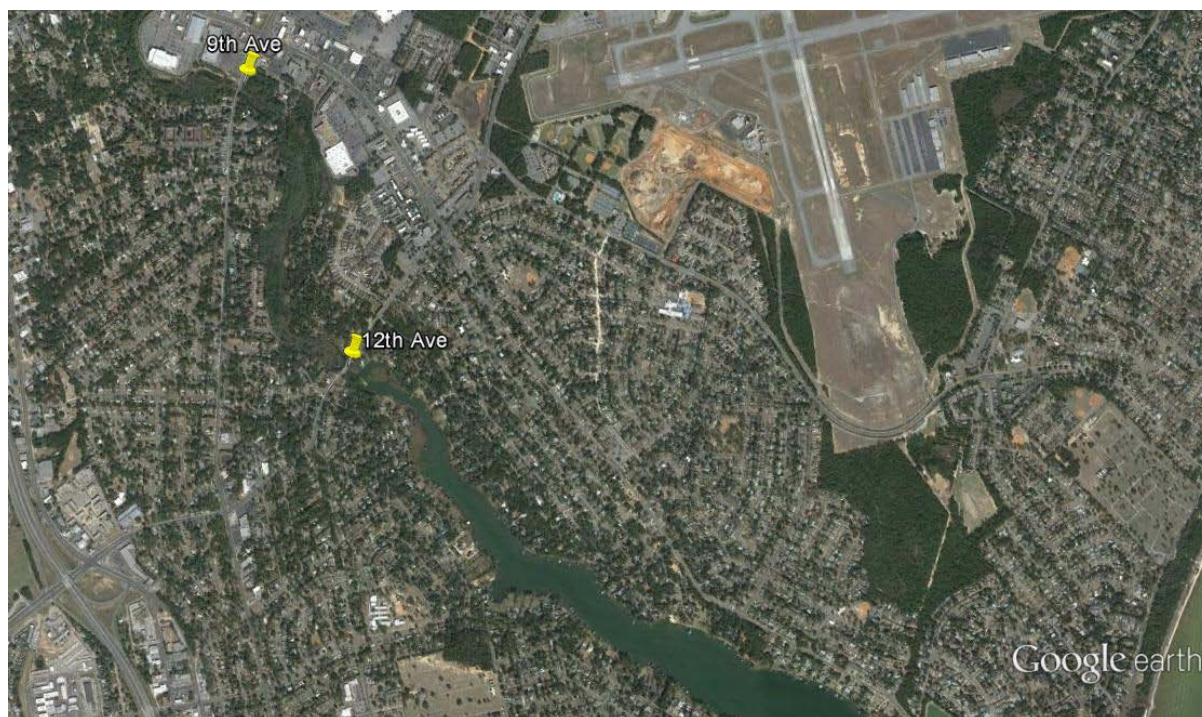


Figure 5. The lower creek and upper bayou becomes completely residential along both banks as the systems begins to widen.

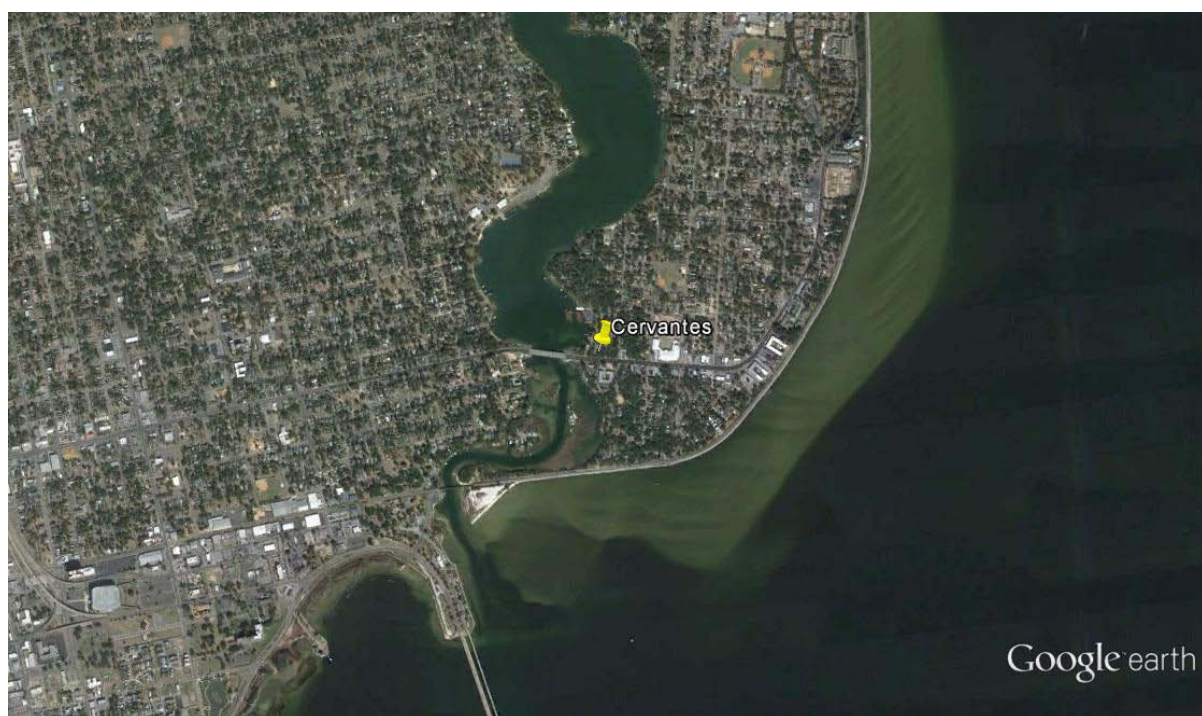


Figure 6. The lower portion of Bayou Texar which is constricted at the Cervantes Street Bridge before flowing out to Pensacola Bay. Note the channel is dredged between the bridge and the mouth and also note the sediment transport is interrupted from the north to the south by the foot/approach of the 3-mile Bridge.

The Carpenter Creek Restoration Project

This project lends itself to a multi-year *in situ* type, multi-disciplinary educational opportunity for academia, the community, research, governmental agencies, businesses, and non-governmental organizations alike.

Step I – the overall assessment of the conditions of the watershed including: habitat assessment, width of riparian zones on both banks, water depth & flow levels, amount of woody material in the system, vegetation type, sediment depth, visible conveyances (active/inactive), water quality, macro invertebrates, vertebrates, etc.

Concurrently, a study identifying upland properties located within a half mile of the watershed, their uses and ample opportunities to develop conservation easements through vacant or abandoned properties to sequester water from rain events. Perhaps develop an incentivized program to reduce taxes or reduce insurance costs.

Step II – Data interpretation from Step I can be compared to past data can be viewed (correlated) with land use changes over time (NRCS, Escambia County) to identify areas with the largest change and potential contribution. LiDAR comparisons and observed changes between 1996, 2002, and 2009 will add another line of evidence to understanding the bigger picture of source control.

Step II lends itself to opportunities for academia/engineering to develop single and complex models which correlate to nutrient loads and general buffering of the system.

The Step II data will be used in the design component of the restoration, ultimately designing the creek to have release areas where sediments can accumulate without contributing to downstream smothering, as well as diverting the pulse of stormwater entering the system to a vegetated flood plain to slow the energy and absorb the nutrients. Persistent water quality problems, septic tank leachate, stormwater pulses from major road corridors can be spot treated via a diversion if the source cannot be addressed.

In 2014, NOAA, USEPA, and USGS identified natural coastal communities as the most threatened ecosystem in Florida. Restoring the health of inland creeks through buffering and stormwater treatment will increase the productivity of the bayou which will serve to increase the productivity of the bay. Additionally, increasing the buffering capacity of the riparian zone will decrease the sediment load and help re-establish a healthy creek/floodplain habitat which could double as a wildlife corridor, serving as refugia for many species that have lost their native home.

The Escambia County Stormwater Advisory Team (SWAT which organized in Dec 2014 in response to the April 2014 Flood) has copious amounts of critical data that can be used to enhance this project regarding flooding and damaged areas within the watershed.

Step III – based on the data interpretation of Step's I & II, the construction component of this effort would be three-fold: 1) Increase vegetated buffer along all banks from headwaters with native species suited to the ecotone; 2) identify suitable areas between the Bayou Blvd and 12th Ave reach of the creek to afford access from big box stores (their associated parking lots) to a

urban creek side boardwalk (similar to Turkey Creek) [<http://cityofniceville.org/turkey.php>] which provides access and awareness of the creek to the public; and 3) identify areas that can be purchased or incentivize private land owners to re-establish riparian buffers. Areas identified as contributing large volumes of stormwater pulses should be re-engineered to redirect stormwater to a holding system or a wetland polishing system.

Step III of this project would kick off a large public participation component. The lower portion of Carpenter Creek is lined by 'Box Stores' from Bayou Blvd to 12th avenue. Many of these stores have been 'grandfathered in' and are not required to treat their stormwater. However, their proximity to the creek, and especially their parking areas, lend themselves to be ideal partners for access to a wide raised boardwalk which could be designed similarly to the Acadia Mill Boardwalk (UWF, Milton). In addition, there are several old water powered mill sites in the area, including one thought to be the oldest mill dam. [Dr. Benchley is reluctant to disclose the exact location – at this time, since vandalism is a concern, but she indicated that this would be a wonderful feature and attract tourism, students, and bring awareness to these systems.]

This project has the potential to become an in situ living and working laboratory utilizing and enhancing multiple disciplines. The complexity of knowledge, given the historic archaeological comprehension, the groundwater plume from the Conoco-Phillips Superfund site, and the historic uses of the upper portions of the watershed (hog farms which continue to contribute nitrates to the system) provide potential for biological and phyto-remediation.

Bayou Texar also has a vibrant history; its lower reaches were used to 'hold oysters' until they were needed as oystermen returned to Pensacola from East Bay and upper Escambia Bay. To avoid saturating the market, oystermen had 'plots' where they held them until timing was best. Today, the lower bayou, below the Cervantes Street Bridge still has small oyster bars which some believe are the descendants from earlier days.

Step IV is implementation and continual monitoring to reinforce awareness and education. Any physical work done to the creek should occur during winter months to avoid the wet season.

- o Tributary monitoring
- o Land use loading rates
- o Sediment load reduction
- o Pollutant load reduction
- o Re-establishing the riparian zone canopy
- o Removal of invasive species (chemical & physical)
- o Biological monitoring
- o Re-introduction of beneficial native species and woody material into the system
- o Quarterly outreach for XX years, followed by bi annual outreach for additional XX years
- o Develop education booklet on this project and why protecting these systems is so important

- o Annual symposium for the public to update the community of this large scale project

ECONOMIC BENEFITS OF THE PROJECT

Industry and Business growth

Step III of the project includes a boardwalk located behind large box stores on Bayou Blvd. This boardwalk could offer seasonal kiosks which serve light foods (eg. ice cream) or artistic wares. In addition, the potential for archeological enthusiasts would be a draw to the historic mill.

A potential opportunity for a new business would overlap with the 2020 state of FL Goals by which 75% of each of the 67 counties in the state will be required to recycle paper, plastic, and glass. Currently, the recycling market fluctuates according to worldwide needs, but a sustainable opportunity exists. TREX decking material is 100% manufactured out of recycled plastic bags (an item not currently recycled in Escambia County). Trex decking material has evolved into several different products which are weather proof, UV resilient, and have a life span of over 50 years. (www.trex.com)

Given the number of projects that will surface along our coastal region, many of which will incorporate decking material and board walks, it could behoove the county to co-locate such an enterprise in the vicinity of the new recycling center (currently ECUA & Escambia County have set aside \$66M for a new recycling facility) which would serve to offer a sustainable project, provide jobs, and allow workforce development to install this product.

Transportation Network Improvements

This project offers the opportunity to expand on the potential wildlife corridor by adding a component which would allow the public access to the creek at several locations. Currently the creek is crossed by the public (pedestrian) on Olive Road, Davis Highway, Airport Blvd, 9th Ave, 12th Ave, and Cervantes Street. Olive Road and the south side of 12th Ave do not offer a pedestrian walkway.

This watershed system is an attribute to the community and offers an educational opportunity to provide overlooks with seating, educational signage and lighting for the interested public. A passive education opportunity includes signage about the ecosystem, including the plant and animal species which one may find in this habitat.

Health Concerns

Restoring water quality to the bayou would increase the opportunities for ecotourism. Currently, water quality notifications are issued after rain events indicating the waters are unsafe for recreation.

The lower bayou offers public access at Bayview Park via boat launch and pier access. In addition, plans to rebuild the older Bayview Center are underway and when finished will attract more of the public to the water. Currently the City of Pensacola allows a vendor to rent kayaks, paddle boards and other non-motorized water craft, but water quality warnings are not posted regularly after rain events. Multiple rowing groups have organized themselves and house their rowing sculls at the park.

The subsistence fishermen community uses the numerous bridge crossings and parks to fish for meals. Notification of high mercury content in fish is rarely posted at bridges or piers. A sizable component of the public relies on fish caught in coastal creeks to supplement their nutrition.

Demographics of the watershed vary from the upper head waters to the bayou area. This project begins in an older portion of town, near Olive Road – between Davis Hwy and Old Palafox Road. The creek and tributaries originate in areas known as Ferry Pass, Brent, Ensley, and flow south into East Pensacola and the City of Pensacola. Originally known as a rural area with larger tracts of land to support farming activities, the addition of the Interstate in the 1970s changed this area into a more suburban setting. Land use changes in the last decade have taken 10 and 20 acre parcels of land and transformed them into high density subdivisions made up of patio homes at 4-6 homes per acre. Many of the older tracts of land are currently trailer parks housing low income families.

The older areas may not be on sewage, as they would have been developed before sewage hook-ups were available. The upper head waters do not contain sidewalks or road side lighting, but because the area is older and a poorer demographic many of the residents supplement their diet through locally caught fish.

Flooding Improvements

This project lends itself to a whole watershed management approach. The Carpenter Creek Watershed lies in two jurisdictional areas (City of Pensacola and Escambia County). This watershed empties into the Pensacola Bay Watershed, which has been identified by on the Federal National Priorities List as an impaired body of water. (USEPA. 2010)

The Watershed Management Approach includes identifying the largest sources of nonpoint stormwater entering the system and redirecting the water to a detention or retention pond. Right of way swales are another opportunity to keep water from entering the wetland/creek/bayou system. Planting the right of way with trees known to ‘drink’ large volumes of water would offer shade on hot days, and be connected to the water table if

they were in the vicinity of the water body. Poplars and Willows are known to ‘drink’ up to 350 gallons of water on a hot day. In the Carpenter Creek/Bayou Texar Watershed, summer rains are known to drop 3-5” at a time, whereas winter conditions are much less; which also coincides with trees entering a dormant period.

The UWF Earth Science Dept has skilled GIS instructors and students who can play an active role with this in situ aspect of the project. The city and the county own the right of way, which would allow the use of swales and turn outs to redirect water away from the creek.

Increasing the riparian zone along the creek will also serve to mitigate flooding and stabilize the banks of the system. Incentivizing private property owners to allow additional trees to be planted on a berm would serve to decrease flooding, improve water quality, stabilize the entire system and cool water before it enters the main stem. This in turn would allow the currently impaired watershed to begin to function as a healthy ecosystem thus creating a stabilized and far more resilient system.

Workforce Development Potential

This project sets the foundation for developing curriculum in high schools, trade schools and upper academic institutions to better understand the coastal plain ecosystem and restoration efforts which blend the geographic, topographic, and biological functions to provide what is known as Coastal Plain Restoration Techniques, and to enhance ecosystem services.

- Currently there is a void of data on the negative costs of hardened infrastructure (such as bulk heads and revetments) which are now known to decrease biological diversity and increase flooding and erosion where the hardened structure ends. This principle artificially inflates the positive impacts of built up infrastructure because the negative costs are not incorporated or understood. To address this void, additional research on natural, living shorelines compared to hardened shorelines must be developed and put in the context of monetary impacts. Since insurance companies drive many of the approaches to protecting infrastructure through actuary data, there are opportunities for economic development in the transformation of hardened landscapes to softening the land and water interface.
- This project lends itself to addressing sea level rise and incorporating proactive techniques for future conditions. In addition, this project contains a Superfund Site which has not been fully investigated for attenuation opportunities in the past decade. The public is informed of its existence but uninformed and unaware of what future conditions may entail. As the technological industry continues to develop new methods for identifying contaminants and concerns, so too can those new concepts and technology be applied to this system. This contaminant plume affords new approaches to ground water attenuation in an urban watershed.

POTENTIAL PARTNERS

The following groups (academia, business, and government) are the potential foundation for the partnerships this project could foster.

- UWF – Earth & Environmental Sciences; Center for Environmental Diagnostics & Bioremediation; Biology Dept; Computer Science Dept; Archeology Dept; and Economic Dept
- Pensacola State College
- Washington High School, Marine Science Academy
- Home School Groups
- Box Stores along the creek – Target, Michaels, Winn Dixie, Publix, Rave Theater, Mellow Mushroom
- Box Stores across the street from the creek – Cordova Mall, Gander Mountain, Barnes & Noble, and Sacred Heart Hospital
- Escambia County, FL
- City of Pensacola
- West FL Regional Planning Council
- FDEP
- Escambia County/SeaGrant, Bringing Back the Bayous
- Homeowners along the creek
- Audubon
- Bayou Texar Foundation
- Bream Fishermen Association
- East Hill Neighborhood Association
- Native Plant Society
- Six Rivers CISMA

PROJECT DETAILS

Project Steps

I. Step I

Ecological assessment of the watershed; native & invasive plant species; condition and width of the riparian zone along each bank; stream & bank condition; Stream Condition Indices; % of woody material; installation of sediment pins above & below bridges; potential sources of erosion; flow rates; and install rain gauges at several reaches (perhaps to be monitored by citizen scientists?).

Upper, middle, and lower headwaters (currently hosting a family of beavers) will include bathymetry, shoreline vegetation identification, and water quality monitoring. Upper, middle, and lower bayou will include bathymetry, water column water quality monitoring and sediment sampling for analyses (metals, nutrients, and contaminants for the Conoco Super Fund Site, PCBs, and historic EMAP data from upper Bayou Texar station TE-10)

II. Step II

Data interpretation from Phase I and application to GIS; Literature review for Carpenter Creek and Bayou Texar (Gerald Moshiri, Sneed Collard, Carl Mohrherr, BFA, EMAP, FDEP, Airport drainage, NOAA, USEPA, USGS, USFWS, FFWCC, City of Pensacola, Escambia County, and the Escambia County Stormwater Advisory Team (SWAT); etc.); NRCS for land use changes; LiDAR comparisons and changes from 1996, 2002, 2009, anything newer?); identify upland properties for water diversion up to ½ mile away; identify best places for berm design; and identify best access/egress points for boardwalk.

Identify all neighboring land owners and begin discussions of increasing the riparian zones. Meet Escambia County to discuss monetary incentives for creek side land owners to benefit from increasing riparian zones and conservation easements. Meet with FDOT and the county to discuss re-routing water from roads to nearby swales. Identify properties which can be converted into natural lands for water retention.

Invite neighboring land owners to participate in water quality sampling through hand held colorimetric kits (eg., Hach, etc.)

Develop legal agreements with all parties (MOUs, MOAs, etc.) prior to Step III.

III. Step III

Develop and plant vegetated berm at the expanded buffering border of the riparian zone and plant with assemblage of native ecologically valuable woody and herbaceous flora which are also wind resistant. Areas which have been identified as conveyances of nutrients or other stormwater discharge should be planted with specialized flora to take up the specific contaminants. Areas that remain moist or wet should be planted with moisture loving plants and trees (cypress, willow, poplar, etc.) The Longleaf Chapter of the Native Plant Society and the Francis M. Weston Chapter of the Audubon Society will be able to assist in these areas.

Identify suitable areas between Bayou Blvd and 12th Ave that would afford access to a boardwalk along the creek. Include the FMW Audubon Chapter in the design since the creek and stormwater ponds offer many viewing opportunities.

Identify the interesting archaeological sites in this watershed and how to best introduce the public to them. The Boardwalk area will lend itself to keeping the public away from the sites and allowing areas for passive education through signage.

IV. Step IV

The next phase of the project includes monitoring and calibrating the models developed earlier in Step II. These include: Tributary monitoring; Land use loading rates; Sediment load monitoring and reporting (increase/decrease); Pollutant load monitoring (increase/reduction); Re-establishing the riparian zone canopy – vegetative monitoring & condition; Removal of invasive species (chemical & physical); Biological monitoring (both flora and fauna, bio-blitz opportunity); Re-introduction of beneficial native species and woody material into the system (increase or decrease of macro-invertebrates); Quarterly outreach for XX years, followed by bi annual outreach for additional XX years; Develop education booklet on this project and why protecting these systems is so important to the public and the surrounding community (invest

everyone); Annual symposium for the public to update the community of this large scale project (have students present their findings. Cross pollinate high school with higher level academics)

V. Step V

Step V will include the continued oversight and maintenance of the Boardwalk. This can be a employment opportunity for several individuals. Offer lecture series and field trips by various groups (Audubon, Native Plant Society, UWF Archeological Society, etc.)

Development, installation, and continual updates of information on the signage, kiosks, and website will also require a dedicated team with an overview and understanding of the project.

Community Engagement

➤ Community Health

Although many individuals living in Escambia County cross bridges daily on their way to work, school, or shopping, many don't realize the central role that rivers and creeks play in enhancing community quality of life. A healthy creek provides clean drinking water, supports a healthy fishery and wildlife habitat, allows natural protection from flooding, and can offer abundant recreational opportunities. Unfortunately, when people don't feel a connection between their community and their creek, they're less likely to care for it – which can lead to pollution, irresponsible development, and overall negligence.

Recent studies have shown that mental health issues can be reduced by access to nature. Many living in cities spend less time outside in green, natural spaces than people did several generations ago. As a result, city dwellers also have a higher risk for anxiety, depression and other mental illnesses than people living outside urban centers, studies show.

Developing sidewalks, benches, and adding trees to take up road side runoff, have the potential to benefit the entire community.

➤ Neighborhood Benefits

The Carpenter Creek/Bayou Texar Watershed is roughly ten miles in length and passes through every aspect of the community from very poor to very wealthy. A segment of the system houses retail and is well suited for a boardwalk. Enhancing the access to the creek and beautifying the area by replanting the riparian zone would serve to restore pride in many of the lower income areas.

Developing a continuous sidewalk/bicycle corridor would allow/encourage the public to reach many of the retail outlets without using a vehicle. Sidewalks and bicycle corridors would have to be designed such that pedestrian traffic is separated from the faster moving roadway, to assure that these corridors are safe and really used.

As the Escambia County/City of Pensacola community grow, a green corridor which encourage pedestrian and bicycle connectivity to the area will add property values and encourage healthful commutes.

➤ **Local Preference**

As with all aspects of infrastructure, there is a maintenance component. This project will lend itself to maintaining the tree canopy, continual removal of invasive species, upkeep of the sidewalks, benches, and weekly garbage pickup.

Communities that maintain their parks and pedestrian corridors raise pride and property values for the area. An educated community also attracts educated visitors.

➤ **Education and Awareness**

Education and awareness can be improved with signage connecting the public to the system. The Boardwalk component of this project will be the real ‘meat and potatoes’ of the educational component since that aspect of the project will separate the public from the noise of city life and traffic.

As the project develops, signs and kiosks will be an important tool to provide information. An overview of the entire watershed and the habitat restoration can be shown as an inset, followed by information at key locations as to what is being at that site; how all these aspects fit together.

Signage along a pedestrian/bicycle corridor in the vicinity of park benches near culverts and bridge crossings will serve to bring awareness of the overall project and tie the community to the watershed. Kiosks can be installed at boardwalk access points.

The general public is very ill informed about nature and the general services the environment performs for the community. This project lends itself to being a passive learning and educational tool to convey this knowledge.

The opportunity to offer information in various languages is also possible by including a QRC code which links to a website and provides updates on water quality, species diversity, and project succession.

➤ **Environmental Outreach**

This project will serve to enhance many senses as the riparian system is restored, it will attract more wildlife in the form of birds and insects. The creek has a good flow, albeit it is smothered by sediments in most of its length, but as the water table is reconnected with the flood zone the water depth should be able to support larger fish and turtles.

The historic mill location will fulfill the connection to the past, and it is hoped that the system is designed to invite educators to the site to share their research with the public. Students will also have the opportunity to educate the public, thus preparing them for public speaking.

This project will also lend itself to educating younger members of the community on the importance of creeks and their role in supporting the fishery. Woody material in the form of native species will increase the diversity of species that support the biological food web. This project lends itself to workshops where the community can be introduced to an inland, urban creek system and with educators can learn about the role of these systems and how they fit into the bigger Pensacola Bay Watershed.

➤ **Cultural and Historic Resources**

As previously mentioned, this project lends itself to both cultural and historic attributes which can be featured as an ecotourism destination.

➤ **Consistency with Local Plans**

Currently the entire Carpenter Creek/Bayou Texar Watershed are on the 303d list for bacterial contaminants, nutrients, and fish consumption due to elevated mercury levels. This watershed empties into the larger Pensacola Bay Watershed which has lost 95% of submerged aquatic vegetation, as well as a diverse fishery. The commercial finfish and shellfish industry harvested from the Pensacola Bay area amounted to 5.6 million pounds in 1973. The fishery had all but collapsed by 1976.

Nutrients, biological oxygen demand, sedimentation, point and non-point runoff was a contributor to demise of the system. Today, contaminated sediment pockets lie dormant in areas, seagrasses are still not making a recovery, and low dissolved oxygen levels on the bottom of the bay reveal signs of hypoxia.

The Water Management District cites many projects to improve water quality in the bay through the SWIM Plan. Escambia County, City of Pensacola, Bay Area Resource Council, FL Dept of Environmental Protection are all working in tandem to improve aspects of these smaller watersheds, but this project proposes a holistic approach and offers the community an opportunity to participate.

➤ **Green Design**

This project seeks to incorporate rain gardens, vegetated swales, stream enhancement, riparian zone enhancement, upland stormwater retention/detention, and landscaping with native species throughout the entire watershed. Areas with boardwalks will be encouraged to use Trex material, which is recycled and has a long lifespan when compared to traditional wooden boardwalks, given our climate.

Estimated Project Budget

Step I – See Separate Attachment

Step II - See Separate Attachment

Step III - See Separate Attachment

Step IV - See Separate Attachment

Step V - See Separate Attachment

Potential Leverage of Other Funds

List sources of state and federal funding, also foundation funding that is currently available or could be applied for as leveraged funding for the project.

1. Rockefeller Foundation: 100 Resilient City Challenge Grant - The Rockefeller Foundation has announced the third and final round of the 100 Resilient Cities Challenge. The 100 Resilient Cities Challenge seeks to find 100 cities that are ready to build resilience to the social, economic, and physical challenges that cities face in an increasingly urbanized world. The Finalists identified during 2015's 100 Resilient Cities Challenge will be eligible to receive: Funding in the form of a grant to hire a Chief Resilience Officer; Technical support to develop a holistic resilience strategy that reflects each city's distinct needs; Access to an innovative platform of services to support strategy development and implementation. Platform partners come from the private, public, and nonprofit sectors, and will offer tools in areas such as innovative finance, technology, infrastructure, land use, and community and social resilience; Membership in the 100 Resilient Cities network to share knowledge and practices with other member cities. Applications are due November 24, 2015. Contact Sustainable Strategies DC at Andrew.Seth@strategiesdc.com or (202)261-9881 for more information.
2. The Environmental Protection Agency (EPA) Office of Smart Growth will choose approximately 25 communities for the "**Local Foods, Local Places**" **Designation**, which will provide direct technical support to selected communities to develop action plans that use local foods to support healthy families and communities and to drive downtown and **neighborhood revitalization**. The assistance process features a community workshop that brings people together to develop shared goals and steps to achieve them. EPA encourages applications from communities that are economically challenged and in the early phases of their efforts to promote local foods and community revitalization. The deadline for applications is September 15, 2015. Contact Andrew Seth at Andrew.Seth@strategiesdc.com or (202)261-9881 for more information.
3. The NFWFMD is seeking project submittals for watershed and water quality improvements. The expansion of riparian zones along the creek was discussed and found to be a good fit.
<http://nwfwater.com/latest-news/2015/09/01/district-seeks-water-project-submittals/>

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