Board of County Commissioners
Workshop Discussion Item

Date of Meeting:	January 29, 2009
Date Submitted:	January 23, 2009
To:	Honorable Chairman and Members of the Board
From:	Parwez Alam, County Administrator Vincent Long, Deputy County Administrator Alan Rosenzweig, Assistant County Administrator David McDevitt, Director, Growth and Environmental Management Tony Park, P.E., Public Works Director
Subject:	Workshop on Stormwater / Transportation Flooding

Statement of Issue:
This is a discussion of potential actions that the Board of County Commissioners might take in response to the impacts of Tropical Storm Fay and prior storm events.

Background:
During the finalization of Leon County's 2008/2009 Annual Budget, Tropical Fay struck Leon County causing damages to neighborhoods and residential areas and interfering with the normal quality of life for many of the residents of Leon County. As it was too early to develop a specific action plan for County response to the situation, the Board established a $5.1 million line item in the budget to be utilized to provide relief or to enact preventative actions to preclude the reoccurrence of such impacts in future storm events. This Workshop was developed to provide the Board with information necessary to determine the allocation of the funds in this budget line item. The workshop materials also provide an extensive review of existing and possible changes to regulations and other policies related to stormwater management.

The workshop materials are structured as follows:

1. Executive Summary
2. Overview
3. Regulatory
4. Policy Issues
5. Infrastructure
6. Options and Recommendations

The following is a detailed outline of the workshop packet and its associated page location:

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1. EXECUTIVE SUMMARY

Following each recommendation, is a page reference to the specific area of the workshop packet that addresses the issues.

Regulatory:

#1: Given the $4 to $5 million cost, direct staff to seek grants funding or other potential funding sources for a county-wide flood study *(County Administration Vincent Long/Don Lanham).*

#2: No changes to floodplain regulations are recommended at this time.

#3: No changes to the existing definition of closed basin are recommended.

#4: No changes to the existing interbasin transfer Code provisions is recommended at this time.

#5: Direct staff to develop a policy to require stormwater controls for future development on vacant vested lots in closed basins to achieve volume control *(GEM/Environmental Compliance Vincent Long/David McDevitt/John Kraynak).*

#6: Direct staff to amend the County's Land Development Code to eliminate or significantly reduce the opportunity to create new subdivisions that rely on privately-maintained infrastructure, particularly within the Urban Services Area *(GEM/Development Services Vincent Long/David McDevitt/Tony Biblo).*

#7: Direct staff to amend the Land Development Code to allow for the use of on-street parking where appropriate, so that significant area is not required for off-street parking (less impervious surface), thereby reducing stormwater management demand in new subdivisions *(GEM/Development Services Vincent Long/David McDevitt/Tony Biblo).*

#8: Direct staff to amend the Land Development Code to facilitate compact development, to generally reduce the amount of impervious surface generating stormwater runoff to allow more land area to remain available for stormwater management capacity *(GEM/Development Services Vincent Long/David McDevitt/Tony Biblo).*

#9: Direct staff to amend the Land Development Code to establish a process providing developers credits to meet natural/landscaped area requirements in exchange for purchasing and conveying to the County, vested, flood prone property, precluding that property from future development *(GEM Vincent Long/David McDevitt and County Attorney).*

#10: Direct staff to amend the County's Land Development Code to enhance stormwater volume regulations by requiring a county-wide standard that increased volume produced by a development site be retained on-site and not be allowed to discharge through a sand filter or a rate control structure *(GEM/Environmental Compliance Vincent Long/David McDevitt/John Kraynak).*

#11: Direct staff to amend the County's Land Development Code to include stormwater runoff rate control regulations for all duration storms with return period frequency of up to and including the 100-year storm period *(GEM/Environmental Compliance Vincent Long/David McDevitt/John Kraynak).*

#12: Direct staff to schedule a public hearing to consider adopting the proposed residential flood prone disclosure ordinance (Attachment #10) *(County Attorney).*

Policy:
#13: Direct staff to schedule a public hearing adopting the Stormwater Management Special Assessment Program Ordinance which specifically creates a new 2/3 program to address stormwater and drainage projects, that allows for properties benefiting from the project to be assessed (Attachment # 11) *(Public Works Engineering Services Alan Rosenzweig/Tony Park/Joe Brown and County Attorney).*

#14: Action related to the flooded property acquisition program is dependent upon funding. If funding is pursued under the infrastructure recommendation, it is recommended that the Board direct staff to prepare a revised flooded acquisition policy which would address the existing flooded property list and any new properties to be added *(Public Works Engineering Services Alan Rosenzweig/Tony Park/Joe Brown and County Attorney).*

#15: Accept staff's report on coordination efforts with the City and support the on-going functional consolidation efforts.

#16: Continue to utilize the Local Mitigation Strategy (LMS) to identified solutions that better prepare Leon County to address disasters *(Planning Vincent Long/Wayne Tedder).*

Infrastructure:
#17: Direct staff to proceed with $6.5 million in capital projects that provide relief to public subdivisions; given the required lead time for design and property acquisition, authorize the funding to be phased ($4.084 million in the current year and $2.416 be included in next fiscal year) to complete the project list *(Public Works Engineering Services Alan Rosenzweig/Tony Park/Joe Brown and County Attorney).*

#18: Authorize $1.0 million in funding be set aside to be utilized as a 20% matching fund for the County Accepted Roadways and Drainage Systems (CARDS; old 2/3s) and direct staff to contact neighborhoods that have been identified for this program *(Public Works Engineering Services Alan Rosenzweig/Tony Park/Joe Brown and County Attorney).*

#19: Direct staff to work with the CSX Railroad and United States Forestry Service to develop joint participation agreements to address stormwater issues involving these two entities *(Public Works Alan Rosenzweig/Tony Park and Vincent Long/Shington Lamy).*

#20: Provide direction to staff regarding a General Obligation (GO) bond referendum for the purpose of acquiring $95 million in flooded property in the unincorporated area of Leon County *(Office of Management and Budget Alan Rosenzweig/Scott Ross).*

2. OVERVIEW:

The National Weather Service official rain total from Tropical Storm Fay was 11.9 inches in Leon County during the official period of the storm, as measured at the Tallahassee Airport (Attachment #1). The rainfall impacts were greater to the north and east with 18.6 inches measured for the official storm period at the Solid Waste Facility on US 27. It is also known that immediately after the official TS Fay event, additional rainfall of significant quantities fell, and it is arguable that the actual total rainfall from the storm was 19.3 inches at the Solid Waste Facility (Attachment #2).

Weather scientists and stormwater engineers have evaluated this rainfall condition and determined that it significantly exceeded the 100 year rainfall event that is normally used as the most extreme design storm for the design of stormwater infrastructure. For this reason, it is to be expected that the stormwater infrastructure currently in place in Leon County would not be able to handle the stormwater created by TS Fay, and it did not. It is noted, however, that more recently constructed infrastructure came very close to performing at acceptable levels and that older infrastructure generally failed with greater impacts. This can be interpreted as a demonstration that current regulations are based on better science than was available in prior decades.

A quick review of the information contained in this section will show that the allocated funding in this year's budget will not be sufficient to resolve all of the desired issues. There is, however, an opportunity to judiciously apply funding in many areas that will benefit many citizens. The application of funds to some larger efforts will do even more to benefit the most citizens at the least cost to the county.

Problem Areas

The problems identified by TS Fay and reaffirming prior storm events are varied in their manifestation. They can, however, be generalized to their core issues by the type of stormwater situation they were impacted by. These are:

Closed Basin Impacts are the result of total rain volume. A prolonged rain event of an intensity that would not otherwise be considered significant can have major consequences within a closed basin. A severe rain event, such as TS Fay, can produce catastrophic results. An example of a closed basin impact would be the Timber Lake Subdivision.

Conveyances in the form of streams, ditches and pipe systems can be overwhelmed by short duration, high intensity rain events; however, the actual total rainfall may not be recognized in the adjacent area as being notable. An example of conveyance failure impacts would be the Killearn Lakes area of Leon County.

River Basin Impacts are the result of regional rainfall events. Flooding from river basins can occur in areas that do not actually experience the rain event that causes the flooding. The

typical configuration of a river is a channel where normal water flow occurs that is surrounded by low areas where water can spread to when the capacity of the channel is exceeded (the flood plain of the river). The extent of flood plains was not understood when many homes and road systems were constructed. Examples of river basin impacts are the Fairbanks Ferry area and the Benjamin Chaires Road area (Attachment #3).

Solution Tools

Although financial support is critical to resolution of the concerns addressed in this workshop, the Board has other options available that can improve the stormwater system to prevent damage from future storm events. In general, these are:

Infrastructure Improvements require the greatest expenditure of funds. Typical tools include the raising of roads to insure their accessibility during storm events, enhancing the capacity of the drainage systems, expansion of floodwater storage areas and related projects. stormwater studies can identify construction projects that will do the most good for the least cost.

Regulatory Changes can be implemented to prevent new construction from occurring in areas subject to the negative impacts of storm events. Regulations changes can be considered for any of the following subjects: Floodplain; Closed Basin; Vested Developments; Volume Control; Rate Control; Private vs. Public Subdivisions.

Policy Changes can also be implemented to create tools for problem resolution. The existing Two Thirds Program has been identified as a way to approach several of the specific problems resulting from TS Fay. Some modifications to this policy could make it even more effective. The previous Flooded Property Acquisition Program could be reactivated. Policies associated with City/County coordination could also be revisited.

The problems identified in TS Fay and prior storm events will be addressed in greater detail in the following workshop discussion items. This will include detailed discussions of possible Regulatory and Policy changes and also specific examples of the problems encountered by county neighborhoods and subdivisions and their possible resolution.

3. REGULATORY

This section is divided into the following areas for discussion:

3.a. Structural Flooding Concerns
- 3.a.i. Flood Map Modernization
- 3.a.ii. Recent Board-Approved Floodplain Regulation Enhancements

3.b. Closed Basins
- 3.b.i. Interbasin Transfer Restrictions
- 3.b.ii. Vested Residential Lots in closed Basins

3.c. Vested Development
- 3.c.i. Vested Residential Subdivisions and Lots
- 3.c.ii. Extinguishing the Development Rights of Vested Residential Lots

3.d. Volume Control

3.e. Rate Control

3.f. Real Estate Disclosure

3.a. Structural Flooding Concerns

Over the years, the floodplain regulations have improved in an effort to minimize flood damage for new development. The first step for any new subdivision or commercial development is to complete a Natural Features Inventory (NFI) to identify sensitive features on the site. One important component of the NFI is to identify and delineate any floodplains on the site. The floodplain area is then protected by either a drainage or conservation easement, depending on whether there are additional features present, such as wetlands. All newly created lots are required to have at least one-half acre of buildable area outside of any regulated sensitive feature, including the 100-year floodplain (lots smaller than one-half acre must be entirely buildable and on central sewer). Except for areas where the floodplain may rise due to the build out of vested vacant lots-of-record, these new lots should not present problems with structural flooding in the future.

Development is allowed within altered floodplains provided that no floodway is adversely affected, compensating volume is provided for any net fill within the floodplain, and the lowest finished floor elevation of any structure is placed at or above the flood protection elevation. The altered floodplain designation is difficult to achieve and for good reason. The effects of future upstream development on the altered floodplains are unknown and development in a floodplain allowed today could be in jeopardy in the future. Large storm events, such as Tropical Storm Fay, provide clear examples of why development should be located outside and away from floodplains.

3.a.i. Flood Map Modernization

Background:

Floodplains are determined during the NFI using the best available information. This can include an engineering flood study, historic flood levels and Federal Emergency Management Agency (FEMA)

flood maps. FEMA maintains a set of floodplain maps for the purpose of underwriting its flood insurance program. These maps are called Flood Insurance Rate Maps (FIRMs). These maps depict Special Flood Hazard Areas (SFHAs), which are floodplain areas that are subject to flooding during the 1% annual chance flood (sometimes referred to as the 100-year flood). SFHAs are often referred to as "the 100-year floodplain."

The problem with FEMA flood maps is they were historically very inaccurate and based on very old, inaccurate elevation contour data. Many citizens unknowingly rely on these maps for making property purchases. The federal government works to improve these maps when funding becomes available. The Northwest Florida Water Management District (NWFWMD) has been working with FEMA as a Cooperating Technical Partner on the latest update to the FIRMs through FEMA's Map Modernization Project. Two major improvements were made to the maps: 1) the older mapped floodplains were incorporated into the County's new LIDAR (Light Detection And Ranging) contour data; and 2) more inclusive wetlands were added to the flood map (many wetland/floodplain areas were previously missed).

The revised FIRMs were released for public review in October. The draft new floodplain boundaries can be found on the web at: www.tlcgis.org. As part of the FIRM update process, Leon County reviewed the newly delineated floodplain boundaries for impacts to County residents. Analysis revealed that approximately 287 structures were added to the new floodplains delineated on the maps. Letters were sent to the 287 property owners to inform them and allow them the opportunity to comment. Staff received feedback from 40 property owners and forwarded this feedback, along with staff analysis, to the NWFWMD. Changes the NWFWMD and FEMA deem appropriate will be incorporated into the final map series to be released in July of 2009. Once the new maps become official, mortgage holders will require borrowers to carry flood insurance for these structures.

Analysis:
The changes made to the FEMA maps improve the accuracy, yet still fall short of providing necessary comprehensive flood information. The impervious area used in the original mapping can date back as far as 1982 for most areas. This means that all new construction since that time (impervious area), which has added more flood water to the system, has not been accounted for in the mapping. Many areas of the County were never modeled, including closed basins and rivers such as the St. Marks.

It is extremely important to have an accurate floodplain map for the entire county. There are many reasons to develop such a map. First, this could minimize errors by consultants who normally determine floodplains on a site specific basis, rather than looking at the holistic picture. Second, this would greatly assist in permitting both existing vested vacant lots and for new subdivisions and commercial development. More accurate flood maps could expedite the development review process. It can be time consuming and expensive to hire engineering consultants to model a

floodplain for each individual development site, which is required in the Natural Features Inventory. Third, the new map could also be used by FEMA for flood insurance purposes. This would add more delineated floodplain areas to the map which would appropriately require the homeowners with mortgages to protect themselves with flood insurance, thereby minimizing property losses from flooding. Fourth, this would bring better awareness to prospective buyers of property who still rely on the inaccurate FEMA flood maps. Fifth, once the model and map has been completed, engineering consultants could incorporate their development site impervious into the model and determine if there are any adverse impacts downstream. This would provide more precise stormwater mitigation and could reduce the size of some of the stormwater ponds as a form of concurrency. Sixth and final, there has not been incorporation of Category 3 or 5 hurricane storm surge effects on southern Leon County into the flood analysis model. Projections observed by staff show major areas of southern Leon County inundated by flood waters from tidal surge. Delineation of this storm surge could facilitate enhanced regulations and protection to minimize future flood losses.

Based on the reasons outlined above, staff believes that it is important to obtain an accurate flood map for all of Leon County to guide development away from these floodplains. The largest obstacle in obtaining this map is the funding. Staff estimates that it could cost between $4 and $5 million to model the entire County. Staff recommends that the county seek grant funding or other potential sources to fund a county-wide flood study.

Recommendation:
#1: Given the $4 to $5 million cost, direct staff to seek grants funding or other potential funding sources for a county-wide flood study.

3.a.ii. Recent Board-Approved Floodplain Regulation Enhancements

There were many residential lots established prior to the 1984 adoption of subdivision regulations, the adoption of the Environmental Management Act (EMA) in 1989, and prior to the adoption of the Comprehensive Plan and implementing Land Development Code in 1990. This resulted in many lots with environmental constraints, the most problematic of which is floodplain. An analysis in 2003 showed that there were 879 vacant lots with less than one-half acre of buildable area outside floodplain, 488 of which were entirely within the floodplain. These numbers were understated since the analysis could only utilize the data produced from the FEMA maps, which we know are inaccurate for the reasons previously stated.

In order to prevent creation of new flooding problems, all new development must be built above or out of the 100 year floodplain. Construction on existing flood prone lots is protected from structural flooding by requiring construction to be above the 100 year floodplain.

In 2005, the Board adopted Ordinance No. 05-01 that increased flood protection for the minimum finished floor elevations above the floodplain. This was done to protect the unknown floodplain elevation increases resulting from the impervious added by new development. The flood protection elevation for buildings was increased as follows:

1. Where no base flood elevation has been determined by an engineering study or can not accurately be determined due to the lack of essential engineering data, the flood protection elevation was increased from 2 feet to 3 feet above the highest reasonably anticipated or historically recorded elevation of surface water in the area where the building is being constructed.
2. Where a less than fully developed upstream watershed was assumed and a base flood elevation was then determined either by an engineering study or by determining the depth of the discharge/flow over a natural topographic saddle, the flood protection elevation was increased from 1 foot to 3 feet above the level of the 100-year flood elevation in the area where the building is being constructed.
3. Where a fully developed upstream watershed was assumed and a base flood elevation was then determined either by an engineering study or by determining the depth of the discharge/flow over a natural topographic saddle, the flood protection elevation was increased from 1 foot to 1.5 feet above the level of the 100-year flood elevation in the area where the building is being constructed.
4. In order to prevent flood damage due to overland sheet flow, the finished floor was increased from 4-inches to 1-foot above the finished grade elevation at a distance of five feet from the foundation for detached single family, duplex, triplex and quadraplex structures. Garages and basements were also protected by grading the site to prevent sheet flow from entering.

The most recent change to the floodplain regulations occurred in 2007. The Board adopted an ordinance requiring that all applicants for development orders for all residential structures to be constructed partially or wholly within a 100-year floodplain, as determined by the flood certificate, must sign, notarize and record a waiver approved by the county administrator or designee, releasing the county from any and all existing and future claims for any damages arising from the floodplain condition of the property. If the driveway access to the structure is partially or wholly within the 100-year floodplain, the applicant likewise must sign, notarize and record such waiver.

Recommendation:
#2: No changes to floodplain regulations are recommended at this time.

3.b. Closed Basins

Closed basins are depressional areas in the drainage system that normally does not discharge stormwater from a rain event. Closed basins can be described like a cup or bath tub with no outlet. The Comprehensive Plan defines closed basins as "a naturally depressed portion of the earth's surface for which there is no natural outlet for runoff other than percolation, evaporation, or

transpiration." The EMA adds some further description and defines closed basins as "a naturally depressed or artificially closed off portion of the earth's surface for which there is no natural and normal outlet for runoff other than percolation, evaporation, transpiration, or discharge into a karst feature." (emphasis of the further description added)

There has been discussion as to whether the closed basin definition requires further clarification, primarily in relation to when the closed basin begins to discharge. Should a basin be considered closed if it discharges after a particular storm event, such as the 25, 50 or 100-year storm events? This discussion began with the Summerfield development in attempting to identify the closed basin exclusion for applying the Lake Jackson Special Development Zone (SDZ) standards of protection. Due to the court's ruling on this issue and subsequent withdrawal of the Comp Plan amendment, no closed basin exclusion exists, and staff believes no further changes to the definition are necessary.

There are approximately 317 closed basins identified in the County's Geographical Information System (GIS). The primary use of the closed basin definition in the EMA is for stormwater volume control purposes. The volume control standard requires that runoff volumes within closed basins in excess of the pre-development runoff volume be retained for all storm events up to and including the 100-year, 24-hour duration storm. Essentially, this means that the additional runoff created by the impervious of new development needs to be retained onsite and cannot discharge to downstream properties. Volume control is required by code for "any closed basin for which it can be shown by hydrologic analysis that cumulative increases in runoff volume from potential development patterns will cause a significant adverse impact on the frequency, duration, or extent of flooding." This is an important tool for reducing downstream flooding.

It was recently calculated that the Hidden Pond closed basin discharged after a 3-year, 24-hour storm event. First appearance of that small of a storm event would indicate that the basin might not need to be regulated for volume control purposes. However, it was also calculated that 96% of the storms over a 40 year period never produced enough runoff to cause the basin to overtop. This analysis allowed staff to require volume control regulations to prevent downstream private property from observing additional runoff from the impervious area created by the new residential development. **This is an example of why staff does not believe the closed basin definition needs to be further defined by a particular storm event, and therefore should remain the responsibility of staff to determine if discharge to a particular basin could cause an adverse impact.**

Recommendation:
#3: No changes to the existing definition of closed basin are recommended.

3.b.i. Interbasin Transfer Restrictions

There have been discussions on whether changes are needed to the interbasin transfer restrictions in the Land Development Regulations. Staff believes that these restrictions do not require modification. Transfer of stormwater runoff from one drainage basin to another, including stormwater runoff from closed basins, is allowed only where an assessment of impact has been made, to the satisfaction of the County Administrator or designee (Environmental Compliance Director), indicating minimal negative impacts to the receiving watershed relative to water quality, quantity and rate of discharge, and where (a) or (b) of the following is met:

(a) The interbasin transfer is necessary for a public sector project, or a private/public joint venture, either of which must benefit a broad segment of the community.

(b) The interbasin transfer mitigates an existing stormwater problem.

The assessment of impact to the receiving watershed must be in the form of a detailed study which addresses not only the specific impacts of the immediate development activity proposed, but also the potential cumulative impact on the receiving watershed and water bodies which would result from continued interbasin transfer within the watershed. Therefore, if the County wanted to transfer stormwater out of the Timberlake basin as an example, both (a) and (b) would qualify this transfer as a viable project provided that a demonstration is made that the transferred stormwater would not cause an adverse impact on the receiving basin. **Staff believes that these regulations are sufficient and does not recommend any changes at this time.**

Recommendation:
#4 No changes to the existing interbasin transfer Code provisions should be implemented at this time.

3.b.ii. Vested Residential Lots in Closed Basins

Background:

As previously stated, there were many residential lots established prior to the 1984 adoption of subdivision regulations, the adoption of the EMA in 1989, and prior to the adoption of the Comprehensive Plan and implementing Land Development Code in 1990. This resulted in many of these lots being created in closed basins. At the bottom of these closed basins are floodplains that collect the accumulated runoff from rainfall events. Many of these closed basins have houses constructed at or near the bottom in the floodplain. In many of these basins, there are vacant lots outside the floodplain that, if home construction occurs, will add more runoff to the bottom of the basin making the floodplain rise and resulting in more flood damage. Historic and current home construction permitting on these vested lots has not required stormwater ponds to mitigate the effects of the new impervious on conveyance systems and to the floodplain at the bottom of the basin.

Analysis:
The recognition of property rights associated with vested lots presents a challenge: the property owners expect to be able to develop their lots, but doing so could potentially cause more flooding, thereby creating a greater need for emergency response and retrofitting of the subdivision, costs typically passed on to Leon County. There are a number of ways to address this issue: 1) the County can apply its resources during and after a flooding event (emergency response and subsequent infrastructure retrofit); 2) the County can acquire development rights to flood prone property, thereby keeping the property from being developed; 3) the County can retrofit affected subdivisions prior to such events; and, 4) the County can require each individual property owner to address necessary stormwater management facilities prior to the development of their lot (through imposition of stormwater management permit requirements on a lot-by-lot basis). Most of these responses will require significant financial resource commitments, from the County, the lot owner, or other entity.

Due to lack of funding for the majority of these options, staff believes the imposition of stormwater management controls, prior to development of the vacant lots, is a necessary option at this time. Without the implementation of this type of regulation, the additional permitted impervious will cause the floodplain to rise, which may cause additional flooding problems. Staff recommends that development on these vacant lots provide stormwater facilities with a goal to achieve volume control for the new impervious. There are approximately 846 vacant vested lots located in closed basins.

The property owner can use several stormwater controls such as retention swales, rain barrels, rain gardens, pervious pavement, etc. to achieve the volume control goal. This would not be an easy task, especially during the current economic situation. Concerns from the development community would be increased costs for engineering, stormwater facility construction and potentially additional time for permitting. Additionally, the smaller the vacant lot, the more difficult it would potentially be to achieve the stormwater controls. There are 340 vacant vested lots in closed basins that are less than or equal to a one-half acre in size. Despite these concerns, staff still recommends that all development on the vacant lots in the closed basins utilize stormwater controls to mitigate the flooding concerns. In order to effectively implement this recommendation, alternative analysis and, flexibility will be necessary. The stormwater requirements would have to be reasonable enough to allow a house to be constructed to prevent "governmental takings" claims. The owner would have to first demonstrate that all feasible options were exhausted before allowing lesser stormwater controls. Any additional storage provided on-site would help prevent flooding at the bottom of the basin, even if full volume control could not be achieved.

Staff believes that the current EMA provisions provide for requiring stormwater controls on individual vested vacant lots in closed basins. Staff recommends that the Board allow staff to develop a policy to require these stormwater controls.

Recommendation:
#5 Direct staff to develop a policy to require stormwater controls for future development on vacant vested lots in closed basins to achieve volume control.

3.c. Vested Development

3.c.i. Vested residential subdivisions and lots

Background:
Flooding–related problems and issues are oftentimes associated with developments (specifically single family residential subdivisions) that do not meet current County stormwater regulations/standards due to date of approval and/or recording. This includes those residential lots established prior to 1984 (adoption of subdivision regulations), prior to the adoption of the Environmental Management Act (1989), and prior to the adoption of the Comprehensive Plan (1990) and implementing Land Development Code (1992).

Analysis:
Tropical Storm Fay highlighted the problem of inadequate infrastructure in older, vested subdivisions in Leon County. The older subdivisions were created with different infrastructures than those presently being developed. Currently, Leon County recognizes vested development rights for approximately 30,000 dwelling units, of which, approximately 5,000 remain unbuilt. Lots in vested, unrecorded subdivisions are not held to the same infrastructure improvement standards as new projects.

Prior to 1984, Leon County did not strictly regulate subdivision of land. Many of the subdivisions created prior to that date were located in areas prone to flooding – new residential subdivision either would not be allowed in these locations or would be limited to extremely low density residential development (i.e., one dwelling unit per forty acres of land). Most subdivisions created prior to 1984, particularly in areas that were rural at the time of development, contain no stormwater management infrastructure, except occasionally, swales along the right-of-way. As more development occurs in Leon County and the lots in these older subdivisions get developed, the lack of adequate stormwater management infrastructure creates the potential for problems during extreme weather conditions: properties within the subdivisions flood or stormwater runs offsite and floods other properties. To make matters worse, these older subdivisions often have limited access as a result of being designed with a single, unpaved road connecting the subdivision to the general street network, and oftentimes, these roads were not well constructed or well maintained. When flooding occurs, the access road to these subdivisions can wash away or get submerged, stranding residents and obstructing emergency access.

In 1990, the County adopted the first edition of the Comprehensive Plan that set out mandatory requirements. The Comprehensive Plan established several general requirements for stormwater management, directing development away from flood prone areas and ensuring that new development contains adequate supporting infrastructure. The Land Development Code implemented many of these requirements through zoning and site and development planning standards, environmental regulations, and through the concurrency management system.

Other factors with vested subdivisions include inadequate stormwater management systems, which is contribute to washouts and "ponding" on area roadways, creating significant safety hazards. These inadequate systems are also a primary factor in contributing to reduce stormwater quality.

Finally, many of these subdivisions often have never established a fiscally-responsible entity, such as a homeowners' association, to maintain existing infrastructure or to construct new infrastructure. Even when such entities do exist, they often do not have sufficient funding to keep up with ongoing maintenance responsibilities.

The following options could be utilized by the Board to address the flooding-related problems as outlined above with existing subdivisions.

1. The acquisition by the County of flood prone, vested development.
2. The subsidization by the County of infrastructure retrofitting (e.g., the "2/3 – 2/3 program") in private and older subdivisions.
3. Implementation by adoption of land development regulations of a Natural/Landscape Area Off-Site Exchange Program for flood prone, vested development.
4. Retrofit existing subdivisions or acquire flood prone property by utilizing public funding sources (e.g., CDBG program, *Florida Forever*, FEMA).

With regard to the above, the acquisition of property will be discussed later under the infrastructure section of the workshop item. The Implementation by adoption of land development regulations of a Natural/Landscape Area Off-Site Exchange Program for flood prone, vested development is discussed more fully below.

The following recommendations could be implemented by the Board to prevent flooding-related problems with new subdivisions:

Recommendations:
#6. Direct staff to amend the County's Land Development Code to eliminate or significantly reduce the opportunity to create new subdivisions that rely on privately-maintained infrastructure, particularly within the Urban Services Area.

#7. Direct staff to amend the Land Development Code to allow for the use of on-street parking where appropriate, so that significant area is not required for off-street parking (less impervious surface), thereby reducing stormwater management demand in new subdivisions.

#8. Direct staff to amend the Land Development Code to facilitate compact development, to generally reduce the amount of impervious surface generating stormwater runoff to allow more land area to remain available for stormwater management capacity.

3.c.ii. Extinguishing the development rights of vested residential lots

Background:
This section discusses regulatory or strategies that provide for the exchange of vested or flood prone property to meet natural/landscaped area requirements

Analysis:
Following is an example of how a natural/landscape area off-site exchange program would work:

1) Property owner A is interested in increasing the amount of developable area on their property. Presently, generic requirements in the Land Development Code result in the property owner setting aside from 25% to 50% of their property for landscaping and natural area, even when there are no environmentally sensitive features on the property (for example, there are no preservation features, such as wetlands, or conservation features, such as significant slopes).

2) Property owner B is the owner of flood prone property. Under current regulations, the property is considered to be vested for single family residential development (typically, all existing residential subdivision lots are eligible sites for a house or mobile home).

3) Property owner A purchases Property owner B's flood prone property, which is subsequently conveyed to the County and then restricted from future development (in essence, becoming open space or natural area). In exchange, the County recognizes that Property owner A has now set aside a specific amount of property counting toward meeting the requirements for landscaping and natural area associated with their proposed development.

The Comprehensive Plan requires that the Land Development Code include standards for minimum open space requirements (between -10% and 25%), but does not restrict the provision of the open space to the development site. Current Land Development Code requirements are set up to facilitate the provision of such open space on the development site, and although they do not preclude off-site provision in exchange for greater development potential on-site, the process for accomplishing such a feat is cumbersome and time-consuming. Three years ago, such a swap of open space for flood prone lots was accomplished when two flood prone parcels located in the Wildwood Subdivision, within the Fred George closed basin, totaling approximately 7¼ acres, were conveyed by the property owner to Leon County to be set aside from development. In exchange, the property owner was authorized to expand the development of their C&D disposal facility within an approximately 4-acre portion of the property, which was previously set aside for open space (but contained no preservation or conservation features).

An amendment to the Land Development Code is all that is necessary to make such an exchange easier and to standardize requirements for all potential participants. The Land Development Code should establish parameters addressing the following to ensure that the process furthers the public's interest in meeting the health, safety, and welfare objectives pertaining to the environment and limiting development of flood prone lots, thus reducing the potential adverse impacts to the specific affected property owners. Suggested parameters include: 1) setting an exchange rate where the area to be conveyed to the County should be at least twice the area where natural area/landscaping requirements have been "foregone;" 2) limiting the general area where developers can make use of the natural area/landscaping requirements to those zoning districts intended to allow more intensive urban development, where there is less emphasis on retaining open green space on site, and more emphasis on good urban design and efficient use of prime development property; and 3) retaining some requirements for natural area/landscaping for development properties using this exchange concept – preservation features and conservation features would still be required to be protected, some landscaping requirements (such as those pertaining to parking lots) would remain in effect, and any requirements for landscaping/natural area specified in a particular zoning district would remain in effect, as well.

Should a strategy where property developers acquire vested flood prone lots for conveyance to the County, the lots would be precluded from development and in exchange requirements to provide landscaping/natural area on the associated development project would be reduced accordingly. The type of regulatory exchange of rights would allow the County to extinguish vested residential development rights on flood prone properties with minimal costs to the public.

Recommendation:
#9. Direct staff to amend the Land Development Code to establish a process providing developers credits to meet natural/landscaped area requirements in exchange for purchasing and conveying to the County, vested, flood prone property, precluding that property from future development.

3.d. Volume Control

Background:
At the September 17, 2003 Board meeting, the Commission directed staff to schedule a Flooded Property Acquisition and Flood Control Regulations Workshop. The workshop was conducted on October 28, 2003. The Board supported volume control regulations, but first wanted collaboration with the City of Tallahassee for joint governmental support before moving forward. The Board requested that staff initiate a meeting with the City of Tallahassee through a Joint Stormwater Committee to discuss volume control regulations for all of Leon County, before proceeding for a consistency review by the Planning Commission and before requesting public hearings for a volume control ordinance. The Board indicated that if the City did not agree with adopting volume control regulations, the County would proceed with a Charter Amendment to address this issue.

Staff conducted a follow up meeting with City stormwater staff in the spring of 2004 and presented the same workshop material. City staff appeared supportive, but the volume control initiative never moved forward due to the potential negative impact to development in the urban core. It was eventually decided that this matter would be discussed again as a part of the Watershed Management Policy Board's agenda. Staff made a volume control presentation to the Watershed Management Policy Board on February 19, 2008. The Board decided to wait until the State Department of Environmental Protection (DEP) adopted its proposed State stormwater rule to prevent confusion by having multiple rule changes in a short interval of time. At that time, the new State rule was scheduled for adoption in July, 2008. The earliest the rule can now be scheduled for adoption is in June of 2010, due to enabling language that needs to be adopted by the legislature, which won't be ready until the 2010 legislature meets.

Analysis:
After Tropical Storm Fay, staff was asked to review current regulations and determine if improvements can be made to prevent further flooding from future development. Based on past volume control regulation studies and discussions staff believes that this initiative issue can provide the most important impact by preventing increases in flooding from future development.

Excerpts from the original volume control workshop are provided in Attachment #4. Due to its length, staff will condense the following discussion to flood protection benefits and forego the discussion of the water quality benefits which is also available in Attachment #4.

New development is required to discharge stormwater at the same pre-development rate for all storms up to and including the 25-year storm event. However, the volume of discharge can be greater than before development, except in regulated closed basins. In other words, as development occurs, more impervious is constructed resulting in more water flowing downhill. In areas that are very flat, at the bottom of the hill, or that have high water tables, this additional volume can cause flooding that is deeper (concentration) and lasts longer (duration).

Staff attempted to address this problem by adding new regulations, effective January 1, 2001, that helped prevent conveyance flooding from future development. If a site is greater than 2 acres and its post-development discharge is estimated to be greater than 2.5% of the flow in the conveyance, a downstream analysis is required to show that no adverse impacts will occur downstream or the applicant must significantly restrict the discharge from the site to minimize conveyance flooding. This change has helped minimize some conveyance flooding, but still does not address the cumulative affects of volume increases on the floodplain at the bottom of the hill.

What is Volume Control?
Volume control refers to a volume of stormwater runoff produced by new development in excess of the pre-development runoff volume generated by a particular storm event (usually the 100-year, 24-hour event) that is retained on-site. In general, as a development increases its impervious area, there is a corresponding increase in the volume of stormwater that is allowed to discharge from the stormwater pond that is constructed on-site.

For non-closed basin areas, current code requires water quality treatment and rate control, but **not** volume control. This means that ponds are allowed to discharge the increased volume, but only at rates that are no greater than pre-development rates. Without volume control, the result is that further downstream, these volumes begin to accumulate and increase flooding in both the conveyances and water bodies. Evidence of this flooding is found all over Leon County, especially when we have storm events such as Tropical Storm Fay. Alford Arm, Chaires, Gum Swamp, St. Marks River and the Oak Ridge Road flooding are some of the areas that receive significant amounts of runoff from impervious area upstream.

Volume control would mean that the increased volume produced by a development site would have to retain this volume on-site and not be allowed to discharge it through a sand filter or a rate control structure. A typical volume control (retention) pond schematic is shown in Attachment #5. The volume retained on-site would have to be either percolated through the pond bottom or re-used as irrigation for landscaping or natural area on-site.

Existing Volume Control Regulations
Volume control is not a new concept for stormwater management; the County's current code requires volume control for all closed basins. Closed basins are naturally depressed or artificially closed off portions of the earth's surface for which there is no natural and normal outlet for runoff other than percolation, evaporation or discharge into a karst feature. Volume control is required to prevent the floodplain at the bottom of the closed basin from increasing its flood elevation. The areas that are currently required to meet volume control regulations are shown in Attachment #6.

If you remove the City of Tallahassee and the Apalachicola National Forest from the land area of Leon County, the closed basin areas encompass approximately 30% of the remaining land area within the County (refer to Attachment #6). Therefore, volume control regulations are currently applicable to 30% of the land regulated by Leon County.

The specific Leon County Code citation that requires volume control is as follows:

> Section 10-4.301(3)(b)
> *Volume control required.* Runoff volumes within regulated closed basins in excess of the pre-development runoff volume shall be retained for all storm events up to a 100-year, 24-hour duration storm. One-half the required pond volume shall be recovered within 7 days, and the full volume shall be recovered within 30 days.

A summary on volume control advantages is provided below from the original October 28, 2003 workshop (Attachment #4). Staff has specifically elaborated on items 1, 2, 3, 6 and 11 as they relate to flooding.

Advantages of Volume Control Regulations for all of Leon County:

- Prevents downstream flooding from increasing due to new development.
- Prevents having to perform full build-out floodplain analyses.
- Can decrease downstream flooding for some storm events.
- Provides the best water quality treatment of stormwater for protection of watercourses and lakes.
- Will save the County costs by not having to perform water quality studies for the remaining drainage basins.
- In relation to stormwater, makes new development pay for itself consistent with one of the primary goals of the Comprehensive Plan.
- Simplifies the code with one stormwater standard.
- Will assist in the implementation of the Total Maximum Daily Load (TMDL) program required by the Federal Government and the Florida Department of Environmental Protection (FDEP).
- Complies with water policy guidelines proposed by the FDEP.

- Prevents costly downstream analyses which may be required during the Environmental Impact Analysis (EIA).
- Provides aquifer recharge versus discharge downstream.

Volume Control Advantages:

- **Prevents downstream flooding from increasing due to new development**

The principal foundation for volume control is that flooding will not be increased as a result of development. The only discharge that is allowed from a volume control (retention) pond is the pre-development volume. This is the rainfall runoff volume that leaves the site from its natural condition.

Current code requires volume control only for closed basins to protect the property at the bottom of the basin from having its floodplain elevation increased. Theoretically, the floodplain cannot increase if the additional volume caused by new development is retained in a stormwater retention pond and recovered onsite.

For non-closed basin areas, current code requires water quality treatment and rate control, but <u>not</u> volume control. This means that the ponds are allowed to discharge this increased volume, but only at rates that are no greater than pre-development rates. The result is that further downstream, these volumes begin to accumulate and increase flooding in both the conveyances and water bodies. Volume control regulations would prevent government from having to buy additional flooded properties caused by permitting that is performed today.

- **Prevents having to perform full build-out floodplain analyses**

There has been discussion about performing full build-out floodplain analysis for the entire County, which could be considered as an alternative to volume control standards. Full build-out floodplain analysis would require that the County contract with an engineering consultant to model the entire County and use existing allowable zoning densities to calculate a theoretical build-out floodplain analysis for watercourses, floodways, water bodies, etc. The County could then acquire easements over these floodplains or provide land use restrictions to prevent future development in these areas. However, there are several disadvantages to the full build-out concept. The engineering study would be very expensive, in the $5 to $8 million range. The analysis would have to be constantly updated as zoning changes occur, resulting in a new form of stormwater concurrency. The analysis could potentially cause litigation due to property owners having to place easements on their property for a future floodplain, and it may take years before new development causes this future floodplain to be realized. All of these costs could be avoided by volume control regulations.

- **Can actually decrease downstream flooding for some storm events**

Due to the size of the retention pond necessary to meet the volume control requirement for up to the 100-year, 24-hour event, most of the smaller and medium sized peak storm events (rainfall up to 5 inches) would be contained entirely within the pond. This means that even the pre-development

volume would also be contained in the pond for these rainfall events. The end result would is that the nuisance flash flood storms can be contained in the pond, which can slowly decrease this type of flooding if enough development sites are permitted with volume control in a particular watershed.

- **In relation to stormwater, makes new development pay for itself**

The Vision Statement, page vii, of the Comprehensive Plan, states: "The plan is based on the principle that development should pay for itself and this vision is implemented, in part, through the accomplishment of several strategies described below…It is the responsibility of every citizen of Leon County to pay his or her fair share first to achieve and then to maintain the community wide adopted levels of service (LOS) for capital infrastructure and urban services." However, it is not a current resident's responsibility to pay for new developments' fair share costs through subsidization. Thus, in a sense, future development must be self-sufficient.

Volume control would make the developer construct a stormwater pond that retains the excess volume that the new development produces. The pond would also contain the pollutant loading produced by the new development and won't allow it to discharge downstream into lakes, wetlands and water bodies. This would, for the first time, will make development pay for itself in relation to stormwater management for both water quality and flood control.

Current code allows the excess volume to be discharged downstream through rate control. Over the years, this excess volume has scoured and eroded most of the watercourses in the city and many in the county, altering them to maintained ditches. These ditches scour due to the increased flows sending sediment and turbidity to the downstream lakes. The volume has increased the floodway elevations to the point where tax dollars are being spent to buy flooded homes and properties. Retrofitting is occurring in areas with water quality problems resulting from developments that either had no stormwater facilities or had inefficient stormwater management systems. All of these retrofit and maintenance costs are being funded by County and City government.

Volume control would prevent further retrofitting in the future for flood control and water quality problems that would relate back to permitting being performed today. Instead of Leon County paying for these retrofit costs in the future, development addresses their own impact.

- **Prevents costly downstream analyses which may be required during the Environmental Impact Analysis (EIA)**

Section 10-4.302.2. of the Leon County Code requires sites greater than 2 acres to have a conveyance analysis performed or the stormwater pond must be designed to meet the 2-year pre-development discharge rate. This is required to minimize off-site impacts. This provision would not be required if a volume control pond was required for the site. The underlying assumption is that if the excess volume above the pre-development volume is retained on-site, then the downstream properties would not experience additional flooding.

Due to the cost of the downstream analysis, most designers use the 2-year restricted discharge provision which makes the stormwater facility almost as large as a volume control pond. The pond size increases to hold back the discharge to the critical duration two year, pre-development discharge rate.

The disadvantages of volume control regulations are summarized from the October 28, 2003 workshop (Attachment #4) and are summarized below.

Disadvantages of Volume Control Regulations for all of Leon County:

- Additional cost due to the increase in stormwater pond size.
- Additional land needed for retention pond.
- Difficulty meeting recovery requirements in clay hill areas.
- Potential to alter the hydrocycle of wetlands and water bodies.

Volume Control Disadvantages:

- **Additional cost due to the increase in stormwater pond size**

To assist in the explanation below, see Attachment #7.
The total volume of a stormwater pond which provides either 0.5 inch or 1 1/8 inch of water quality treatment, plus 25-year rate control is approximately *2.7 inches to 2.9 inches* times the area of the site. Such ponds are the standard for *all open basins in the County for sites less than 2 acres in size, with the exception of the Bradfordville Study Area (BSA).*

In the BSA, the total volume of a stormwater pond to service a site with 50 percent impervious area would be approximately *3.2 inches* times the area of the site. Such a pond would retain the required treatment volume and provide 25-year rate control.

In the County's *closed basins*, a stormwater pond must provide volume retention to the 100-year, 24-hour storm and 25-year rate control; *the same requirements as herein proposed as a county-wide volume control ordinance*. The total volume of such a pond would be *3.65 inches* times the area of the site, where 3.2 inches would be for volume retention and the remaining 0.45 inch being needed to attain rate control.

From the above three paragraphs it can be seen that a "volume control" pond will be 1.3 times (3.65 inches/2.8 inches) as large as a non-BSA pond and 1.14 times (3.65 inches/3.20 inches) as large as a BSA pond. Therefore, the cost to construct a volume control pond will be slightly higher for excavation costs.

For developments two acres or larger, the code requires a downstream analysis or the pond must be constructed so as to restrict the rate of discharge to no greater than the largest rate of discharge occurring during a 2-year storm. This is required to protect against downstream flooding. Most

designers opt to use the 2-year restricted discharge because the downstream analysis can be very complicated and expensive. This constriction of discharge rate causes the ponds to get rather large. For ponds providing either 0.5 inch or 1.125 inch of water quality and *2-year discharge restriction*, the total volume is approximately *4.0 inches* times the area of the site. Thus, if a site requires restriction to the 2-year discharge rate, its pond will actually be larger than a "volume control" pond. The "2-year rate control" pond will be 1.25 times (4.0 inches/3.2 inches) larger than a "volume control" pond.

- **Additional land needed for retention pond**

Since the total volume of "volume retention" ponds will be larger than those not providing volume controls, they will in all probability need to occupy a greater portion of the developed site.

On sites with sandy soils (i.e. high percolation rates) where the groundwater table is at a sufficient depth, it will be possible to simply increase the depth of a pond and thereby provide the additional volume for a "volume control" pond. On primarily the south side of town, the sandy soils make the pond design and construction easier without the additional land requirement.

On sites with clayey soils which have low percolation rates, to enhance the total percolation/recovery rate in accordance with the larger pond volume, it will probably be necessary to increase the footprint (area) of the pond. The negative effect is that a larger pond "footprint" could reduce the percentage of the site that can be used for development purposes.

On clayey soil sites, more percolation area will be needed. This might be accomplished by innovative design, such as installing shallow, flat bottom swales with ditch blocks to convey runoff to the pond, and by allowing a portion of the natural and landscaped areas to be modified so as to assist with stormwater percolation.

The pond area could be significantly increased without reducing the allowable impervious area on the site by allowing a 10 percent credit toward the 25 percent natural or 25 percent landscape area requirements (see the schematic example in Attachment #8). Staff would propose this credit to offset the impact of a larger pond footprint on the development site. **This solution is very important since one of the primary objections to volume control regulations has been the additional pond footprint decreasing developable area on the site.** This option would not be available to residential subdivisions since they do not require natural or landscaped areas. Residential subdivisions, however, usually encompass a larger land area than do commercial developments, and since the percentage of impervious area is usually smaller, the pond would occupy a smaller percentage of the land area of the site.

- ***Difficulty meeting recovery requirements in clay hill areas***

Where the site's soils possess very low infiltration rates, it will be difficult to recover the pond's larger volume. In such a situation, the following alternatives can be made available:

A. Expand the area to be used for volume recovery by allowing modification of a portion of the landscaped or natural areas. The pond area could be significantly increased without reducing the impervious area on the site by allowing a 10 percent credit toward the 25 percent natural or 25 percent landscape area requirements.

B. Irrigate the pervious areas of the site using the water from the stormwater pond. This is how some of the ponds are being designed to meet the Bradfordville standard.

C. Construct a facility with an even larger volume than required, such that the recovery time can be extended beyond that set forth in the ordinance. To take this alternative, the applicant would have to demonstrate equivalent performance to the code required pond over a 40-year period. Such a provision is similar to an existing pond design alternative included in the Bradfordville Stormwater Standard.

D. The applicant could apply for a variance to allow a portion of the retained volume to be discharged over a sufficiently long period so as to avoid downstream flooding problems.

It needs to be noted here that originally there was great concern as to whether sites in Bradfordville could be designed to meet the new standard established there. This has now been successfully accomplished a number of times. The Bradfordville retention requirement is 4.0 inches over the impervious area; the "volume control" retention requirement is 6.4 inches times the impervious area, or 1.6 times as much. The required recovery period for a "volume control" pond is 3.2 inches in 7 days (0.46 inches/day) vs. 4.0 inches in 3 days (1.33 inches/day) for a Bradfordville pond. Thus the "volume control" pond will be allowed to recover over a longer period than the rate of a Bradfordville pond. This longer allowable recovery time for a "volume control" pond means that it will be easier to accomplish pond recovery in the allowable time.

- **Potential to alter the hydrocycle of wetlands and waterbodies**

A pond sized to retain the pre-development to post-development volume increase for a 100-year, 24-hour storm will hold back all of the runoff for storms with runoff volumes smaller than this 100-year volume difference. For instance, a commercial development on clayey soils which is 50 percent impervious will, for a 100-year, 24-hour storm, yield 3.2 inches of runoff over and above that which occurs in an undeveloped condition. Thus, the development's "volume retention" pond would be sized to completely retain this 3.2 inch volume difference. To get more than 3.2 inches of runoff after development, and thereby cause the pond to discharge, will require a rain storm of **4.8 inches** or more. Rain events that are this large, however, occur on the average only about 1.2 times per year. Thus the area immediately downstream of the development could be starved for water with the exception of the very infrequent times when rain events larger than 4.8 inches occur. Wetlands and aquatic systems in close downstream proximity to such a development may not survive under such erratic conditions.

In most situations, however, the above shortcoming of too much volume retention should not be a problem. Most of our urban and near urban watersheds and conveyances, due to the lack of adequate (or any) stormwater facilities, suffer the consequences of already having far more water than can be contained. They are much in need of flow reduction and flow stabilization that results from water percolating into the groundwater table. Increased percolation to groundwater is exactly what is accomplished by volume retention.

New development happens piecemeal. In most cases, only a small portion of a watershed is affected by a new development. Thus, the unaltered portion of the watershed will continue to provide runoff to the downstream system as always. The summed effect of existing and new development will not modify to any great extent what is already occurring downstream. Therefore, volume retention will assist in offsetting previous volume increases due to earlier development where such was not practiced.

Summary of Advantages and Disadvantages of a Volume Control Ordinance:

Advantages:

- Prevents downstream flooding from increasing due to new development.
- Prevents having to perform full build-out floodplain analyses.
- Can actually improve downstream flooding for some storm events.
- Provides the best water quality treatment of stormwater for protection of our watercourses and lakes.
- Will save the County costs by not having to perform water quality studies for the remaining drainage basins.
- In relation to stormwater, makes new development pay for itself.
- Simplifies the code with one central stormwater standard.
- Will assist in the implementation of the Total Maximum Daily Load (TMDL) program required by the Federal Government and the Florida Department of Environmental Protection (FDEP).
- Complies with water policy guidelines proposed by the FDEP.
- Prevents costly downstream analyses which may be required during the Environmental Impact Analysis (EIA).
- Provides aquifer recharge versus discharge downstream.

Disadvantages:

- Additional cost due to the increase in stormwater pond size.
- Additional land needed for retention pond.
- Difficulty meeting recovery requirements in clay hill areas.
- Potential to alter the hydrocycle of wetlands and water bodies.

In summary, the advantages for volume control far outweigh the disadvantages. Staff has shown that many of the disadvantages can been resolved or mitigated, such as using natural or landscape areas to offset the pond footprint increase. Staff has been monitoring the progress of the new State stormwater rule and believes that volume control would exceed the proposed State rule (scheduled for adoption in June of 2010). The State rule is focusing more on water quality versus flood control.

Volume control has been endorsed by several prominent entities. Camp Dresser and McKee (CDM) developed the Stormwater Management Master Plan for Leon County in 1995 and recommended volume control for several areas of the county including the Woodville Recharge area. Volume Control regulations are supported by two very distinguished individuals in the field of stormwater management. Eric Livingston, P.E., Bureau Chief of the Watershed Management Division of FDEP, supports volume control regulations as a means to maintain and improve water quality in our surface waters. Mr. Livingston provided a TMDL workshop in 2003 to the Board and indicated that these regulations would assist in the implementation phase of the TMDL process. He is currently working on the new stormwater rule proposed for June of 2010 and volume control would meet or exceed that standard. Dr. Harvey H. Harper, Ph.D., P.E. of Environmental Research & Design (ERD) supports the volume control regulation for purposes of protecting water quality. Dr. Harper completed the Bradfordville Stormwater Study and the Lake Lafayette Water Quality Study. In the Lake Lafayette Study, Dr. Harper and staff recommended volume control regulations for the entire county which staff brought to the Board in 2006. The Board voted to not move forward with the volume control regulations at that time.

The primary regulatory tool that can keep existing flooding situations from getting worse is the expansion of stormwater regulations to include full volume control countywide. Staff recommends proceeding forward with a volume control ordinance.

> ***Recommendation:***
> ***#10: Direct staff to amend the County's Land Development Code to enhance stormwater volume regulations by requiring a county-wide standard that increased volume produced by a development site be retained on-site and not be allowed to discharge through a sand filter or a rate control structure.***

3.e. Rate Control

Background:
The current rate control provision in the LDR provides rate control only through the 25-year storm event. The actual code citation is as follows:

Section 10-4.302 Stormwater Rate Provisions
1. *Rate control.* Peak post-development stormwater discharge rates shall not exceed the peak pre-development rates for all duration storms with return period frequency of up to and including the 25-year storm period.

Analysis:
When storms occur beyond the 25-year storm event, there is no rate control under current permitting regulations. The stormwater pond becomes full and begins to discharge over the emergency overflow weir uncontrolled. All of the new impervious that produces a higher rate begins to discharge downstream. The regulations are designed to allow flooding beyond the 25-year event. Conveyance flooding in watercourses is common. After a 100-year storm event, some of the flooding complaints are directly attributed to this lack of rate control.

Staff recommends changing the stormwater rate provision to include all duration storms with return period frequency of up to and including the 100-year storm period. This would prevent this type of flooding from new development, and would be consistent with the Florida Department of Transportation's (FDOT) rate control provisions for all their roadway projects.

Staff analyzed the impact of this change on a typical development site. A one acre site with 50% impervious would require a stormwater pond with approximately 30% more volume. This is much easier to design and accomplish since this volume can be stacked vertically in most cases, which would minimize increases in pond footprint area. The additional volume is recovered through a rate control structure, which is much easier than having to percolate the volume through the soil. This would provide minimal impact to the development site plan. Staff recommends changing the regulations to include rate control through the 100-year storm period.

Recommendation:
#11: Direct staff to amend the County's Land Development Code to include stormwater runoff rate control regulations for all duration storms with return period frequency of up to and including the 100-year storm period.

3.f. Real Estate Disclosure
In 1985, the Florida Supreme Court decided its landmark case of *Johnson v. Davis* in which it abolished the doctrine of *caveat emptor* (buyer beware) in the sale of residential real property. *Johnson V. Davis*, 480 So.2d 625 (Fla. 1985). Since that ruling, a seller of a residential property in Florida, with knowledge of facts materially affecting the value of the property which are not readily observable and are not known to a prospective buyer, is under a duty to disclose those facts to the prospective buyer. In subsequent cases, this rule of law has been extended to obligate a residential

landlord to disclose such known facts to a prospective tenant. *Haskell Company v. Lane Company, Ltd.*, 612 So.2d 669, 674 (Fla. 1st DCA 1993). In addition, the duty to disclose is applicable to a real estate broker who has knowledge of such facts materially affecting the value of the property. *Syvrud v. Today Real Estate, Inc.*, 858 So.2d 1125, 1129 (Fla. 2d DCA 2003). However, the Florida appellate courts have reluctantly refused to extend the duty to disclose to the seller or landlord in a sale or lease of commercial real estate. *Haskell*, at 674.

With regard to the disclosure of known flood conditions on a property, the duty of a seller or landlord depends on whether or not the information that the property was subject to such flood conditions is available to a prospective buyer or tenant. The Third District Court of Appeal ruled against a prospective buyer when it found that a seller has no duty to disclose the flood prone nature of a property when that information is readily available through diligent attention. *Nelson v. Wiggs*, 699 So. 2d 258 (3d DCA 1997). However, our First District Court of Appeal later disagreed with that ruling: *Newburn v. Mansbach*, 777 So. 2d 1044 (1st DCA 2001). In *Newburn*, the property was designated as being located in a Coastal Barrier Resource Zone, thereby being excluded from the Federal Flood Insurance Program, and was therefore a land regulation that was available to the purchaser as a public record. The Court held that the availability of the flood information as a public record did not negate the seller's duty to disclose such information to the purchaser. Thus, the current law in the First District, which includes Leon County, obligates a seller to disclose flood conditions regardless of whether or not such information is available as a public record.

Although the Florida case law has clearly established the duty of a residential seller or landlord, and their broker, to disclose known facts materially affecting the value of a property, the Florida legislature has failed to codify such law by statute. Chapter 475, Florida Statutes, although not specifically addressing a real estate broker's duty to disclose, does include disciplinary provisions for a licensee's deceptive, untrue, or fraudulent representations or for having been found guilty of fraud, misrepresentation, concealment, false promises, false pretenses, or dishonest dealing in any business transaction.

Many other states, however, have addressed such disclosures. California statutory law, for example, establishes the duty of a real estate broker to, "conduct a reasonably competent and diligent visual inspection of the property offered for sale and to disclose to that prospective purchaser all facts materially affecting the value or desirability of the property that an investigation would reveal. . ." Section 2079, California Civil Code (2008). In 1991, the National Association of Realtors began a national campaign promoting the use of property condition disclosure laws which, at that time, existed in only two states. As of 2003, however, property condition disclosure forms were required of sellers in two-thirds of the states and are widely used in the remaining states. 39 Real Property, Probate and Trust Journal 193 (Summer 2004).

The Florida Association of Realtors makes available for its members' use a Seller's Real Property Disclosure Statement (Attachment #9). The form tracks the language from the *Johnson v. Davis* case in bold letters informing the buyer and seller that, "a seller is obligated to disclose to a buyer all known facts that materially affect the value of the property being sold and that are not readily observable." It is designed to, "assist the seller in complying with the disclosure requirements under Florida law and to assist the buyer in evaluating the property being considered." The Tallahassee Board of Realtors addresses the duty to disclose in its Code of Ethics where, in Article 2, Realtors are bound to "avoid exaggeration, misrepresentation, or concealment of pertinent facts relating to the property or the transaction." Article 2 goes on to clarify the meaning of pertinent by stating, "factors defined as 'non-material' by law or regulation or which are expressly referenced in law or regulation as not being subject to disclosure are considered not 'pertinent'."

The County Attorney's Office conducted a search of the Florida statutes and the municipal and county codes from across Florida, and failed to discover any state or local laws which specifically address the general duty to disclose mandated by the *Johnson v. Davis* line of cases. However, a number of statutes and local ordinances require a seller's limited disclosure to a purchaser of various conditions of a property. Some examples of such disclosure requirements from the Florida statutes are as follows:

- *Disclosure of ad valorem taxes to prospective purchaser.* Fla. Stat. §689.261 (2008)
    - Requires a prospective purchaser of residential property to be presented a disclosure summary at or before execution of the contract for sale which discloses that the purchaser should not rely on the seller's current property taxes as the amount of property taxes that the purchaser may be obligated to pay in the year subsequent to the purchase.
- *Sinkhole reports.* Fla. Stat. §627.7073 (2008)
    - Requires that a seller of real property upon which a sinkhole claim has been made by the seller and paid by the insurer shall disclose to the buyer of such property that a claim has been paid and whether or not the full amount of the proceeds were used to repair the sinkhole damage.
- *Disclosure of windstorm mitigation rating.* Fla. Stat. §689.262 (2008)
    - Requires that, effective January 1, 2011, a purchaser of residential property located in the wind-borne debris region, must be informed of the windstorm mitigation rating of the structure. The rating must be included in the contract for sale or as a separate document attached to the contract for sale.

The Leon County Code also contains a seller disclosure requirement. In the subdivision regulations of the Land Development Code, an owner of any lot in a subdivision having private streets or roads

is required to, before the complete execution of a contract for the purchase and sale of such lot, obtain from the prospective purchaser a signed receipt that a copy of the restrictive covenants applicable to the subdivision has been received, read, and understood. Sec. 10-7.610, Leon County Code. Some other examples of seller disclosure requirements in local ordinances include the following:

- *Airport/airfield environs real estate sales disclosure.* Sec. 58-2, Escambia County Code
    - Requires that, as soon as practicable during the listing, advertisement, or other posting of information pertaining to the sale or lease of real property located within a designated airport/airfield zone, but no later than the execution of the contract for sale or lease, the owner shall provide the buyer or lessee with written notice that the real property is in such airport/airfield zone.
- *Coastal properties disclosure statement.* Sec. 5.5-33 Franklin County Code
    - Requires that, unless otherwise waived in writing by the purchaser, at or prior to the closing of any transaction where an interest in real property, located either partially or totally seaward of the coastal construction control line, is being transferred, the seller shall provide to the purchaser an affidavit or a survey delineating the location of such control line on the property being transferred.
- *East Everglades Wetlands Disclosure Law.* Division 4, Miami-Dade County Code
    - Requires that, in order to seek to ensure that the purchasers of land located in the East Everglades Area of Critical Environmental Concern are fully apprised of the character of the lands in the East Everglades, and in particular that such lands are subject to periodic flooding, the seller of such lands shall disclose to all purchasers, or potential purchasers, the character of such lands prior to purchase or agreement to purchase.

In most cases, the statutes and ordinances do not provide for a penalty upon a seller's failure to provide the required disclosure, although one of the county codes does subject such seller to a $500 civil infraction. Instead, the consequence of a seller's failure to disclose is, generally, the establishment of fraud or, using language from the *Johnson v. Davis* case, a rebuttable presumption that the seller has failed to disclose a material fact affecting the value of the property. The seller disclosure requirement in the Leon County Land Development Code provides this rebuttable presumption option for a seller's failure to comply.

The County Attorney's Office has drafted a proposed ordinance for the Board's consideration (Attachment #10). The proposed ordinance essentially codifies the *Johnson v. Davis* line of cases

with regard any known flood conditions on a residential property offered for sale or for lease. It makes it unlawful for a seller or landlord of residential property, with knowledge that such property has experienced flooding or is otherwise flood prone, to fail to disclose such facts in writing to a prospective buyer or tenant when such flood conditions are not readily observable and are not known to the prospective buyer or tenant. It includes in the definition of a seller or landlord the owner's authorized agent and the owner's real estate broker. If a seller or landlord fails to provide such disclosure in advance of entering into a purchase and sale agreement or a lease agreement, the ordinance establishes a rebuttable presumption that the seller or landlord has failed to disclose facts that materially affect the value of such property and thereby entitles the purchaser or tenant to seek to recover from the seller, in accordance with the remedies available at law, any damages resulting from such failure to disclose. The ordinance exempts from such disclosure the sale or lease of commercial real property or any other real property deemed not be a residential property, as has been consistently held by the Florida courts. The adoption of the ordinance would require one public hearing.

Recommendation:
#12 Direct staff to schedule a public hearing to consider adopting the proposed residential flood prone disclosure ordinance (Attachment #10).

4. POLICY ISSUES

The policy section is divided as follows:

4.a. Changes to the existing 2/3's program
4.b. Flooded property acquisition program
4.c. County/City Coordination
4.d. Local Mitigation Strategy

4.a. Changes to the existing 2/3's program

The county program for the acceptance of private roads and drainage systems into the county maintained system of roads and drainage systems provides a potential vehicle for county response to issues associated with damages to privately owned and maintained road and drainage systems. Revisions to the Code of Laws that establishes this program may enhance further the benefits of the program in response to storm events as well as in the routine utilization of the program.

Background:
The 2/3 program was created in 1982 with the adoption of Leon County Ordinance 82-45 to give property owners along private roads a method to petition the County to have their roads upgraded to County standards and become County maintained. The Ordinance specifies the manner in which this is to be accomplished and the requirements and obligations to be met.

The Ordinance is now identified as Chapter 16, Article II (Sections 16-26 through 16-37) of the Leon County Code of Laws. A similar ordinance was created in 1993 for Utilities, now identified as Sections 18-46 through 18-56, Code of Laws. The procedures and requirements have not changed.

The 2/3 Program is based on the requirement that the infrastructure in question is to be brought up to acceptable County standards for maintenance prior to the County's acceptance of the infrastructure for maintenance. The total cost of improvements to bring the infrastructure up to County standards must be paid for by the affected properties. The County finances the individual projects from their inception and the affected properties are assessed for repayment over a period of years. Typically this is 8 years, however in some cases the Board has allowed this to be extended up to 15 years.

From 1982 to 1999 the assessments and their repayment was handled through the Clerk of Court Finance Division. In 2000 the Board revised this process to allow the assessments to be noticed on the County property tax bills and collected by the Tax Collector's Office. This method is in accordance with the Uniform Method of Levy, Collection and Enforcement of Non Ad-valorem Assessments, Section 197.3632, Florida Statutes.

To date there have been 28 2/3 projects completed at an approximate total cost of $5.5 million. There are 2 projects currently ongoing which are expected to be completed in 2009. There have been approximately 113 requests from neighborhoods for preliminary estimates that did not materialize into projects. Several of these have made multiple requests over the years as ownership changes.

Discussion:
As a result of Tropical Storm Fay a significant number of privately owned subdivisions or neighborhoods realized the need for improvements to their roads and/or drainage systems to prevent similar occurrences in future storm events. As these citizen groups approached the county for assistance in developing those projects, the fact that the projects involved private properties was realized as precluding county response. Unless there is a declared state of emergency, county forces are not allowed to expend public funds to assist private properties, and in the emergency situation, the County response is limited to minimal actions to restore access, etc.

The county program for the acceptance of private roads and drainage systems into the county maintained system provides a vehicle for county response to these requests. If the citizens of a subdivision, neighborhood, or even a single road, petition the county to have an infrastructure project constructed, the County is then empowered to secure right of way or easements such that the project can be completed and to enter the property to construct the improvements.

In addition, the program provides that the citizens abutting the project will pay 100% of the cost of the improvements, and may do so with county financing of the cost for a period of years. Under the circumstances of storm damages, the County is also then in a position to contribute funds to the project, if such funds are available and the County makes that determination, thereby reducing the costs to the homeowners. The County Attorney's Office advises, however, that ad-valorem funds may not be used to assist homeowners in such situations, and that any such project cost participation would have to come from other sources of funds.

The program has been referred to as the "Two-Thirds Program" over the years because no other logical name has been applied to it for reference. Because the program is based on a 2/3 majority, the name apparently evolved from there. It has been problematic, however, because citizens frequently thought that it meant that the County would be paying one or two thirds of the project cost, and the name never properly identified the concept or benefits of this important program. To end the confusion associated with the lack of a formal program name, Staff is now proposing that the program be referred to as the "County Acceptance of Road and Drainage Systems", otherwise to be referred to as the "CARDS Program", and will be referred to as such in the remainder of this discussion.

The CARDS Program has been beneficial to many county citizens over the years, as is evidenced by the successful completion of 28 projects. It is also beneficial to the citizens at large in Leon County

because it helps to insure the integrity of the County road and drainage network, which depends on many privately maintained systems for its efficiency. The failure of private road drainage systems is to be avoided, and the owners of these private systems should be encouraged to work with the program.

From staff experience, many homeowners buy into private road and drainage systems without full comprehension of the implications of that action. Many Homeowner Associations do not have a realistic dues system that provides for the accumulation of funds for proper maintenance, which further lulls new buyers into thinking that there is no real issue with the roads. Concerns begin to rise when there has to be an assessment to repair isolated failures, but even at that most private homeowners do not realize their obligation to maintenance until it is too late. The recent experience the County had with the Whispering Pines subdivision is a good example of where these private subdivisions are headed without the benefits of the CARDS Program.

There are, however, some basic problems with the program that have been revealed during its implementation. As they relate to the routine utilization of the program, changes merit consideration. As they relate to storm related issues such as those currently being considered, more extensive changes may be worthy of consideration.

One significant issue associated with the current program is its core consideration that only two-thirds (67%) of the effected residents must sign the petition. As a general rule, most petitions have been very close to the two thirds mark, which leaves one third of the effected residents against the project but obligated to pay their fair share of the cost anyway. Staff experience has been that usually most of the non-petitioners are not actively against the project, but just weren't sure enough that they were for it to sign the petition. But there are invariably a few effected residents who are adamantly against the project and resent their obligation to pay for it.

The result of this situation is typically increased project costs and delays as the non-petitioners attempt to thwart the project. In many cases, each property owner in the project area is expected to donate the parts of the right of way or easements that run across their property. The non-petitioners typically do not want to donate, and demand payment. The use of the eminent domain process to acquire this property is costly and usually not included in any estimates that the petition was based on.

Generally, the experience to date has been that older neighborhoods tend to have inactive Homeowner's Associations and these HOAs do not own the rights of way and drainage easements, so acquisition of these properties becomes more time consuming and expensive. More recent subdivisions with active HOAs are more routinely able to process with the program.

The City of Tallahassee has also implemented a similar program within the City Limits. Initially, the City also used the two-thirds requirement for petitions, but has recently changed to requiring 100% of the effected parties to sign the petition. It must be noted, however, that this higher mark makes it much more difficult to accomplish a project under the program, and could effectively eliminate the program as being viable. The result could be catastrophic failure of roads and drainage systems around the county over time. It is also to be noted that the City participates by paying 25% of the project cost.

We have seen situations where those attempting to complete a petition have been unsuccessful. To overcome this failure, groups of residents within a project area would agree to pay the assessment of a non-petitioner to induce them to sign. It is possible that some Code revisions could address this aspect of the petition.

In a storm response event, where the successful arrangement of two thirds of the residents must sign the petition, the situation becomes even more critical. The Board may wish to consider revisions to Code that would allow the Board to "buy out" enough votes to make the petition successful.

A second significant issue with the current Code language for the program relates to the proximity of a parcel to the project. As currently written, all properties that "abut" the project must participate. Prior experience with road projects has resulted in "abutting" property owners who do not use the road in any way have been drawn into a project, generally objecting.

In the response to TS Fay, several subdivisions have a drainage issue with their entry (and sole access) road. A drainage project could be accomplished to insure the viability of that entrance road in future storm events, but the question of "abutting" looms. The County Attorney's Office has indicated that all parcels that benefit from such an improvement would be considered to be "abutting", but Code revisions should be made to clarify this for immediate and future instances.

In response to this issue and as it relates to the flooding issue at hand, the County Attorney's Office has prepared a draft ordinance (Attachment # 11) which would create a new stormwater management special assessment program. This is essentially a third CARDS program that will focus on stormwater issues where the abutting properties issue is the greatest problem.

Recommendation:
#13 Direct staff to schedule a public hearing adopting the Stormwater Management Special Assessment Program Ordinance which specifically creates a new 2/3 program to address stormwater and drainage projects, that allows all properties benefiting from the project to be assessed (Attachment # 11).

4.b. Flooded Property Acquisition Program:

As a result of Tropical Storm Fay's impacts and the many homes that were flooded as a result of that event, many citizens have asked that this program be re-activated and expanded to address a greater realm of issues than it was originally contemplated to address.

Background:

The County's first flooded property acquisition program was initiated in 1995 with a $6.4 million CDBG grant for flooded property acquisition and up-front expenses for the Lake Munson Restoration Project. The Board adopted the Flooded Property Acquisition Program Policy (95-2) to provide the administrative guidance for the program which resulted in the acquisition of 43 homes. This funding was exhausted with several homes still identified as being candidates for purchase (the "Southside List").

Due to the number remaining homes on the "Southside List" and the number of residents who came forward asking to be included in the program from outside of the original project scope, the Board directed that another program be developed based on County funding only.

In 2004 the Board adopted a prioritized County wide Flooded Property Acquisition List which incorporated the original Southside list and approved the funding of the program at $1 million per year, the funds to be provided from the Communications Services Tax collected each year. This acquisition list was established based on applications received and were prioritized based on the personal needs of the actual occupants at the time.

In 2005 the Board directed staff to sell off all surplus properties so that the proceeds of those sales could be used to augment to $1 million per year funding level of the program. That direction has been completed and the current surplus properties owned by the County are essentially unmarketable.

In 2007 the Board terminated the funding of the program due to budgetary issues caused by a statewide mandate to reduce taxes. At that time, 25 of the 217 homes on the list had been acquired at a total cost of $4.6 million. This includes purchase, appraisal fees, administrative costs, demolition and clean-up, and miscellaneous costs. On average, the total cost of acquisition and demolition of a home site has been 212 percent of the Property Appraiser's assessed Market Value for the home. The program remains in full effect at this time, but without funding.

Discussion:

Flooded property acquisition may be the most cost feasible response that the county can make to some instances of impacts caused by TS Fay and prior storm events. In several instances, there are no available infrastructure improvements that can be practically enacted to prevent the future flooding of those properties.

Purchase Process

In this workshop package, staff is proposing that the acquisition of flooded properties be accomplished by the one-time funding of all acquisitions so that all such properties can be acquired in a short period of time. This proposal includes the properties on the existing list with the addition of properties identified since that list was established. It is to be noted that some of the properties on the original list have been re-confirmed as necessary flooded property buy-outs by recent storms. This purchase envisions the acquisition of approximately 670 homes at a total cost of $93 million.

Under the circumstances, the option of continuing the process with limited annual funding as has been pursued in the past does not appear to be feasible. The prior process was funded at the level of $1 million per year. At that funding level, the completion of the project would take almost 100 years. If the Board set a goal of acquiring all of the flooded properties within 10 years, the funding requirement would be almost $10 million per year.

If it is the Board's direction that an ongoing program for the purchase of these flooded properties be implemented, staff will provide a future agenda item for the Board to consider issues related to this process.

The Existing Prioritized List for Acquisition

The workshop package proposal proposes that the existing list of Flooded Properties be included in the purchase program. Staff will need direction regarding how the existing list is to be applied due to circumstances not addressed in the governing policy:

1. Should property owners who declined to sell to the County under the prior program be allowed to remain on the list? There were 10 properties that, when offered a purchase price, declined to sell and elected to remain. Some of these property owners have, afterwards, expressed an interest in a new offer.
2. Should properties where the original property owner has sold to new owners be included in the program? Prioritization was established based on the health conditions of the occupants. New occupants would indicate that the health conditions have changed. Under the single funding concept, the prioritization is no longer an issue. But the fact that the list was so closely tied to the ownership causes staff to seek clarification for these 45 properties.

Determination of Flooded Properties to be acquired under a new list

The properties targeted for acquisition in this workshop package were identified based on storm records where responses were made to flooded homes, Red Cross reports, isolated reports from observers, and public requests for information about flooded properties that were published in the County Link. It is not reasonable to conclude that the list as an absolute final list, and it is reasonable to expect that there will be homeowners asking to be added to the list contained herein.

It is therefore necessary to establish the criteria for inclusion on the final list to be developed. The criteria used for the existing list was that the property was subject to any form of flooding, such as yard flooding, garage flooding or other nuisance flooding. The Board may wish to provide direction as to the level of flooding impacts that qualify a property for acquisition, such as actual structural flooding or flooding sufficient to isolate a property, rendering it unusable during flood events.

> ***Recommendation:***
> ***#14 Action related to the flooded property acquisition program is dependent upon funding. If funding is pursued under the infrastructure recommendation, it is recommended that the Board direct staff to prepare a revised flooded acquisition policy which would address the existing flooded property list and any new properties to be added.***

4.c. City/County Coordination

Presentation of the City-County coordination efforts regarding stormwater management.

Background:
The Tallahassee-Leon County Comprehensive Plan requires the City and the County to coordinate their respective stormwater management programs.

In 1991, the stormwater management master plan (the NWFWMD Study) was adopted for the urban basins. The Northwest Florida Water Management District (District), the City of Tallahassee and Leon County cooperated in the plan development.

In 2004, the City and County adopted the Watershed Protection Plan Interlocal Agreement to formalize stormwater management coordination efforts.

Discussion:
The NWFWMD study identified a list of projects to be developed by the appropriate jurisdictions. Some did develop as joint City-County projects, primarily where the project addressed shared infrastructure such as roads.

The Watershed Management Policy Board, established by the City-County interlocal agreement, provides oversight to the coordination efforts. A joint list of capital projects was reviewed by the Board and is illustrated on maps available at the Board's web site. Water quality has been the greatest focus for the Board, rather than flood control.

The City's program predominately addresses flood control, which often results in increased discharge to the unincorporated area. The City's Stormwater Utility Fee generates funding for planning, capital projects and maintenance activities. The fee was established to implement capital projects within a specified time period and is adjusted annually for inflation. Consequently, substantial progress has been made within the City.

The City and Leon County environmental regulations are substantially different with regards to stormwater management requirements during redevelopment of a site. Leon County relaxes the rate control and downstream capacity analysis requirements when a site is redeveloping so long as full water quality treatment is provided. The City Redevelopment Standards (Article V of Section 5) limit stormwater management to the net increase of impervious surface area, resulting in site redevelopment without water quality treatment or rate control prior to discharge. The NWFWMD study did not consider the possibility of increasing development density within the urban basins.

Recommendation
#15 Accept staff's report on coordination efforts with the City and support the on-going functional consolidation efforts.

4.d. Local Mitigation Strategy

The Local Mitigation Strategy (LMS) is a joint community-based plan intended to help make the City of Tallahassee and Leon County safer and more resistant to natural and technological hazards. Attachment #12 provides a summary of the LMS and the most current update to the plan. The LMS:

- Identifies hazards to which the county is vulnerable, such as hurricanes, tornadoes, floods, fires, and hazardous materials releases;
- Determines where the community is most vulnerable to these hazards;
- Assesses the facilities and structures that are most vulnerable to hazards;
- Includes a prioritized list of mitigation projects to take advantage of available funding;
- Identifies potential funding sources for the mitigation projects; and
- Makes hazard awareness and education a community goal.

The LMS helps Leon County in several important ways. First, having a plan helps local emergency managers and planners anticipate potential hazards. The creation and update of the LMS includes listing hazards by risk rating, the identification of critical facilities and other vulnerable areas of the county, and the development of a series of mitigation measures ranked by priority and the identification of responsible agencies and funding sources for these mitigation measures. This helps authorities to prepare for responses to events such as storms, including the identification of local, regional, state, federal and non-profit agencies and their role in hazard mitigation.

Second, having an adopted, updated LMS not only gives a local government priority for disaster recovery and hazard mitigation funds from state and federal sources, but also allows it to apply for these funds in the first place. The absence of such a plan would mean that the State of Florida and/or the federal government could deny any such funding requests.

The Board of County Commissioners can use the LMS in several ways. For instance, the LMS identifies high-risk areas and critical facilities within Leon County. The Board can use this document to inform the public about expected hazards and how the local government can mitigate these hazards by permanently reducing or eliminating long-term risk to people and their property from the effects of hazards. Through adopted policies in the LMS that address hazard mitigation, this plan can assist the Board in making informed decisions about hazard mitigation and other related policy and project objectives affecting development and redevelopment, the location of critical facilities, participation in the National Flood Insurance Program, upgrades to existing housing stock, and other initiatives identified in the LMS.

One of the most prominent examples of how the LMS can help the County mitigate natural hazards is through the identification of critical facilities and any mitigation measures that can reduce the effect of such hazards on these facilities. For instance, facilities operated by the Leon County Emergency Medical Services division are eligible for grant funding to help harden these structures and other facilities against natural hazards such as wind. Furthermore, the LMS lists specific projects from the Leon County Stormwater Master Plan that may be eligible for partial or full grant funding under one or more mitigation grant programs operated by the Federal Emergency Management Agency. County staff is aware of these grant opportunities and applied for these funds.

Recommendation
#16 Continue to utilize the Local Mitigation Strategy (LMS) to identified solutions that better prepare Leon County to address disasters.

5. INFRASTRUCTURE

5.a. Background on previous efforts
5.b. Project specific solutions

5.a. Background on previous efforts

The first master plan effort occurred in the 1970's, when the urban area was evaluated for flood control projects.

In 1984, the State of Florida adopted the Stormwater Rule which required treatment of stormwater runoff from new development.

In 1990, Leon County's Environmental Management Act established broader controls on the rate and volume of runoff, as well as increasing treatment requirements for particular drainage basins.

In the early 1990's, the Tallahassee-Leon County Comprehensive Plan required a county-wide stormwater management master plan to provide system-wide planning of capital projects and land use. The County plan was developed in two stages.

In 1991, the first master plan (the NWFWMD Study) was adopted for the urban basins. The Northwest Florida Water Management District (District), the City of Tallahassee and Leon County cooperated in the plan development.

In 1995, the Stormwater Management Master Plan was prepared by CDM, Inc. to address the non-urban basins that were not included in the 1991 NWFWMD study.

Discussion:
The 1970's master plan capital projects were primarily to increase ditches to relieve existing flooding. In order to prevent the future need for ditch enlargement, Leon County required developers to construct stormwater rate-control facilities, which restricted the stormwater discharge to pre-development rates.

The historic stormwater management focus on flood control has evolved to include stormwater pollution reduction. Stormwater master plans were prepared in the 1990's to evaluate problem areas and identify capital projects to resolve these historic development impacts.

NWFWMD Study:
The first master plan, adopted in 1991, was developed for the urban basins (Fred George Sink and Lakes Munson, Jackson, Lafayette). This study identified a list of projects to be developed by the appropriate jurisdictions. That list is attached indicating those projects that have been completed and those that have not (Attachment #13). It is to be noted that the costs are based on the costs in 1991, the year of the report. The study also targeted areas for flood plain and wetland acquisition in order to preserve floodwater storage areas.

CDM Study:
The non-urban basins (the balance of the county's land area) were evaluated in the 1995 Stormwater Management Master Plan prepared by CDM, Inc. This study identified a list of projects to be developed by the appropriate jurisdictions. That list is attached indicating those projects that have been completed and those that have not (Attachment #13). It is to be noted that the costs are based on the costs in 1995, the year of the report. The study also targeted areas for flood plain and wetland acquisition in order to preserve floodwater storage areas.

Summary of Expenditures to Date, By Study

Projects Status	NWFWMD Study	CDM Study	Total
Completed	$7,775,000	$1,840,0000	$9,615,000
Not completed	$4,743,000	$105,763,000	$110,506,000

The NWFWMD and CDM studies together comprise the essential guidance to the development of stormwater facilities on a county-wide basis. Although there have been other localized studies subsequent to these, those studies primarily focused on water quality issues rather than flood control.

The current Stormwater Capital Improvement Program (Attachment #14) continues to implement the Master Plan projects. Long-standing operational issues are also addressed, such as with the Killearn Lakes Plantation Stormwater project. The locations of the master plan and CIP projects are in Attachment #15.

The age of these studies and their current state of implementation, along with the fact that the population distribution in Leon County had changed significantly suggest that planning should be started soon to reevaluate the master plan recommendations and/or the implementation of a new master plan. Advances in computer technology and improved GIS data would support greater accuracy and refinement in the identification of flooding areas and recommended solutions.

5.b. Project Specific Solutions

Areas of known flooding during Tropical Storm Fay and other prior storm events are presented for Board consideration of County actions that may be directed to mitigate or prevent reoccurrence of flooding situations in future storm events.

It must be noted that the solutions for many of these problem areas will be based on design criteria that exceeds the Level of Service by which the remainder of Leon County has been and will be developed. Many of these areas have experienced these problems on a recurring basis, and in virtually all events, the storm events have exceeded Level of Service design standards. However, these areas are also unique in Leon County in their exposure to almost catastrophic impacts from these storms when the remainder of the County does not have such impacts.

Background:

Leon County has experienced a number of significant storm events that have exceeded normal design capacity for stormwater handling facilities. It is also to be noted that the Leon County topography, comprised of many closed basins of varying dimensions, is particularly vulnerable to even normal stormwater events, and when the events exceed the range of normal, the impacts quickly become significant to catastrophic.

Tropical Storm Fay was one of those excessive storm events that measured in excess of the 100 year event that is the customary most extreme event used for any stormwater design. TS Fay was also unusual in that it did not deliver uniform impacts across the county. The primary impacts of this storm were felt in the eastern half of the county while areas on the western side of the county that usually are the first to experience flooding did not have that problem at all.

Discussion:

This Discussion Item will present a detailed discussion of each of the neighborhoods that were impacted by TS Fay and/or other prior storm events. The information presented will include:

- Type of problem experienced
- Root cause of the problem
- Whether the area impacted is in public or private ownership/maintenance
- Whether or not the area has been identified in prior stormwater studies
- Solution Options
- Costs of solutions
- Regulations in effect at the time of development

The information presented is summarized in Attachment #16. The more detailed information packages for each neighborhood or area is also included in Attachment #17.

The proposed projects have been categorized as follows:

- County funded project
- County acceptance of road and drainage systems (CARDS, old 2/3's program)
- Flooded property acquisition
- Large scale river basin projects

County funded capital improvement projects: $6.506 million
This list consists of projects that are located in a public sub-division and involve improvements on public lands. Overall, a minimum of 318 individual parcels would benefit from these projects. The projects range in size from $26,000 to $2,000,000. To maximize the funds available, the County would complete as many projects during the current fiscal year and provide the balance of the funds during next fiscal year. Staff recommends allocating $4.084 million of the currently allocated CIP towards these projects. This would require approximately $2.422 million in funding during the next budget year. Given the complexity and lead time for design and property acquisition, the phased funding will not impact the implementation of these projects.

Joint Participation Projects: $3,020,000
Two projects have been identified that involve improvements associated with the CSX Railroad and the National Forest. Both of the projects would require working with the entity to define the scope of the project and determine a joint funding arrangement. The County has initiated contact with CSX. However, at this point in time no formal action has been taken by either party. Based on past experience working with these entities, this will be a long term process.

County acceptance of road and drainage systems (CARDS, old 2/3's): $26,120,000
This list consists of projects that are located in private subdivisions. As discussed above, the proposed ordinance amends the County code to allow the CARDS program to be utilized to support the drainage projects being proposed. It is recommended that for projects that are specifically being done to address neighborhood flooding, that the County match 20% of the funds for the project. To start the program, $1,000,000 is recommended to be set aside from the existing stormwater/flooding CIP.

Given the nature of the program, these projects will take some time to develop. County staff will provide the individual neighborhoods information regarding the projects. Petitions will need to be collected and ROW acquired. Some of the project costs versus the number of individual parcels benefiting will not result in a cost feasible solution for the neighborhood. In situations where individual parcels are receiving structural flooding, but would not benefit from the improvement being proposed the parcels is included on the flooded acquisition list.

Flooded Property Acquisition Program (FPAP): $93,000,000

As discussed previously, the County FPAP was discounted several years ago. At the current time, the acquisition list contains 216 parcels with a total estimated cost of $40.67 million. The costs are all inclusive of acquisition, expenses and ultimate demolition of the structures. The balance of the $93,000,000 million is proposed acquisitions of structures that have been identified through recent storm events but were not included on the original list.

If funded, the FPAP would be voluntary. To fund the acquisitions, staff is proposing the Board consider the issuance of general obligation bonds. General obligation bonds are voted on by the public and supported by an ad valorem millage levy established by the Board annually. As the property acquisitions are all occurring in the unincorporated area, the referendum would be conducted outside the city and the corresponding millage would be levied there as well.

Given that the individual acquisitions would be voluntary it is unknown what the exact dollar amount of parcels would be acquired. Assuming the entire list was acquired, the bond would have the following assumptions: 30 year term, 5% interest rate, $95.0 million in proceeds (includes expenses, etc.). Based on current property values in the unincorporated area, the millage to support this debt would be 1.29 mills for the unincorporated area the first year. Over the 30 years, assuming modest growth (3%) in property values, the millage rate in year 30 would be 0.55 mills.

If the referendum was approved, the actual bond would be issued in a series of issues which would allow time to negotiate for individual parcels and determine which properties would be acquired. This would reduce the possible size and payments and the corresponding millage rate.

The ballot can be prepared for a special election to be conducted in the unincorporated area only. Based on information provided by the Supervisor of Elections Office, the cost of this special election would cost between $290,000 and $327,000. The low end of the range is based on an all mail ballot election and the high end is a traditional precinct based election with early voting. Alternatively, the ballot could be prepared for the November 2010 general election.

Large Scale River Basin Projects: $82,070,000

Included in the attached schedule are a series of large scale projects that are needed as the result of massive river basin flooding. These projects involve regional areas (Benjamin Chaires, Fairbanks Ferry). Staff has evaluated various solutions, and in these areas the properties in question literally become part of the river basin during large scale rain events. Solutions would involve entire roadways to be raised; however, while this may solve road flooding issue, it may also create the road structure to act as a dam and cause flooding elsewhere. In the Fairbanks Ferry area, solutions would require a massive levee system (similar to New Orleans) to be constructed around the entire neighborhood. The cost would be significant and would require extensive study to determine the feasibility.

Given the massive undertaking of these types of projects it is highly unlikely that they will be constructed anytime in the foreseeable future. As such any parcels in these neighborhoods that have received structural flooding have also been included in the flooded property list.

Recommendation
#17: Direct staff to proceed with $6.1 million in capital projects that provide relief to public subdivisions; given the required lead time for design and property acquisition, authorize the funding to be phased ($4.084 million in the current year and $2.422 be included in next fiscal year) to complete the project list.

#18: Authorize $1.0 million in funding be set aside to be utilized as a 20% matching fund for the County Accepted Roadways and Drainage Systems (CARDS; old 2/3s) and direct staff to contact neighborhoods that have been identified for this program.

#19: Direct staff to work with the CSX Railroad and United States Forestry Service to develop joint participation agreements to address stormwater issues involving these two entities.

#20: Provide direction to staff regarding a General Obligation (GO) bond referendum for the purpose of acquiring $95 million in flooded property in the unincorporated area of Leon County.

Options:

1. Approve recommendations #1 through #19 contained in the workshop packet.
2. Provide staff with direction regarding recommendation #20 relating to a General Obligation (GO) bond referendum to acquire $93 million in flooded property in the unincorporated area of Leon County.
3. Board Direction

Recommendation:
Option #1 and Board direction on #2.

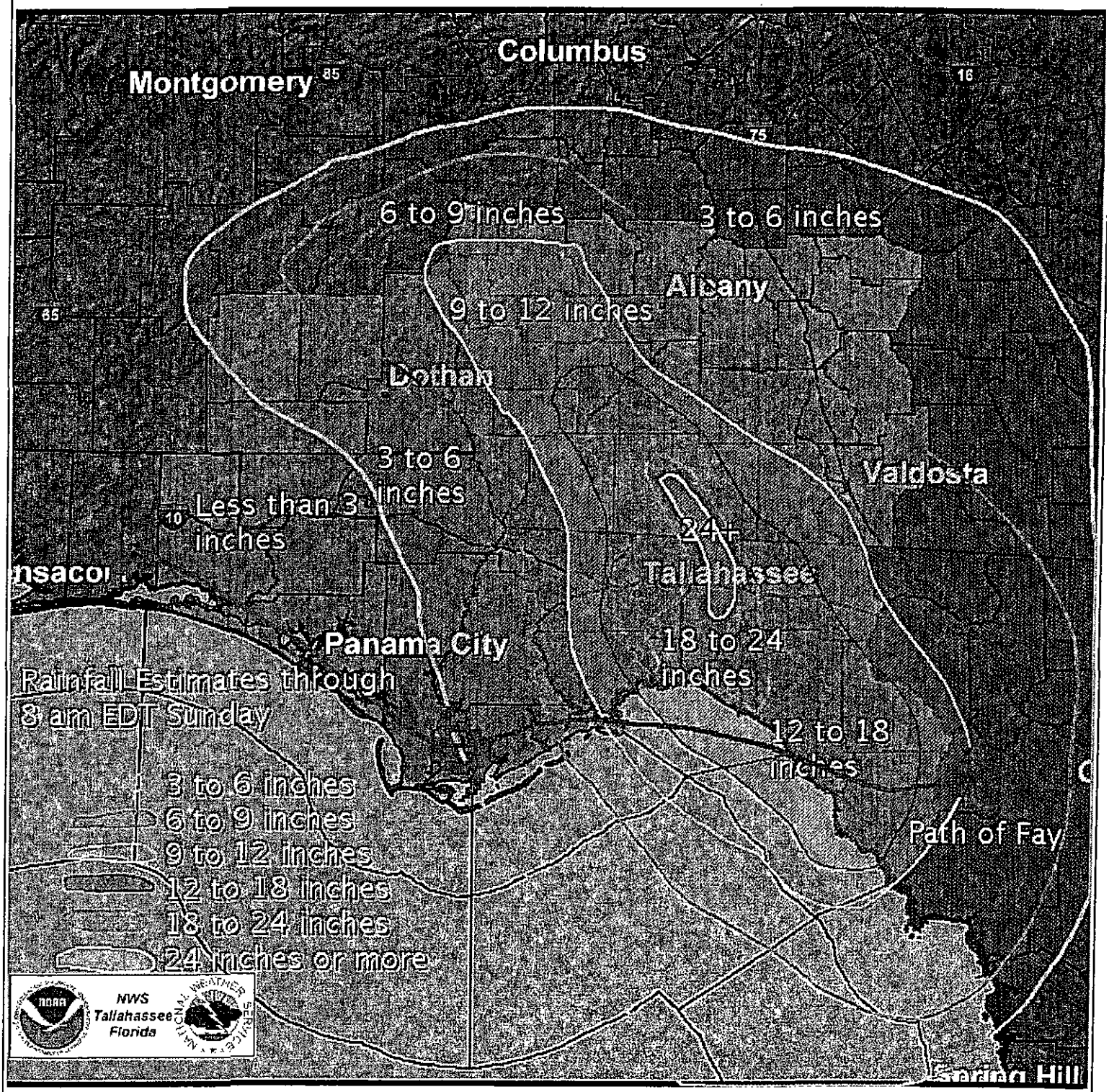
Attachments:

1. National Weather Service's official rainfall total for Tropical Storm Fay
2. Actual total of rainfall from Tropical Storm Fay as recorded at solid waste facility
3. Ochlocknee and St. Marks River Basin Map

4. Excerpts from the October 28, 2003 Volume Control Workshop
5. Typical volume control pond
6. Leon County Map of Closed Basins
7. Total volume of stormwater ponds
8. Example of 10% credit toward Natural and Landscape Area Requirements
9. Seller's Real Property Disclosure Statement
10. Proposed ordinance regarding disclosure of known flood conditions
11. Draft ordinance regarding creation of a new stormwater management special assessment program
12. Tallahassee-Leon County Local Mitigation Strategy
13. 1991 Northwest Florida Water Management District Stormwater Master Plan and 1995 CDM Stormwater Management Master Plan
14. 2009 Stormwater Capital Improvement Projects
15. Map of 2009 Stormwater Master Plan and Capital Improvement Project Locations
16. List of Leon County neighborhoods impacted by flooding and associated map
17. Detailed information on Leon County neighborhoods impacted by flooding

T.S. Fay Rainfall Distribution
National Weather Service
August 22 - 24, 2008

ATTACHMENT # J
PAGE 1 OF 1



0 5 10 20 30 Miles

N W E S

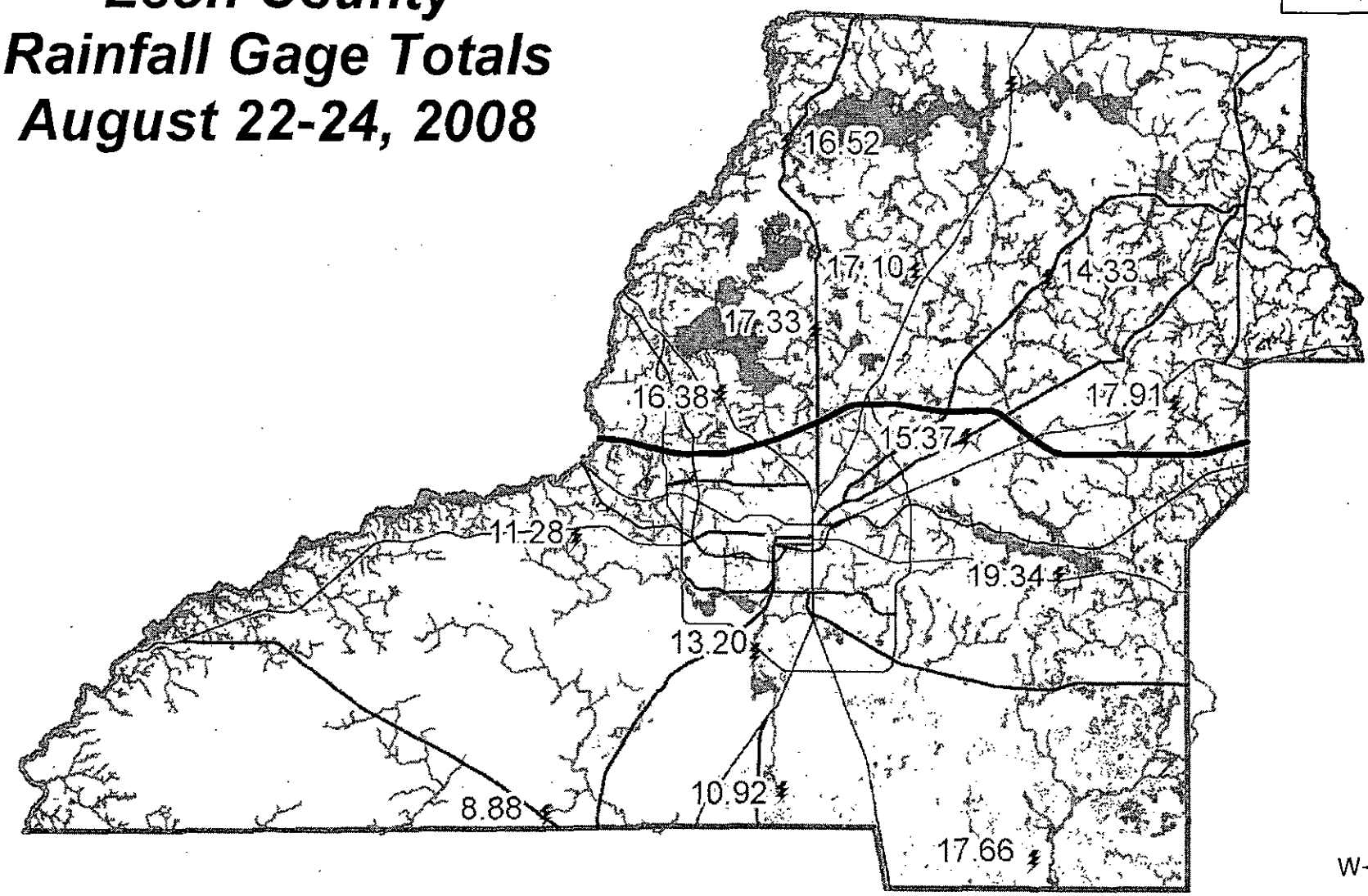
NOTE: This product has been compiled from the most accurate source data from Leon County, the City of Tallahassee, and the Leon County Property Appraiser's Office. However, this product is for reference purposes only and is not to be construed as a legal document or survey instrument. Any reliance on the information contained herein is at the user's own risk. Leon County, the City of Tallahassee, and the Leon County Property Appraiser's Office assume no responsibility for any use of the information contained herein or any loss resulting therefrom.

Tallahassee-Leon County GIS

Attachment # 2
Page 10

ATTACHMENT # ___
PAGE ___ OF ___

Leon County Rainfall Gage Totals August 22-24, 2008



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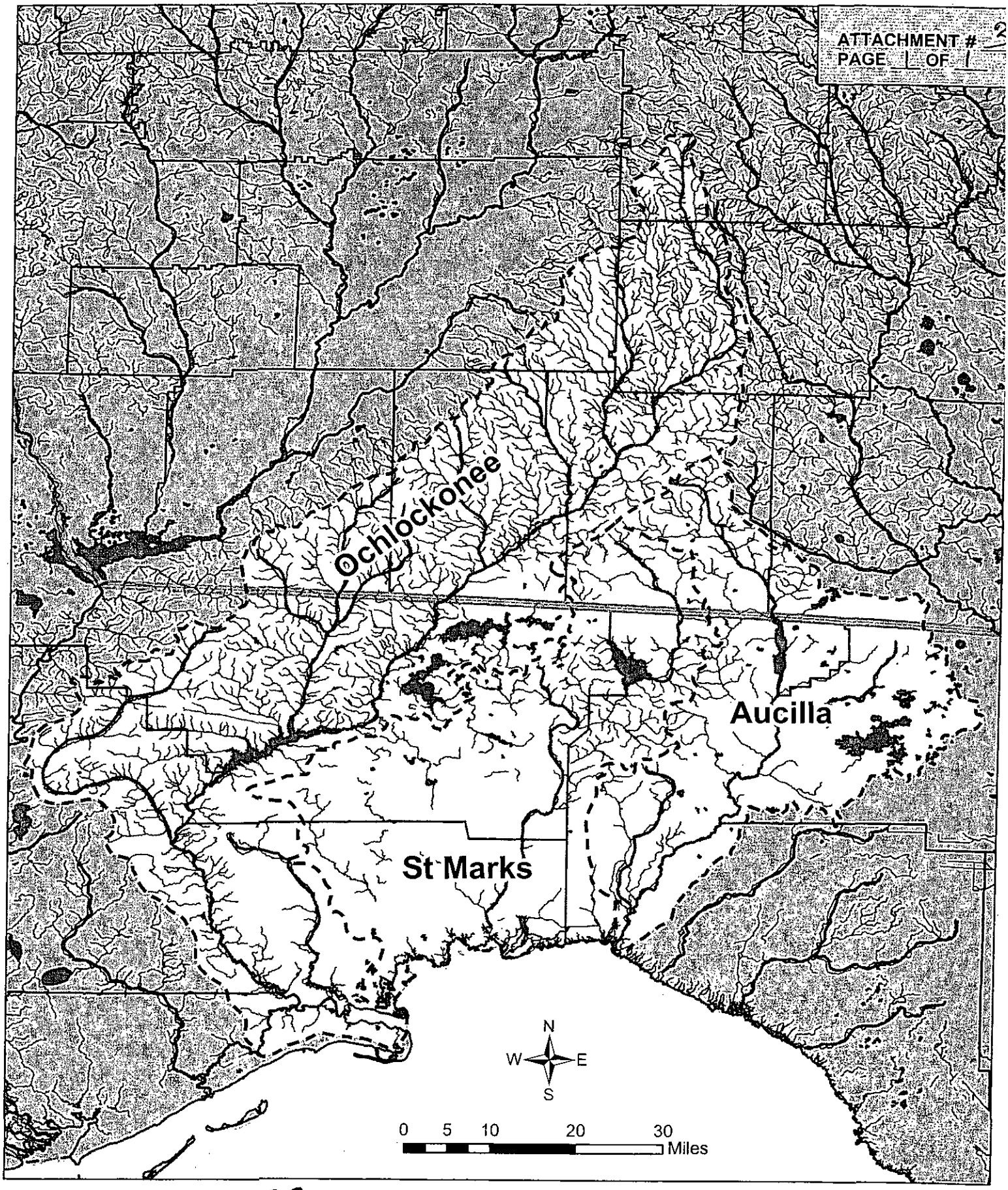
0 2.5 5 10 Miles

Tallahassee-Leon County GIS

Ochlockonee and St. Marks River Basins

ATTACHMENT # 2
PAGE 1 OF 1



Major Water Courses
County Boundaries
State Boundaries
Major Lakes
Basins

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Excerpts From the October 28, 2003 Leon County Board of County Commissioner's Workshop on volume Control and Flood Protection Regulations with Emphasis on Volume Control Regulations

Background:
At the September 17, 2003 Board meeting, the Leon County Board of County Commissioner's directed Leon County Growth & Environmental Management (staff) to schedule a Flooded Property Acquisition and Flood Control Regulations workshop. The workshop was conducted on October 28, 2003. The volume control regulations were placed on hold. The Board held their annual retreat on December 3, 2003, and water quality was named the County's #1 priority. The Board directed staff to obtain comments from the Science Advisory Committee(SAC), Water Resources Committee, Growth & Environmental Management (GEM) Citizen's User Group, the City of Tallahassee Staff and Tallahassee Builder's Association(TBA). Due to staffing constraints and workload, this process has been slow. However, the Board recently asked to speed up the process and bring back the volume control ordinance for public hearings before the end of this year.

Staff has met with the SAC, the Water Resources Committee and the GEM Citizen's User Group and is in the process of scheduling meetings with the last two groups to obtain comments on the proposed volume control regulations.

Analysis:
Currently, Leon County flood control regulations are enforced at the time that proposed new development is reviewed. Each of these regulations will be discussed as to the effectiveness in providing flood control.

New development is required to discharge stormwater at the same rate, or less, than the discharge rate before development. However, the volume of discharge can be greater than before development, except in regulated closed basins. In other words, as development occurs, more impervious is constructed resulting in more water flowing downhill. In areas that are very flat, at the bottom of the hill, or that have high water tables, this additional volume can cause flooding that is deeper and lasts longer.

Staff attempted to address this problem by adding new regulations, effective January 1, 2001, that helps prevent conveyance flooding from future development. If a site is greater than 2 acres and its discharge is greater than 2.5% of the flow in the conveyance, then a downstream analysis is required to show that no adverse impacts occur downstream or the applicant must significantly restrict the discharge from the site to minimize conveyance flooding. This will help minimize some conveyance flooding but still does not address the cumulative affects of volume increases on the floodplain at the bottom of the hill. Thus, as directed by the Board, staff has analyzed the advantages and disadvantages of volume control regulations and continues to obtain public comment.

Volume Control Regulation Consideration:

What is Volume Control?

Volume control refers to a volume of stormwater runoff in excess of the pre-development runoff volume generated by a particular storm event (usually the 100-year 24-hour event) that is retained onsite.

In general, as a development increases its impervious area, there is a corresponding increase in the volume of stormwater that is allowed to discharge from the stormwater pond that is constructed onsite.

For non-closed basin areas, current code requires water quality treatment and rate control, but **not** volume control. This means that the ponds are allowed to discharge this increased volume, but only at rates that are no greater than pre-development rates.

Without volume control, the result is that further downstream, these volumes begin to accumulate and increase flooding in both the conveyances and waterbodies.

Volume control would mean that the increased volume produced by a development site would have to retain this volume onsite and not be allowed to discharge it through a sand filter or a rate control structure. This volume would have to be either percolated through the pond bottom or re-used as irrigation for landscaping or natural area onsite.

Current Mix of Leon County Stormwater Treatment Standards:

1. At a minimum, the State of Florida Department of Environmental Protection (FDEP) standard of ½ inch over the area draining to the pond must be met. This volume can be retained and percolated onsite or treated through a sand filter and discharged offsite. Recovery of this volume must be within 72 hours.
2. Outstanding Florida Water (OFW) - Applies to FDEP designated OFWs. A standard of 3/4 inch over the area draining to the pond must be met. This volume can be retained and percolated onsite or treated through a sand filter and discharged offsite. Recovery of this volume must be within 72 hours.
3. There are special stormwater treatment standards in special development zones for the Lake Jackson, Bradford Brook Chain-of-Lakes, Fred George, Lake McBride, Lake Lafayette and Lake Iamonia Basins. There are four options for treatment as follows:
   (1) Wet detention - 1-1/2 inches over the area draining to the pond must be detained in a wet pool with wetland vegetation for nutrient uptake. The first half of this treatment volume can be discharged in 60 hours and the second half in 60 hours or more. (Typical layout in Attachment #1)

(2) Off-line retention - 3/4 inch over the area draining to the pond. This treatment volume is treated separately in one cell(off-line) of a two cell system. The second cell handles the rate portion of the system. Recovery of the treatment volume must be within 72 hours. (Typical layout in Attachment #2)

(3) Underdrained filtration (filter pond) - 1-1/8 inches over the area draining to the pond. This volume is treated through a sand filter before discharge. Recovery of the treatment volume must be within 36 hours. (Typical layout in Attachment #1)

(4) Swales (typically for roads) - 80% of 2.6 inches over the area draining to the swale. Recovery within 72 hours.

4. Bradfordville Study Area - Applies to Bradfordville Study area only. A volume of runoff calculated as 4 inches times the total impervious area on a site must be retained in a retention facility. Recovery of this treatment volume must be within 72 hours.
5. Lake Jackson 50-year retention - Applies to the Lake Jackson Basin only. Non-single family residential uses shall retain the post-development stormwater on-site for all storm events up to and including the 50-year 24-hour duration storm. One-half the volume must be recovered within 7 days, and the full volume within 30 days.
6. Closed Basin (Volume Control) - Applies to closed basins only. Runoff volumes in excess of the pre-development runoff volume shall be retained in a retention pond for all storm events up to a 100-year, 24-hour duration storm. One-half the required pond volume shall be recovered within 7 days, and the full volume shall be recovered within 30 days. (Typical retention pond layout in Attachment #1)

Water Quality by Filtration

The most widely used form of stormwater treatment is detention with filtration. The required water quality treatment volume is recovered by the use of a sand filter as shown in Attachment #1. This is common since it is the easiest form of recovery for the treatment volume, especially on sites with soils that don't percolate well.

A literature review was conducted of previous research which quantified pollutant removal efficiencies associated with various stormwater treatment ponds. The research indicated that detention with filtration was the worst form of stormwater treatment. A summary of one of the studies is shown in Attachment #3. (Research by Harvey H. Harper, Ph.D., P.E.)

Dissolved nutrients pass through the filter medium and discharge to our lakes. Trapped particulate nitrogen and phosphorous were shown in some cases to undergo decomposition within the filter media which actually produced higher concentrations after discharge compared to the concentrations measured within the stormwater pond. ("Treatment Efficiency of Detention with Filtration Systems", by ERD, August 1993)

The FDEP State Water Policy Goal is to achieve 80% reduction by the stormwater pond for

pollutants going into the pond. Filtration ponds do not meet that goal.

Based upon the literature review, there is little evidence to indicate that sand filter systems improve the operational performance of stormwater ponds. Some of the research indicates that sand filter systems may actually degrade the pollutant removal effectiveness of the stormwater pond.

Existing Volume Control Regulations.

Volume control is not a new concept for of stormwater management. Current code requires volume control for all closed basins. Closed basins are naturally depressed or artificially closed off portions of the earth's surface for which there is no natural and normal outlet for runoff other than percolation, evaporation or discharge into a karst feature. Volume control is required to prevent the floodplain at the bottom of the closed basin from increasing its flood elevation. The areas that are currently required to meet volume control regulations are shown in Attachment #4.

If you subtract the City of Tallahassee and the Apalachicola National Forest from the land area of Leon County, the closed basin areas encompass approximately 30% of the remaining land area within the County (refer to Attachment #4). This means that we already have volume control regulations covering 30% of the land regulated by Leon County.

The specific Leon County Code citation that requires volume control is as follows:

Section 10-188(b) *Volume control required.* Runoff volumes within regulated closed basins in excess of the pre-development runoff volume shall be retained for all storm events up to a 100-year, 24-hour duration storm. One-half the required pond volume shall be recovered within 7 days, and the full volume shall be recovered within 30 days.

Advantages of Volume Control Regulations for all of Leon County:

1. Prevents downstream flooding from increasing due to new development
2. Prevents having to perform full build-out floodplain analyses
3. Can actually decrease downstream flooding for some storm events
4. Provides the best water quality treatment of stormwater for protection of our watercourses and lakes
5. Will save the County costs by not having to perform water quality studies for the remaining drainage basins
6. In relation to stormwater, makes new development pay for itself
7. Simplifies the code with one central stormwater standard
8. Will assist in the implementation of the Total Maximum Daily Load (TMDL) program required by the Federal Government and the Florida Department of Environmental Protection (FDEP)
9. Endorsements by Eric Livingston of FDEP and Dr. Harvey Harper of ERD.
10. Complies with water policy guidelines proposed by the FDEP
11. Prevents costly downstream analyses which may be required during the Environmental Impact Analysis (EIA)
12. Provides aquifer recharge versus discharge downstream

Each of these advantages are discussed in more detail on the following pages.

Volume Control Advantage:

1. Prevents downstream flooding from increasing due to new development

The principal foundation for volume control is that flooding will not be increased as a result of development. The only discharge that is allowed from a volume control (retention) pond is the pre-development volume. This is the rainfall runoff volume that leaves the site from its natural condition.

Current code requires volume control only for closed basins to protect the property at the bottom

of the basin from having its floodplain elevation increased. Theoretically, the floodplain cannot increase if the additional volume caused by new development is retained in a stormwater retention pond and recovered onsite.

For non-closed basin areas, current code requires water quality treatment and rate control, but not volume control. This means that the ponds are allowed to discharge this increased volume, but only at rates that are no greater than pre-development rates. The result is that further downstream, these volumes begin to accumulate and increase flooding in both the conveyances and waterbodies.

Volume control regulations will prevent government from having to buy additional flooded properties caused by permitting that is performed today.

Volume Control Advantage:
2. Prevents having to perform full build-out floodplain analyses

There has been discussion about performing full build-out floodplain analysis for the entire County. This could be considered as an alternative to volume control standards. Full build-out floodplain analysis would require that the County contract with an engineering consultant to model the entire County and use existing allowable zoning densities to calculate a theoretical build-out floodplain analysis for watercourses, floodways, waterbodies, etc. The County could then require easements over these floodplains or provide land use restrictions to prevent future buildings from being constructed in these areas.

However, there are several disadvantages to the full build-out concept. The engineering study would be very expensive, in the 2 to 3 million dollar range. The analysis would have to be constantly updated as zoning changes occur, resulting in a new form of stormwater concurrency. The analysis could potentially cause litigation due to property owners having to place easements on their property for a future floodplain. It may take years before new development causes this future floodplain to be realized.

All of these costs could be avoided by volume control regulations.

Volume Control Advantage:
3. Can actually decrease downstream flooding for some storm events

Due to the size of the retention pond necessary to meet the volume control requirement for up to the 100-year 24-hour event, most of the smaller and medium sized peak storm events (rainfall up to 5 inches) will be contained entirely within the pond. This means that even the pre-development volume will also be contained in the pond for these rainfall events.

The end result will mean that the nuisance flash flood storms can be contained in the pond which can slowly decrease this type of flooding if enough development sites are permitted with volume control in a particular watershed.

Volume Control Advantage:

4. Provides the best water quality treatment of stormwater for protection of our watercourses and lakes

As previously mentioned, detention with filtration does not provide the pollutant removal necessary to protect our lakes. The best form of stormwater treatment is retention. This is the form of treatment found in volume control type ponds. It is best because the pollutants are kept in the pond and either percolated in the ground or re-used for irrigation purposes.

The Bradfordville Stormwater Study showed that to produce no new loading downstream, retention of 4-inches over the impervious area was needed. Retention was required as the primary method to achieve this goal. The size of the volume control type retention pond would exceed this Bradfordville standard.

Research on comparisons of treatment efficiencies for stormwater management systems showed retention (also referred to as "dry retention") as the best in achieving the maximum pollutant removal efficiencies. (Attachment #3, page 2 of 3, Table 8)

Volume Control Advantage:

5. Will save the County costs by not having to perform water quality studies for the remaining drainage basins

The County spent $300,000 for the Bradfordville Stormwater Study and is currently underway with another $250,000 for the Lake Lafayette Water Quality Study. There are several additional drainage basins which may also need studying.

The Bradfordville Stormwater Study produced a no new load standard that would be exceeded by the volume control standard. The volume control standard would exceed any standard resulting from water quality studies. Therefore, additional water quality studies would not be necessary and could save Leon County these costs.

Volume Control Advantage:

6. In relation to stormwater, makes new development pay for itself

The Land Use Summary, page I-2, of the Comprehensive Plan, states: "It is the responsibility of every citizen of Leon County to pay his or her fair share first to achieve and then to maintain the

community wide adopted levels of service for capital infrastructure and urban services. However, it is not a current resident's responsibility to pay for new developments' fair share costs through subsidization. Thus, in a sense, future development must be self-sufficient."

Volume control would make the developer construct a stormwater pond that retains the excess volume that the new development produces. The pond also contains the new pollutant loading produced by the new development and doesn't allow it to discharge downstream into lakes, wetlands and waterbodies. This for the first time makes development pay for itself in relation to stormwater management for both water quality and flood control.

Current code allows the excess volume to be discharged downstream through rate control. Over the years, this excess volume has scoured and eroded many of the watercourses in the City, altering them to maintained ditches. These ditches scour due to the increased flows sending sediment and turbidity to the downstream lakes. The volume has increased the floodplain elevations to the point where tax dollars are being spent to buy flooded homes and properties. Retrofitting is occurring in areas with water quality problems resulting from developments that either had no stormwater facilities or had inefficient stormwater management systems. All of these retrofit and maintenance costs are being funded by County and City government.

Volume control would prevent further retrofitting in the future for flood control and water quality problems that would relate back to permitting being performed today. Instead of Leon County paying for these retrofit costs in the future, development addresses it today.

Volume Control Advantage:

7. Simplifies the code with one central stormwater standard

As mentioned on page 4, there are many different stormwater standards within the Leon County Code. A volume control standard would meet all of these standards except the Lake Jackson 50-year post-development retention standard for all non-single family uses. This would greatly simplify the code.

Last year, the City of Tallahassee adopted the lake protection standards as their primary standard for all areas within the City. This simplified their standards. However, they still have closed basin standards similar to Leon County.

Volume Control Advantage:

8. Will assist in the implementation of the Total Maximum Daily Load (TMDL) program required by the Federal Government and the Florida Department of Environmental Protection (FDEP)

TMDL is the maximum amount of a given pollutant that a particular waterbody can assimilate

without exceeding surface water standards. The EPA and FDEP is responsible for developing TMDLs for impaired waters. The list of impaired waters includes many surface waters in Leon County, including Lake Jackson, Lake Lafayette, Lake Munson and the Ochlockonee River to name a few. Draft TMDLs have already been proposed for Upper Lake Lafayette and Lake Lafayette Drain.

Pollutant Load Reduction Goals (PLRGs) will be developed to reduce the loading from stormwater to meet water quality standards. A basin management action plan will be developed for each impaired water to meet the PLRGs.

Part of the TMDL implementation will include improvements to existing and proposed stormwater management facilities. FDEP has already targeted conversion of sand filtration to a better form of stormwater treatment as one of the mechanisms to achieve the PLRGs. Adopting volume control regulations that require retention will be a proactive approach in achieving these PLRGs.

Filtration ponds permitted today can contribute to the pollutant loadings that are causing the waters to be impaired. FDEP is beginning to work on a State wide standard that will require some form of stormwater retention. Volume control regulations could be the start of the TMDL implementation program and will also prevent future waters from becoming impaired by permitting actions performed today.

Volume Control Advantage:
9. Endorsements by Eric Livingston of FDEP and Dr. Harvey Harper of ERD

Volume Control regulations are supported by two very distinguished individuals in the field of stormwater management. Eric Livingston, P.E., Bureau Chief of the Watershed Management Division of FDEP, supports volume control regulations as a means to maintain and improve water quality in our surface waters. Mr. Livingston recently provided a TMDL workshop to the Board and indicated that these regulations would assist in the implementation phase of the TMDL process. He also informed that FDEP will be working on improving the State standards for stormwater and volume control would meet or exceed that standard.

Dr. Harvey H. Harper, Ph.D., P.E. of Environmental Research & Design (ERD) supports the volume control regulation for purposes of protecting water quality. Dr. Harper performed the Bradfordville Stormwater Study and is currently working on the Lake Lafayette water quality study. He has performed numerous other water quality studies and is also working for both the City of Tallahassee and FDEP.

The storage in a volume control pond would be approximately 50% larger than a Bradfordville (4-inches over the impervious) type retention pond. Therefore, water quality protection would be better and no new pollutant loadings would be released to surface waters.

Volume Control Advantage:
10. Complies with water policy guidelines proposed by the FDEP

The FDEP published a notice of proposed rulemaking on August 15, 2003, for Chapter 62-40 F.A.C., the Water Resource Implementation Rule. The proposed rule substantively amends most of this Chapter to incorporate statutory changes enacted in the past six years. A new Section 62-40.431 F.A.C., Stormwater Management Program, is proposed to establish goals to provide guidance for FDEP, Water Management Districts and local government stormwater management programs.

Proposed Section 62-40.431(2)(a) F.A.C. states: "The primary goals of the state's stormwater management program are to maintain, to the maximum extent practical, during and after construction and development, the pre-development stormwater characteristics of a site; to reduce stream channel erosion, pollution, siltation, sedimentation and flooding; to reduce stormwater pollutant loadings discharged to waters to preserve or restore designated uses;.....to enhance groundwater recharge by promoting infiltration of stormwater in areas with appropriate soils and geology....."

Volume control regulations would comply with these proposed goals since the required retention pond would maintain the pre-development characteristics of the site for both water quality and flood control.

Volume Control Advantage:
11. Prevents costly downstream analyses which may be required during the Environmental Impact Analysis (EIA)

Section 10-208(15) of the Leon County Code requires sites greater than 2 acres to have a conveyance analysis performed or the stormwater pond must be designed to meet the 2-year pre-development discharge rate. This is required to minimize offsite impacts. This provision would not be required if a volume control pond was required for the site. The underlying assumption is that if the excess volume above the pre-development volume is retained onsite, then the downstream properties would not experience additional flooding.

Due to the cost of the downstream analysis most designers use the 2-year restricted discharge provision which makes the stormwater facility almost as large as a volume control pond. The pond size increases to hold back the discharge to the critical duration two year pre-development discharge rate.

Volume Control Advantage:
12. Provides aquifer recharge versus discharge downstream

Current stormwater pond designs with detention and filtration allow all of the stormwater to discharge downstream. Pre-development percolation cannot occur after buildings, pavement and other impervious surfaces are constructed on a site. This reduces the net storage within the aquifer.

Florida is fighting a constant battle with developing and maintaining an adequate water supply for its ever increasing population. In these times of water shortages and water wars, recycling of stormwater can be important in maintaining a water balance within the aquifer. If we keep drawing potable water from the aquifer while sending all of our stormwater downstream to the gulf, eventually our water supply will diminish.

Volume control regulations require that the excess volume produced by the development be retained onsite. This volume will be recovered either by percolation through the pond bottom or irrigation of the landscaping or natural area. Both of these recovery methods will assist in recharging the aquifer instead of discharging the stormwater downstream.

Disadvantages of Volume Control Regulations for all of Leon County:

1. **Additional cost due to the increase in stormwater pond size**
2. **Additional land needed for retention pond**
3. **Difficulty meeting recovery requirements in clay hill areas**
4. **Potential to alter the hydrocycle of wetlands and waterbodies**

Each disadvantage is discussed in more detail below.

Volume Control Disadvantage:
1. Additional cost due to the increase in stormwater pond size

To assist in the explanation below, see Attachment 5.
The total volume of a stormwater pond which provides either 0.5 inch or 1-1/8 inch of water quality treatment plus 25-year rate control is approximately *2.7 inches to 2.9 inches* times the area of the site. Such ponds are the standard for *all open basins in the County for sites less than 2 acres in size with the exception of the Bradfordville Study Area (BSA).*

In the BSA, the total volume of a stormwater pond to service a site with 50 percent impervious area would be approximately *3.2 inches* times the area of the site. Such a pond would retain the required treatment volume and provide 25-year rate control.

In the County's *closed basins*, a stormwater pond must provide volume retention to the 100-year, 24-hour storm and 25-year rate control, *the same requirements as herein proposed as a countywide volume control ordinance*. The total volume of such a pond would be *3.65 inches* times the area of the site, where 3.2 inches would be for volume retention and the remaining 0.45 inch being needed to attain rate control.

From the above three paragraphs it can be seen that a "volume control" pond will be 1.3 times (3.65 inches / 2.8 inches) as large as a non-BSA pond and 1.14 times (3.65 inches / 3.20 inches)) as large as a BSA pond. Therefore, the cost to construct a volume control pond will be slightly larger for excavation costs.

For developments two acres or larger the code requires a downstream analysis or the pond must be constructed so as to restrict the rate of discharge to no greater than the largest rate of discharge occurring during a 2-year storm. This is required to protect against downstream flooding. Most designers opt to use the 2-year restricted discharge because the downstream analysis can be very complicated and expensive. This constriction of discharge rate causes the ponds to get rather large. For ponds providing either 0.5 inch or 1.125 inch of water quality and *2-year discharge restriction* , the total volume is approximately *4.0 inches* times the area of the site. Thus if a site requires restriction to the 2-year discharge rate, its pond will actually be larger than a "volume control" pond. The "2-year rate control" pond will be 1.25 times (4.0 inches / 3.2 inches) larger than a "volume control" pond.

Volume Control Disadvantage:
2. Additional land needed for retention pond

Since the total volume of "volume retention" ponds will be larger than those not providing volume control , they will in all probability need to occupy a greater portion of the developed site.

On sites with sandy soils (i.e. high percolation rates) where the groundwater table is at a sufficient depth, it will be possible to simply increase the depth of a pond and thereby provide the additional volume for a "volume control" pond. On primarily the south side of town, the sandy soils makes the pond design and construction easier without the additional land requirement.

On sites with clayey soils which have low percolation rates, to enhance the total percolation/recovery rate in accordance with the larger pond volume, it will probably be necessary to increase the footprint (area) of the pond. The negative effect is that a larger "pond" footprint could reduce the percentage of the site that can be used for development purposes.

On clayey soil sites more percolation area will be needed. This might well be accomplished by innovative design, such as installing shallow, flat bottom swales with ditch blocks to convey runoff to the pond, and by allowing a portion of the natural area and landscaped area to be modified so as to assist with stormwater percolation.

The pond area could be significantly increased without reducing the allowable impervious area on the site by allowing a 10 percent credit toward the 25 percent natural or 25 percent landscape area requirements (See the schematic example in Attachment #6). Staff is proposing this credit to offset the impact of a larger pond footprint on the development site. **This solution is very important since the past major stumbling block against volume control regulations has been the additional pond footprint taking up developable area on the site.** This option has been placed in the draft ordinance. This option will not be available to residential subdivisions, since they do not require natural or landscaped areas. Residential subdivisions, however, usually encompass a larger land area than do commercial developments, and since the percentage of impervious area is usually smaller, the pond would occupy a smaller percentage of the land area of the site.

Volume Control Disadvantage:

3. Difficulty meeting recovery requirements in clay hill areas

Where the site's soils possess very low infiltration rates, it will be difficult to recover the pond's larger volume as required in the proposed ordinance. In such a situation, the following alternatives can be made available:

A. Expand the area to be used for volume recovery by allowing modification of a portion of the landscaped or natural areas. The pond area could be significantly increased without reducing the impervious area on the site by allowing a 10 percent credit toward the 25 percent natural or 25 percent landscape area requirements. As previously mentioned, this option has been placed in the draft ordinance.

B. Irrigate the pervious areas of the site using the water from the stormwater pond. This is how some of the ponds are being designed to meet the Bradfordville standard.

C. Construct a facility with an even larger volume than that required such that the recovery time can be extended beyond that set forth in the ordinance. To take this alternative, the applicant would have to demonstrate equivalent performance to the code required pond over a 40-year period. Such a provision is similar to an existing pond design alternative included in the Bradfordville Stormwater Standard.

D. The applicant could apply for a variance to allow a portion of the retained volume to be discharged over a sufficiently long period so as to avoid downstream flooding problems.

It needs to be noted here that there was great concern originally as to whether sites in Bradfordville could be designed to meet the new standard established there. This has now been successfully accomplished a number of times. The Bradfordville retention requirement is 4.0 inches over the impervious area; the "volume control" retention requirement is 6.4 inches times the impervious area, or 1.6 times as much. The required recovery period for a "volume control" pond is 3.2 inches in 7 days (0.46 inches/day) vs. 4.0 inches in 3 days (1.33 inches/day) for a Bradfordville pond. Thus the "volume control" pond will be allowed to recover at approximately one-third of the rate of a Bradfordville pond. This longer allowable recovery time for a "volume control" pond means that will be easier to accomplish pond recovery in the allowable time.

Volume Control Disadvantage:

4. Potential to alter the hydrocycle of wetlands and waterbodies

A pond sized to retain the pre-development to post-development volume increase for a 100-year, 24-hour storm will hold back all of the runoff for storms with runoff volumes smaller than this 100-year volume difference. For instance, a commercial development on clayey soils which is 50-percent impervious will, for a 100-year, 24-hour storm, yield 3.2 inches of runoff over and above that which occurs in an undeveloped condition. Thus the development's "volume retention" pond would be sized to completely retain this 3.2 inch volume difference. To get more than 3.2 inches of runoff after development, and thereby cause the pond to discharge, will require a rain storm of **4.8 inches** or more. Rain events that are this large, however, occur on the average only about 1.2 times per year. Thus the area immediately downstream of the development could be starved for water with the exception of the very infrequent times when rain events larger than 4.8 inches occur. Wetlands and aquatic systems in close downstream proximity to such a development may not survive under such erratic conditions.

In most situations however, the above shortcoming of too much volume retention should not be a problem. Most of our urban and near urban watersheds and conveyances, due to the lack of adequate (or any) stormwater facilities, suffer the consequences of already having far more water than can be contained. They are much in need of flow reduction and flow stabilization that results from water percolating into the groundwater table. Increased percolation to groundwater is exactly what is accomplished by volume retention.

New development happens piecemeal. In most cases, only a small portion of a watershed is effected by a new development. Thus the unaltered portion of the watershed will continue to provide runoff to the downstream system just as it always has. The summed effect of existing and new development will not modify to any great extent what is already occurring downstream. Thus volume retention will assist in offsetting previous volume increases due to earlier development where such was not practiced.

Summary of Advantages and Disadvantages of a Volume Control Ordinance:

Advantages:

1. Prevents downstream flooding from increasing due to new development
2. Prevents having to perform full build-out floodplain analyses
3. Can actually improve downstream flooding for some storm events
4. Provides the best water quality treatment of stormwater for protection of our watercourses and lakes
5. Will save the County costs by not having to perform water quality studies for the remaining drainage basins
6. In relation to stormwater, makes new development pay for itself
7. Simplifies the code with one central stormwater standard
8. Will assist in the implementation of the Total Maximum Daily Load (TMDL) program required by the Federal Government and the Florida Department of Environmental Protection (FDEP)
9. Endorsements by Eric Livingston of FDEP, Dr. Harvey Harper of ERD.
10. Complies with water policy guidelines proposed by the FDEP
11. Prevents costly downstream analyses which may be required during the Environmental Impact Analysis (EIA)
12. Provides aquifer recharge versus discharge downstream

Disadvantages:

1. Additional cost due to the increase in stormwater pond size
2. Additional land needed for retention pond
3. Difficulty meeting recovery requirements in clay hill areas
4. Potential to alter the hydrocycle of wetlands and waterbodies

In summary, the advantages for volume control far outweigh the disadvantages. Staff has shown that many of the disadvantages can been resolved or mitigated, such as using natural area or landscape area to offset the pond footprint increase.

Proposed Volume Control Ordinance:
The draft volume control ordinance is shown in Attachment #7. Newly proposed Sections 10-190 (b) and 10-190 (b)(1) of the Leon County Land Development Code comprise the most important and fundamental modifications to the County's stormwater regulations. These items will establish runoff volume control for up to and including a 100-year, 24 hour storm. Section 10-190 (b) will require the retention of the pre-development to post-development runoff volume increase from a developed site. Section 10-190 (b)(1) requires the recovery of this volume in a timely manner so that the pond's capacity will again be available to capture the volume excess from subsequent storms.

Section 10-190 (b)(4) sets a maximum application rate for irrigation as a means to recover the capacity of a volume control pond. Application rates higher than the allowable 1.5 inches per week usually result, along with natural rainfall, in the total saturation of soils. This will cause water to be discharged from the site rather than be retained as required by Section 10-190 (b).

Section 10-190 (b)(6) is a new proposal that will allow a portion of the site's natural area and landscaped area to be utilized for stormwater purposes, whether it be to construct a larger stormwater pond or to provide percolation areas. This section will allow up to 10 percent of the total area of the site, which would otherwise be in some combination of natural area and landscaped area, to be converted for stormwater purposes.

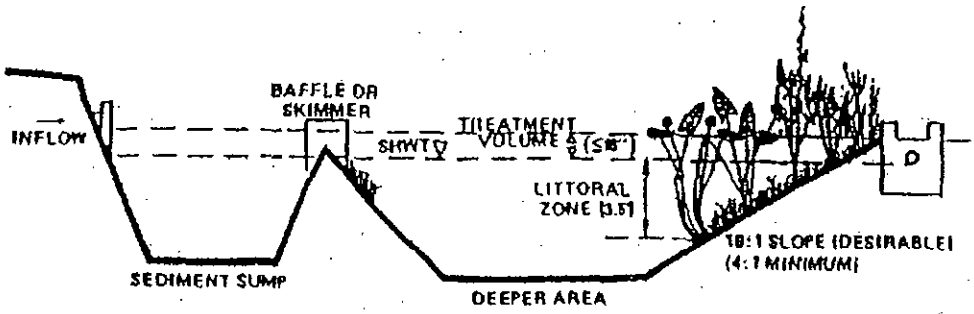
All of the other provisions of Section 10-190 are essentially carry over items from the existing ordinance, most coming from the provisions added during the implementation of the Bradfordville Stormwater Standard. They deal with very specific pond design standards such as pond slopes, widths of maintenance roads, energy dissipation, trash skimmers, etc.

Section 10-191 (b), dealing with the stormwater treatment standards for "special" areas requiring watershed conservation measures is proposed for deletion from the ordinance. On first appearance, it would appear that these special development zone areas will not, due to this deletion, be protected as well. This, however, is not the case. The newly proposed volume retention requirements set forth in Sections 10-190 (b) and 10-190 (b)(1) exceed by far the water quality standards being deleted. The new volume retention standards call for greater volumes to be retained, and by using retention rather than detention, hold back 100 percent of all pollutants generated from the site.

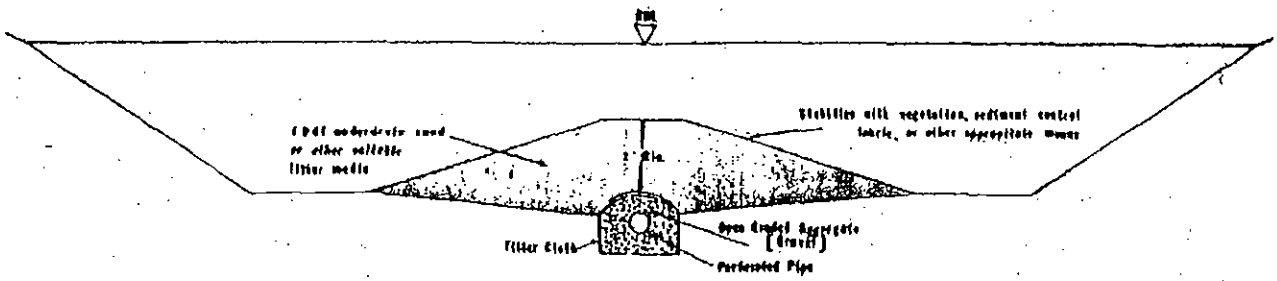
Attachments:
1. Stormwater Pond Types
2. Off-Line Treatment System
3. Pollution Removal Efficiencies For Typical Stormwater Management Systems in Florida
4. Closed Drainage Basins of Leon County
5. Total Volumes of Stormwater Ponds
6. Example of 10% Credit Toward Natural and Landscape Area Requirements
7. Draft Volume Control Ordinance

STORMWATER POND TYPES

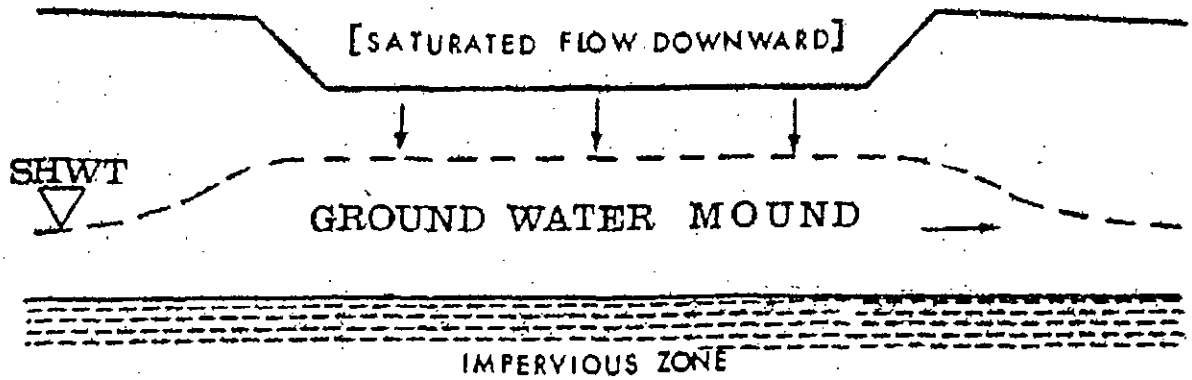
WET DETENTION



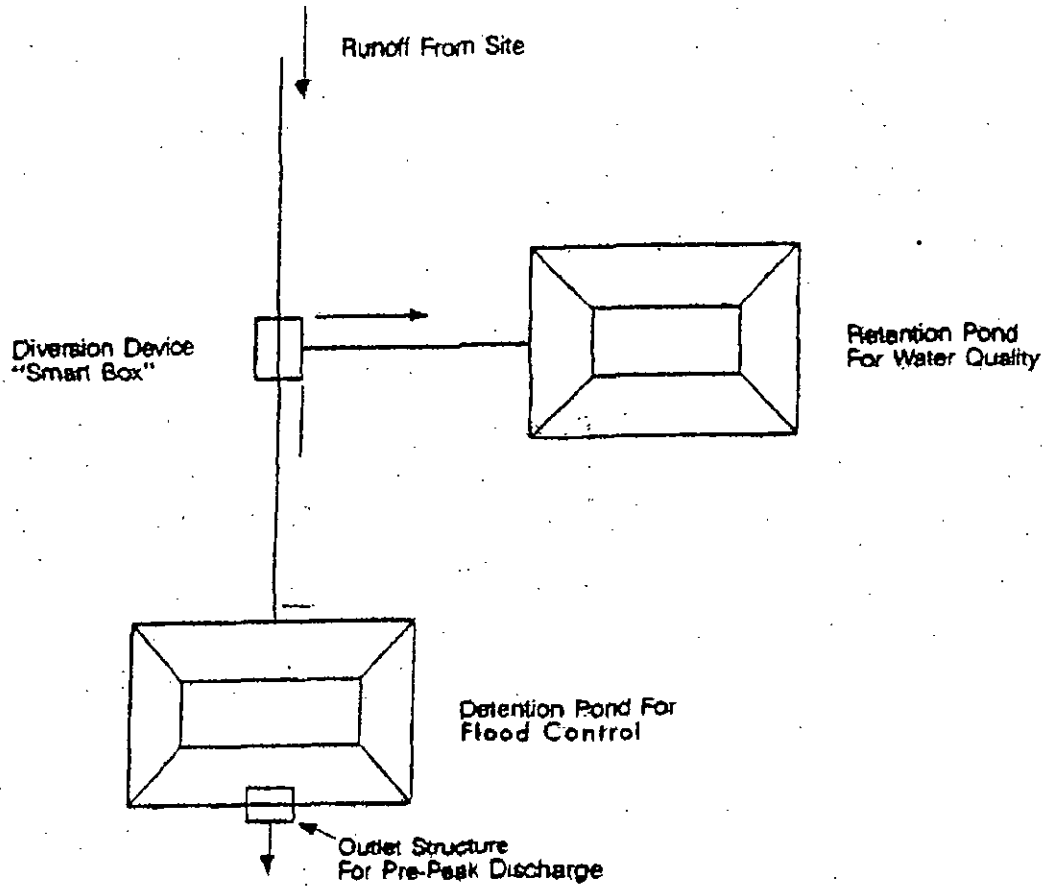
SAND FILTRATION



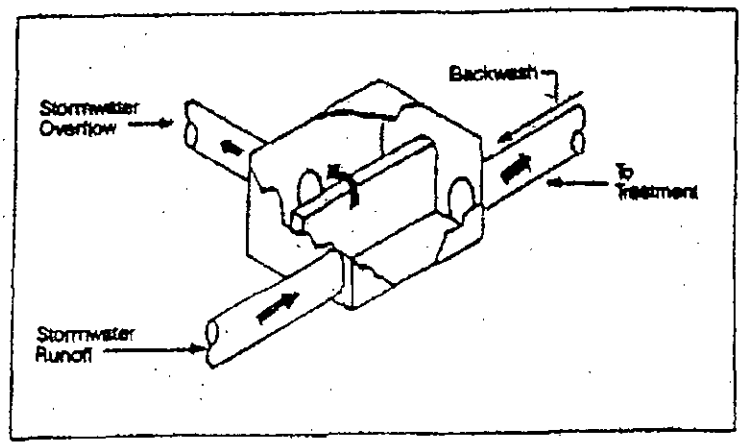
RETENTION WITH PERCOLATION



Off-Line Treatment System



"Smart" Box Schematic



POLLUTANT REMOVAL EFFICIENCIES FOR TYPICAL STORMWATER MANAGEMENT SYSTEMS IN FLORIDA

Presented at the
Fourth Biennial Stormwater Research Conference
Clearwater, FL

October 18-20, 1995

Sponsored By:

The Southwest Florida Water Management District

Prepared By:

Environmental Research & Design, Inc.
3419 Trentwood Blvd., Suite 102
Orlando, FL 32812

Harvey H. Harper, Ph.D., P.E.

Comparison of Treatment Efficiencies for Stormwater Management Systems

A comparison of treatment efficiencies for typical stormwater management systems used in the State of Florida is given in Table 8 based on information obtained in the literature review. In cases where a range of removal efficiencies are presented in technical reports related to a particular stormwater management technique, the mid-point of the range is given in Table 8 for comparison purposes.

The Florida State Water Policy, outlined in Chapter 17-40 of the Florida Administrative Code, establishes a goal of 80% annual reduction of stormwater pollutant loadings by stormwater management systems. Of the stormwater management systems listed in Table 8, only dry retention systems, with 0.5-inch of runoff retained, meet the State Water Policy goal of 80% reduction in annual pollutant loadings to the system. Off-line retention/detention facilities meet the 80% reduction goal for total phosphorus, TSS, BOD and total zinc, but provide only a 60-75% annual pollutant reduction for total nitrogen, copper and lead. Wet detention systems can meet the 80% reduction goal for TSS only, with removal efficiencies from 40-50% for total nitrogen, total phosphorus and BOD. Dry detention with filtration systems meet the 80% reduction goal for total lead only and provide virtually no pollutant removal for total nitrogen, total phosphorus and BOD. Based on the available literature, dry detention with filtration systems were found to exhibit a high degree of variability in estimated removal efficiencies. The actual removal efficiencies achieved by dry detention with filtration systems are a function of the relationship between the underdrain system and the seasonal high groundwater table.

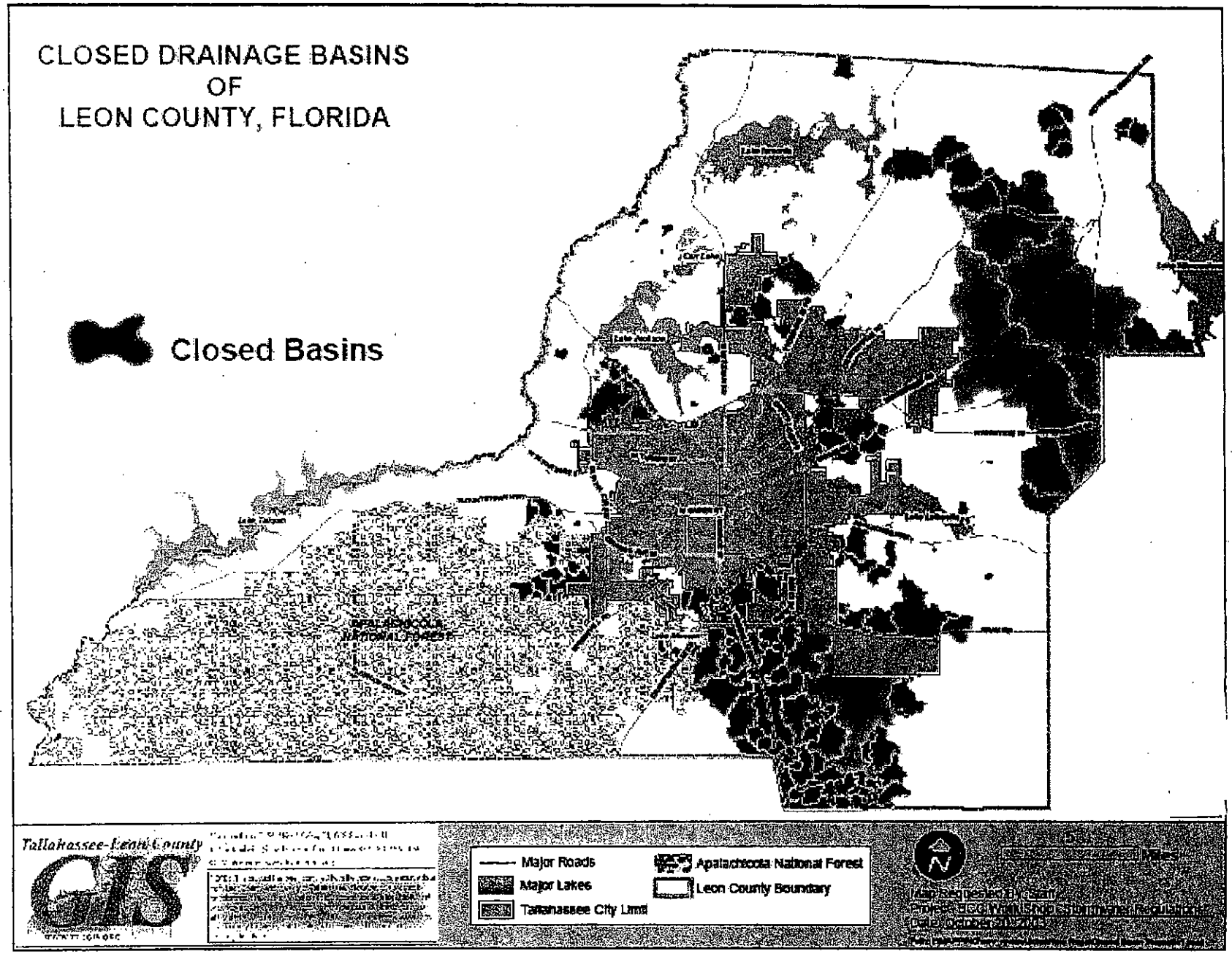
TABLE 8

COMPARISON OF TREATMENT EFFICIENCIES FOR TYPICAL STORMWATER MANAGEMENT SYSTEMS USED IN FLORIDA

TYPE OF SYSTEM	ESTIMATED REMOVAL EFFICIENCIES (%)						
	TOTAL N	TOTAL P	TSS	BOD	TOTAL Cu	TOTAL Pb	TOTAL Zn
Dry Retention							
a. 0.25-inch retention	-60	-60	-60	-60	-60	-60	-60
b. 0.50-inch retention	-80	-80	-80	-80	-80	-80	-80
c. 0.75-inch retention	-90	-90	-90	-90	-90	-90	-90
d. 1.00-inch retention	-95	-95	-95	-95	-95	-95	-95
e. 1.25-inch retention	-98	-98	-98	-98	-98	-98	-98
Off-Line Retention/Detention	-60	-85	-90	-80	-65	-75	-85
Wet Retention	-40	-50	-85	-40	-25	-50	-70
Wet Detention	-25	-65	-85	-55	-60	-75	-85
Wet Detention with Filtration	0	-60	-98	-99	-35	-70	-90
Dry Detention	-15	-25	-70	-40	-35	-60	-70
Dry Detention with Filtration	0	0	-75	0	-65	-90	-25
Alum Treatment	-50	-90	-90	-75	-80	-90	-80

Based on the information provided in Table 8, the most effective stormwater management systems in terms of retaining stormwater pollutants appear to be dry retention, off-line retention/detention ponds, wet retention, and wet detention systems. The use of these types of systems should be emphasized to maximize the pollutant removal effectiveness for stormwater management systems.

Based upon the literature review, there is little evidence to indicate that filter systems improve the operational performance of stormwater management systems. In fact, much of the research indicates that filter systems may actually degrade the pollutant removal effectiveness of either a wet detention or dry detention system. In addition, filter systems must be routinely maintained to continue the proper hydraulic performance of the system. In view of the poor pollutant removal effectiveness of filter systems, and the continuing maintenance problems associated with these systems, the use of filter systems with wet detention or dry detention ponds should be discouraged.


CLOSED DRAINAGE BASINS
OF
LEON COUNTY, FLORIDA
Closed Basins
Tallahassee-Leon County
GIS
Major Roads
Major Lakes
Tallahassee City Limit
Apalachicola National Forest
Leon County Boundary
Miles

Total Volumes of Stormwater Ponds
That Comply with Various Water Quality and Rate Control Provisions

Ordinance Provisions Met	Pond Volumes Associated with These Provisions for a one acre site (inches over the site / total cubic feet)		
	Water Quality	Rate Control	Total
0.5" WQ + 25-Yr. Rate Control	0.50 / 1,815	2.20 / 7,985	2.70 / 9,800
0.5" WQ + *2-Yr. Rate Control*	0.50 / 1,815	3.46 / 12,560	3.96 / 14,375
1.125" WQ + 25-Year Rate Control (Lake Protection)	1.125 / 4,084	1.735 / 6,298	2.86 / 10,382
1.125" WQ + *2-Yr. Rate Control* (Lake Protection)	1.125 / 4,084	2.835 / 10,291	3.96 / 14,375
4.0" WQ + 25-Yr. Rate Control (The Bradfordville 4-Inch Standard)	2.00 / 7,260	1.20 / 4,356	3.20 / 11,616
6.4" Volume Control + 25-Yr. Rate control	3.20 /11,616	0.45 / 1,634	3.65 / 13,250

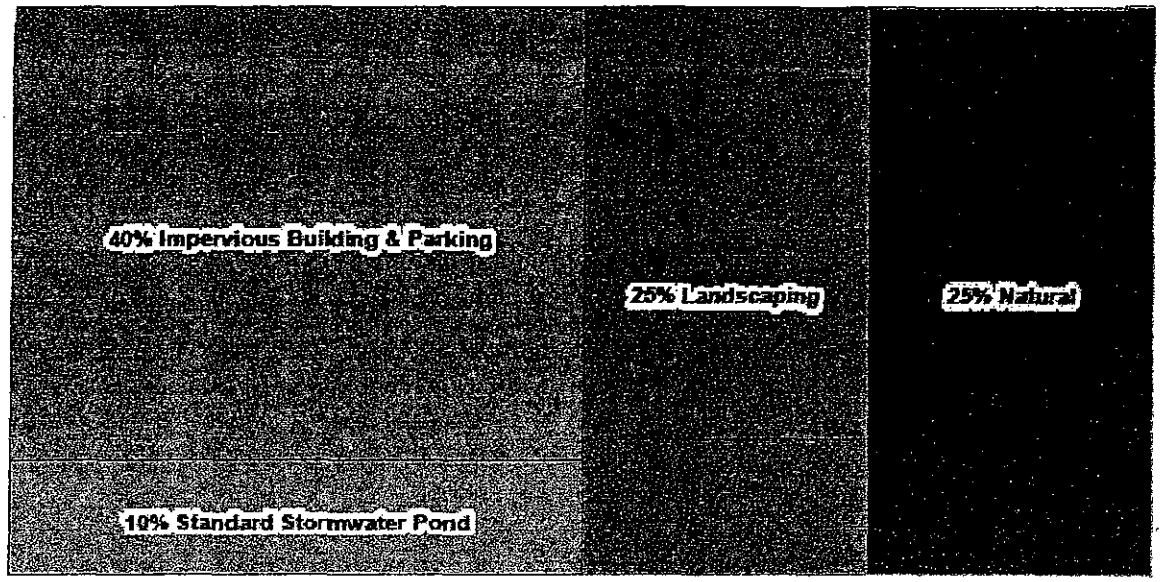
All of the values above are for stormwater facilities serving a 1.0 acre site developed to possess 50 percent impervious area with a post-developed pervious area CN of 66 - which has been constructed on an undeveloped site with an original CN of 60.

Example of 10% Credit toward Natural and Landscape Area Requirements

SITE A

Typical Site Layout

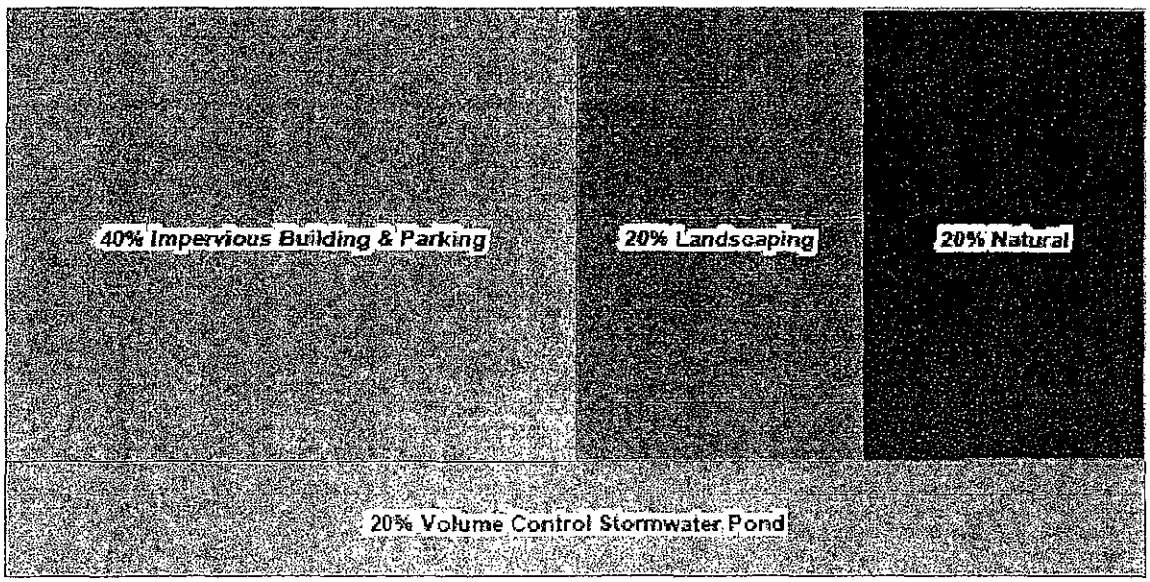
40% - Impervious Building & Parking
10% - Standard Stormwater Pond
25% - Landscaping
25% - Natural



SITE B

Modified Site Layout with 10% allowance toward natural and or landscape area for a volume control pond.

40% - Impervious Building & Parking
20% - Volume Control Stormwater Pond
20% - Landscaping
20% - Natural



Prepared By: Ned Cada, GIS Spec II LCCBW Requested By: Staff Project: BCC Work Shop "Stormwater Regulations" Date: October 20, 2003

Last Revision: 1/26/04

ORDINANCE NO. 04-___

AN ORDINANCE OF THE BOARD OF COUNTY COMMISSIONERS OF LEON COUNTY, FLORIDA, AMENDING CHAPTER 10, LAND DEVELOPMENT CODE, OF THE LEON COUNTY CODE OF LAWS RELATING TO THE ENVIRONMENTAL MANAGEMENT ACT (EMA); AMENDING SECTION 10-190, WATER QUALITY TREATMENT; AMENDING SECTION 10-191, WATERSHED CONSERVATION MEASURES; PROVIDING FOR CONFLICTS; PROVIDING FOR SEVERABILITY; AND PROVIDING AN EFFECTIVE DATE.

BE IT ORDAINED BY THE BOARD OF COUNTY COMMISSIONERS OF LEON COUNTY, FLORIDA, that:

Section 1. Section 10-190 of Chapter 10 of the Code of Laws of Leon County, Florida, is hereby amended as follows:

Sec. 10-190. Water quality treatment.

(a) Water quality treatment shall be provided as a part of all development activity which requires a stormwater application under this article. At a minimum, ~~T~~treated stormwater shall meet the applicable water quality standards set forth in F.A.C. chs. 62-4, 62-302, 62-520, 62-522, 62-550 and 62-25, and in this division. Design and performance standards set forth in such F.A.C. chapters are hereby adopted and incorporated in this article by reference. However, design and performance standards more stringent than those specified therein may be required whenever discharge from a site does not meet state water quality standards, and may also be required ~~for specific watersheds for which the~~ for purposes of preserving water quality as adopted by the Board of County Commissioners ~~has adopted, or shall adopt, conservation measures~~.

(b) Volume control is required. Runoff volumes in excess of the pre-development runoff volume shall be retained for all storm events up to a 100-year, 24-hour duration storm, except that the excess volume may be discharged from individual sites to an approved regional retention facility as may be allowed pursuant to section 10-189.

(1) Drawdown requirements:

a. One-half the required pond volume shall be recovered within 7 days, and the full volume shall be recovered within 30 days.

b. Regardless of the method of volume recovery, the entire retention volume must recover within the time frame established above unless an approved continuous analysis, using Tallahassee Airport rainfall data from January 1,

1959 to December 31, 1998, demonstrates that the total volume retained within the stormwater system over the forty year period is greater than or equal to that retained by a dry retention system as set forth in subsection (b) based on the above described recovery times.

(2) For calculating the treatment volume required for pervious pavements and graveled areas, initially such surfaces shall be assumed to be 100 percent impervious, then deductions in the required treatment volume for such areas can be taken that is equivalent to:

a. The porosity of the pavement material times the thickness of the paving material times a safety factor of 0.5.

b. If, and only if, the soils immediately underlying the pavement for a depth of 18 inches have a permeability of 3 inches per hour or greater, as demonstrated by onsite percolation tests, then a further deduction can be taken equivalent to the porosity of the soil strata times 4 inches times a safety factor of 0.5.

The above deductions will be allowed provided that the applicant specifically commits, in his Stormwater Operating Permit, to regularly sweep/vacuum the area covered with pervious pavement and to verify the pavement's percolation capacity when the Operating Permit is renewed.

(3) Where volume recovery is to be by percolation, groundwater mounding calculations to demonstrate recovery of the retention volume pursuant to the requirements set forth in subsection (1) above shall be required unless the applicant conclusively demonstrates by other engineering methods that pond recovery will not be adversely affected by an elevated groundwater table. If the bottoms of all retention areas intended to percolate stormwater are shown by soil borings to be less than 3 feet above the historical wet-season high water table, a mounding analysis shall be required.

(4) Where volume recovery is to be by irrigation, the rate of land application shall not exceed 1.5 inches per week unless the applicant can conclusively demonstrate that the on-site soil conditions and vegetation warrant a higher application rate. Under no circumstances shall irrigation water be allowed to discharge from the irrigation site.

(5) Facility design standards.

a. Facility Configuration: All on-line facilities shall have a flow-path-length to flow-path-width ratio of 2:1 or greater. The inlets and outlets shall be on

opposite ends of the facility. If this is not possible, the effective flow length shall be increased by adding diversion barriers within the facility as necessary to provide this minimum flow length.

b. Retention ponds/areas shall have 4H:1V maximum side slopes on a sufficient length of the perimeter to allow adequate maintenance access to the bottom of the facility. If any of the side slopes are steeper than this, a security fence shall be placed completely around the perimeter of the facility and located exterior to the maintenance access ways. The fence shall not be required if the pond depth is less than 18 inches.

c. Retention facilities shall have flat bottoms in order to maximize the surface area for percolation.

d. Maintenance access requirements:

1. For every facility, the owner or developer shall provide, at a minimum, a 15 feet wide clear and stable access to the facility from the nearest "public" right-of-way or road. Such access shall be evidenced by a recorded reservation or grant of an easement, which shall run with the land, to the benefit of the County.

2. For retention facilities with an overall depth greater than 18 inches, provide, at a minimum, a 15 feet wide clear, level and stable access around a sufficient portion of the perimeter of the facility, that is inside of any fences and external to the top-of-bank of the facility, to allow adequate maintenance from dry land. For retention facilities with an overall depth of 18 inches or less, provided the facility has side slopes of 4 horizontal to 1 vertical (or less) on at least one side of the facility, the applicant can provide the above access on the sloped side of the facility only. Any access required by the provisions of this subsection shall be evidenced by a recorded reservation or grant of an easement, which shall run with the land, to the benefit of the County.

3. The minimum inside radiuses of all access ways shall be 20 feet.

4. Adequate access for both personnel and mechanized equipment shall be provided to all inlet and outlet structures.

5. If Leon County is proposed to be the maintenance entity for any stormwater management facility permitted under this section, either

by dedication, or by reservation of an easement, or by any other process, the applicant shall submit the engineering design for the facility directly to the Leon County Department of Public Works for its review and approval as to the adequacy of maintenance access to the facilities. An environmental permit shall not be issued until the applicant demonstrates, in writing, the approval of the Department of Public Works.

e. Skimmer/trash rack requirements:

1. Trash/leaf traps with easy maintenance access shall be provided at key inlets and all outlets from a facility unless the applicant can conclusively demonstrate that it is not possible.

2. All outlet structures shall have an oil skimmer that extends above and below any outlet structure opening.

f. Energy dissipation requirements:

1. Energy dissipation devices sufficient to prevent erosion and resuspension of loose sediments shall be placed on all inlets to retention facilities.

2. Energy dissipation devices sufficient to prevent downstream channel erosion shall be placed at the outlets of all retention facilities.

g. Stabilization of stormwater treatment facilities:

All berms and side slopes shall be stabilized with pinned sod. Pond bottoms can be seeded and mulched. Restabilization by the contractor or owner shall be necessary until such time that the sod is fully rooted and otherwise well established.

h. Rate control in Section 10-208(1) is required after the water quality treatment within this section is fully satisfied prior to any overflow/discharge from the facility. The conveyance analysis and restricted discharge requirements in Section 10-208(15) will not be required if the stormwater management facility is designed in accordance with this section.

(6) It shall be presumed that a volume control stormwater management facility will require no more than 10 percent of the total area of the development site. If, however, the applicant can demonstrate with engineering calculations that this area

is insufficient to achieve compliance with volume control provisions within this section, a portion of the site's required natural and/or landscape area may be converted for stormwater management uses. Only the additional area demonstrated as being necessary to achieve full compliance with volume control provisions, but in no case more than an additional 10 percent of the total area of the site, may be converted from any combination of the 25% landscape area requirements in Section 10-257 and the 25% natural area requirements in Section 10-258. Any reduction toward the natural area requirement can only occur if the natural area does not contain a conservation or preservation area identified in Section 10-346.

(Ord. No. 92-3, § 1(7-15), 1-28-92)

Section 2. Section 10-191 of Chapter 10 of the Code of Laws of Leon County, Florida, is hereby amended as follows:

Sec. 10-191. Watershed conservation measures.

(a) Conservation measures designated. The Board of County Commissioners hereby adopts the following conservation measures to be applied in the Lake Jackson, Bradford Brook Chain-of-Lakes, Fred George, Lake McBride, Lake Lafayette, and Lake Iamonia watersheds for the protection of water quality, fish, wildlife, and the aquatic ecosystem of those drainage basins. The Board of County Commissioners may adopt additional conservation measures to provide such protection for other receiving water bodies and associated surface water drainage basins in the county.

~~(b) Stormwater treatment. The following are minimum acceptable methods for stormwater treatment, provided that the discharges meet state water quality criterion. More stringent treatment methods may be required by the director if discharges fail to meet state water quality standards.~~

	~~Method~~	~~Treated Volume~~

1	~~(1)~~	~~Wet detention~~	~~Wet detention treatment volume shall be, at a minimum, the runoff from the first three inches of rainfall, or as an option for sites with drainage areas less than 100 acres, the first 1 ½ inches of runoff. The top one-half of the treatment volume must be discharged in 60 hours. Subsequently, the bottom one-half of the treatment volume must be discharged in 60 hours or more.~~
2	~~(2)~~	~~Off-line retention~~	~~Off-line retention treatment volume shall be provided equal to 50 percent of the runoff from the first 3.0 inches of rainfall, or as an option for sites with drainage areas less than 100 acres, the first 3/4 inch of runoff. The full treatment volume shall again be available within 72 hours following a storm event, with appropriate on-site soils tests submitted to verify the infiltration rate.~~

~~(3)~~	~~On-line retention or underdrained filtration~~	~~For on-line retention or detention with underdrained filtration, treatment volume shall be provided equal to 75 percent of the runoff from the first 3.0 inches of rainfall, or as an option for sites with drainage areas less than 100 acres, the first 1.125 inches of runoff. For the filtration option, only bottom underdrain systems planted with grass that are capable of recovering the treatment volume within 36 hours shall be allowed, unless an alternative system is shown by the applicant, to the satisfaction of the director, to exceed the capabilities of such a bottom underdrain system.~~
~~(4)~~	~~Swales~~	~~Swale treatment volume shall be percolation of 80 percent of runoff from a three-year one-hour (2.6 inches)storm event. Calculations demonstrating percolation of this volume within the swale within 72 hours shall be submitted with the permit application.~~

~~The drainage area for determining treatment volumes shall include all areas draining to the facility (on-site and off-site).~~

~~(c) *Special site constraints.* If site constraints require another method of water quality treatment, such other method may be approved by the director if such method provides a level of~~

~~treatment equivalent to off-line retention as specified in subsection (b)(2), and is specifically authorized by the State Department of Environmental Protection.~~

~~(d)~~(b) *Best management practices.* The following best management practices, at a minimum, shall be required in conjunction with all new development and redevelopment, and shall be adhered to by all property owners, located within the Lake Jackson, Bradford Brook Chain-of-Lakes, Fred George, Lake McBride, Lake Lafayette and Lake Iamonia special development zone. All site and development plans submitted for approval shall specifically include the requirement of compliance with these best management practices. The best management practices shall be specifically set forth within, and made a part of, the restrictive covenants for all subdivisions approved by the local government and such restrictive covenants shall be recorded with the plat. All environmental management permits issued for development activities within the Lake Jackson, Bradford Brook Chain-of-Lakes, Fred George, Lake McBride, Lake Lafayette or Lake Iamonia special development zone shall include the requirement of compliance with these best management practices as a condition of such permit:

(1) Buffering, which may include vegetated berms along the lower contours of lots, so as to provide or improve wildlife habitat and to improve water quality. Berms or buffers shall be vegetated with natural indigenous vegetation suitable for soil and hydrology of the site.

(2) Restricted use of pesticides, herbicides, and fertilizers to those materials which have rapid decomposition characteristics, are labeled for aquatic use, and are used at the lowest possible label rates. Fertilizer constituents should have at least 50 percent slow release characteristics, be applied at the lowest labeled rate per application, be a non-phosphorous or low phosphorous analysis, and be formulated for good slope retention characteristics.

(3) Preservation or revegetation of natural wetlands, floodways and watercourses.

(4) Use of native, low-fertilization, and low-maintenance vegetation.

(5) Regular maintenance and upgrading, as necessary, of septic tanks and approved discharges from washing machines and garbage disposals.

(6) Soil conservation service approved conservation practices, including erosion and sediment control and water quality practices for all agricultural operations.

(Ord. No. 92-3, § 1(7-16), 1-28-92; Ord. No. 95-14, § 7, 9-12-95)

Section 3. Conflicts

All ordinances or parts of ordinances in conflict with the provisions of the Ordinance are hereby repealed to the extent of such conflict, as of the effective date of this Ordinance, except to the extent of any conflicts with the Tallahassee-Leon County Comprehensive Plan, as amended, which provisions shall prevail over any parts of this Ordinance which are inconsistent, either in whole or in part, with the Comprehensive Plan.

Section 4. Severability

If any section, subsection, sentence, clause or phrase of this Ordinance is, for any reason, held to be invalid or unconstitutional by any court of competent jurisdiction, such portion shall be deemed a separate, distinct and independent provision and, such holding shall not affect the validity of the remaining portions of this Ordinance.

Section 5. Effective Date

This ordinance shall have effect upon becoming law.

DULY PASSED AND ADOPTED BY the Board of County Commissioners of Leon County, Florida, this ____ of _____.

LEON COUNTY, FLORIDA

BY:_____
JANE SAULS, CHAIRMAN
BOARD OF COUNTY COMMISSIONERS

ATTEST:
BOB INZER, CLERK OF THE COURT
LEON COUNTY, FLORIDA

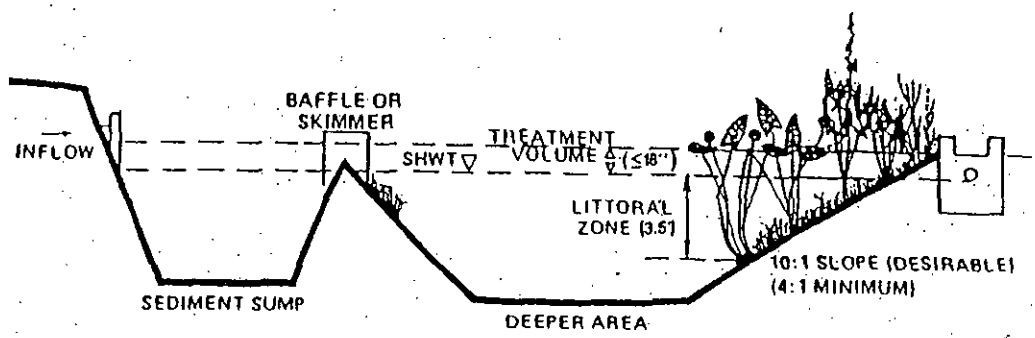
BY: _____

APPROVED AS TO FORM:
LEON COUNTY ATTORNEY'S OFFICE

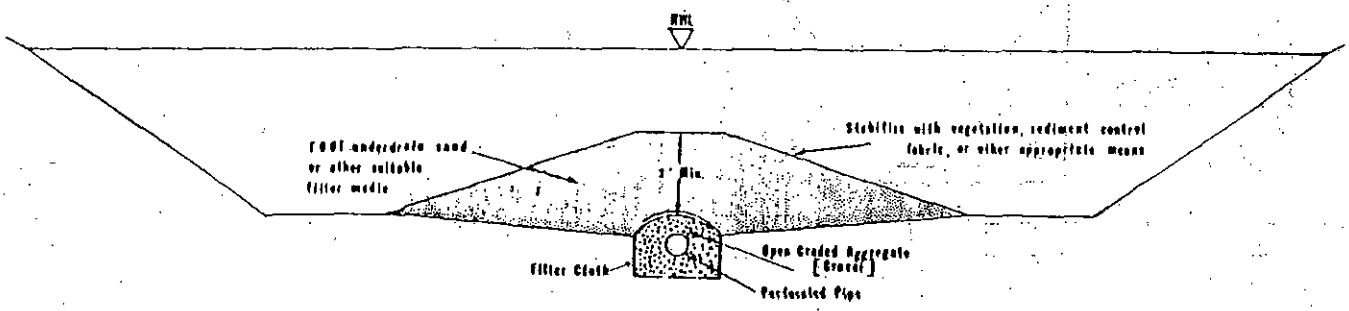
BY: _____
HERBERT W.A. THIELE, ESQ.
COUNTY ATTORNEY

STORMWATER POND TYPES

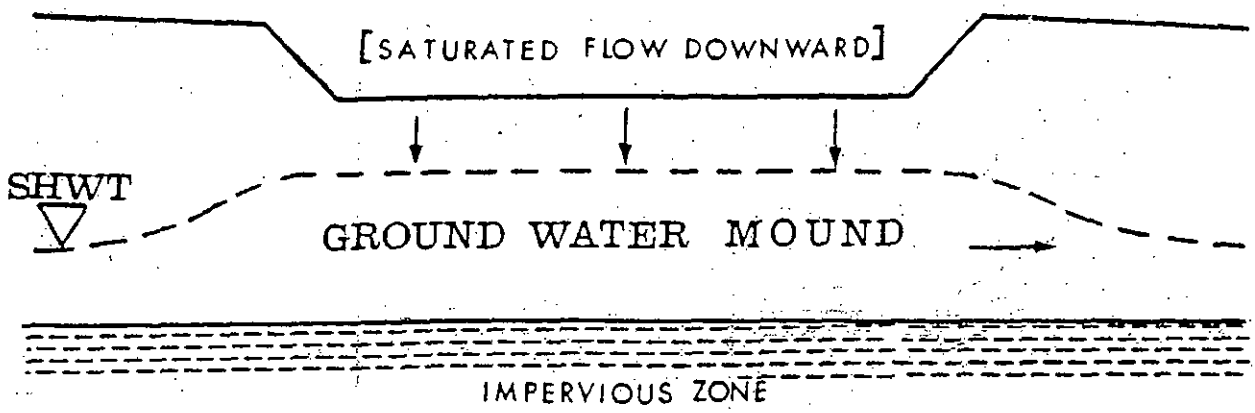
WET DETENTION



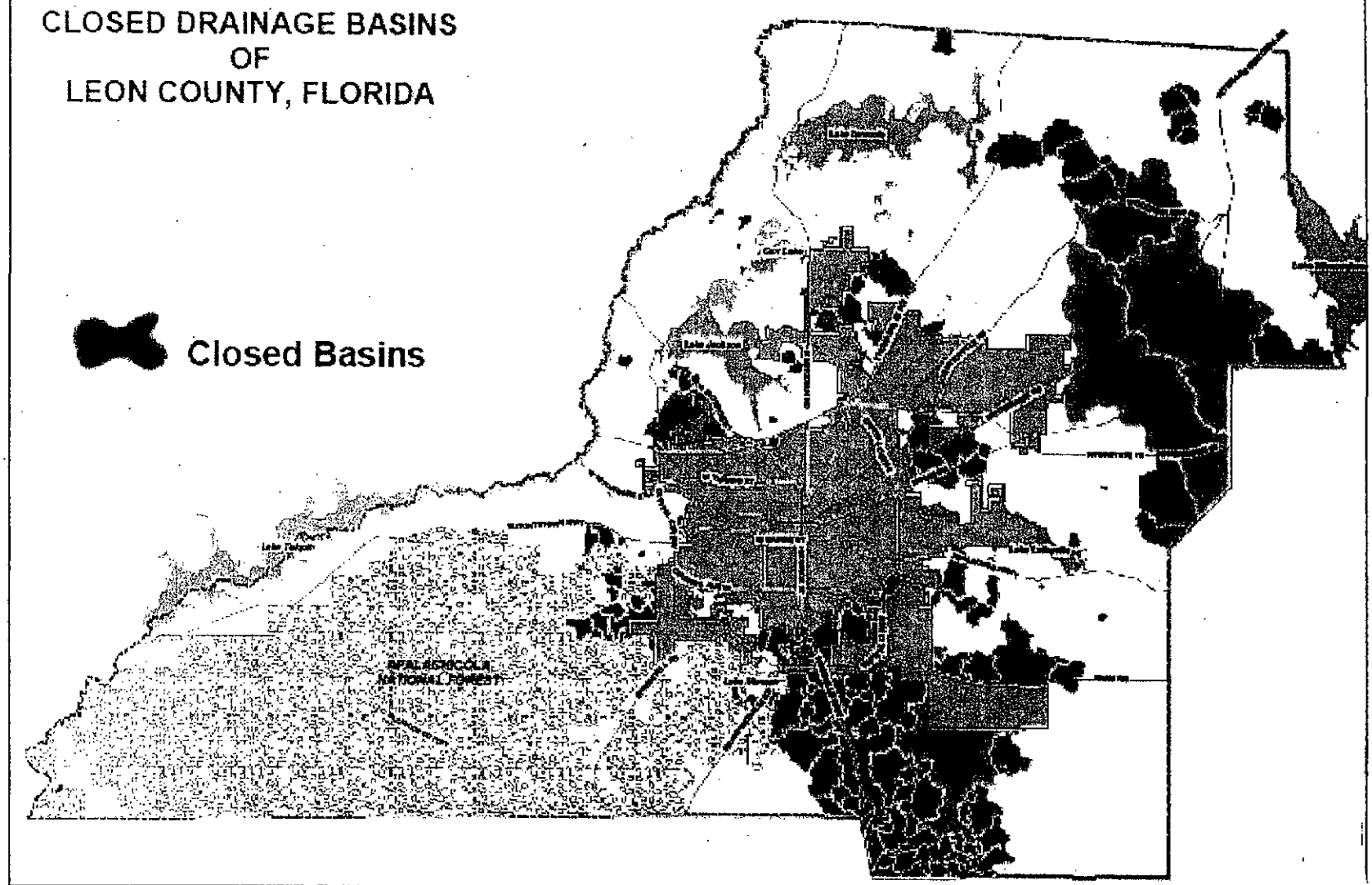
SAND FILTRATION



RETENTION WITH PERCOLATION



CLOSED DRAINAGE BASINS OF LEON COUNTY, FLORIDA



Tallahassee-Leon County GIS

Major Roads
Major Lakes
Tallahassee City Limit
Apalachicola National Forest
Leon County Boundary

Miles

Map Requested by: Staff
Project: BCC Work Shop: Stormwater Regulations
Date: October 30, 2006

Attachment # 6
Page 1 of 1

Total Volumes of Stormwater Ponds
That Comply with Various Water Quality and Rate Control Provisions

Ordinance Provisions Met	Pond Volumes Associated with These Provisions for a one acre site (inches over the site / total cubic feet)		
	Water Quality	Rate Control	Total
0.5" WQ + 25-Yr. Rate Control	0.50 / 1,815	2.20 / 7,985	2.70 / 9,800
0.5" WQ + *2-Yr. Rate Control*	0.50 / 1,815	3.46 / 12,560	3.96 / 14,375
1.125" WQ + 25-Year Rate Control (Lake Protection)	1.125 / 4,084	1.735 / 6,298	2.86 / 10,382
1.125" WQ + *2-Yr. Rate Control* (Lake Protection)	1.125 / 4,084	2.835 / 10,291	3.96 / 14,375
4.0" WQ + 25-Yr. Rate Control (The Bradfordville 4-Inch Standard)	2.00 / 7,260	1.20 / 4,356	3.20 / 11,616
6.4" Volume Control + 25-Yr. Rate control	3.20 /11,616	0.45 / 1,634	3.65 / 13,250

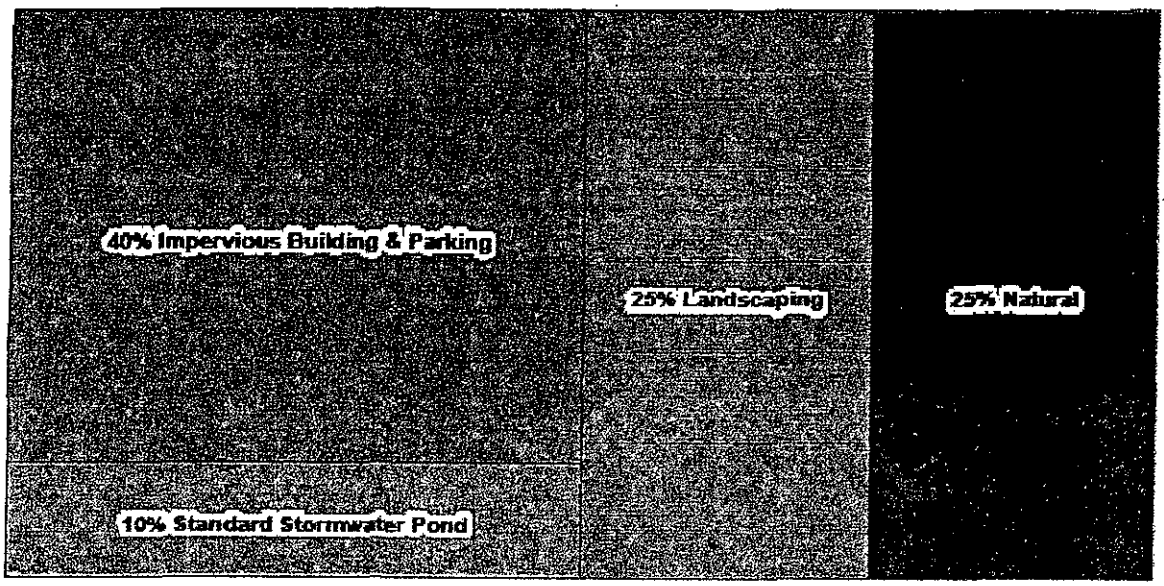
All of the values above are for stormwater facilities serving a 1.0 acre site developed to possess **50 percent impervious area** with a post-developed pervious area CN of 66 - which has been constructed on an undeveloped site with an original CN of 60.

Example of 10% Credit toward Natural and Landscape Area Requirements

SITE A

Typical Site Layout

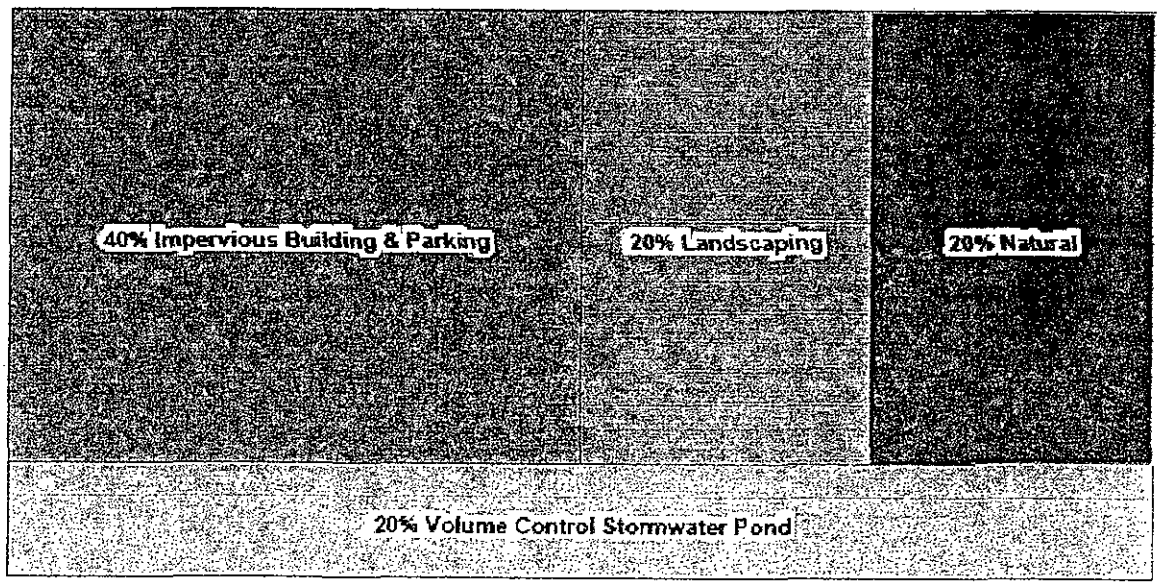
40% - Impervious Building & Parking
10% - Standard Stormwater Pond
25% - Landscaping
25% - Natural



SITE B

Modified Site Layout with 10% allowance toward natural and or landscape area for a volume control pond.

40% - Impervious Building & Parking
20% - Volume Control Stormwater Pond
20% - Landscaping
20% - Natural



Prepared By: Neil Case, GIS Spec II LCCBW Reviewed By: Staff Project: BCC Work Shop "Stormwater Regulations" Date: October 20, 2003

Seller's Real Property Disclosure Statement

FLORIDA ASSOCIATION OF REALTORS®

NAME: _____
SELLER HAS ☐ HAS NOT ☐ OCCUPIED THE PROPERTY.
DATE SELLER PURCHASED PROPERTY? _____
IS THE PROPERTY CURRENTLY LEASED? NO ☐ YES ☐ TERMINATION DATE OF LEASE: _____
DOES THE PROPERTY CURRENTLY HAVE HOMESTEAD EXEMPTION? NO ☐ YES ☐ ; YEAR _____

GENERAL INFORMATION ABOUT PROPERTY:
PROPERTY ADDRESS: _____
LEGAL DESCRIPTION: _____

NOTICE TO BUYER AND SELLER:
In Florida, a Seller is obligated to disclose to a Buyer all known facts that materially affect the value of the property being sold and that are not readily observable. This disclosure statement is designed to assist Seller in complying with the disclosure requirements under Florida law and to assist the Buyer in evaluating the property being considered. This disclosure statement concerns the condition of the real property located at above address. It is not a warranty of any kind by the Seller or any Licensee in this transaction. It is not a substitute for any inspections or warranties the parties may wish to obtain. It is based only upon Seller's knowledge of the property condition. This disclosure is not intended to be a part of any contract for sale and purchase. All parties may refer to this information when they evaluate, market, or present Seller's property to prospective Buyers.

The following representations are made by the Seller(s) and are not the representations of any real estate licensees.

1. **CLAIMS & ASSESSMENTS**

a. Are you aware of existing, pending, or proposed legal actions, claims, special assessments, municipal service taxing or benefit unit charges or unpaid assessments (including homeowners' association maintenance fees or proposed increases in assessments and/or maintenance fees) affecting the property? NO ☐ YES ☐ If yes, explain: _____

b. Have any local, state, or federal authorities notified you that repairs, alterations or corrections of the property are required? NO ☐ YES ☐ If yes, explain: _____

2. **DEED/HOMEOWNERS' ASSOCIATION RESTRICTIONS**

Are You Aware:

a. of any deed or homeowner restrictions? NO ☐ YES ☐
b. of any proposed changes to any of the restrictions? NO ☐ YES ☐
c. of any resale restrictions? NO ☐ YES ☐
d. of any restrictions on leasing the property? NO ☐ YES ☐
e. If any answer to questions 2a-2d is yes, please explain: _____

f. Are access roads private ☐ public ☐ ? If private, describe the terms and conditions of the maintenance agreement: _____
g. If there is a homeowner association, is membership mandatory? NO ☐ YES ☐ , and are fees charged by the homeowner association? NO ☐ YES ☐ If yes, explain: _____

3. **PROPERTY-RELATED ITEMS**

Are You Aware:

a. if you have ever had the property surveyed? NO ☐ YES ☐ Date: _____
b. if the property was surveyed, did you receive an elevation certificate? NO ☐ YES ☐ Date: _____
c. of any walls, driveways, fences or other features shared in common with adjoining landowners or any encroachments, boundary line disputes, setback violations, or easements affecting the property? NO ☐ YES ☐
d. of any portion of the property that is fenced? NO ☐ YES ☐
If any answer to questions 3a-3d is yes, please explain: _____

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Keller Williams Classic Realty 5979 Vineland Road, Ste 101 Orlando, FL 32819
Phone: (407) 376 - 3092 Fax: Ken Thompson

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4. **THE LAND:**

Are You Aware:

a. of any past or present settling, soil movement, of sinkhole problems on the property or on adjacent properties? NO ☐ YES ☐

i. of any sinkhole insurance claim that has been made on subject property? NO ☐ YES ☐

ii. if claim made, was claim paid? NO ☐ YES ☐

iii. was the full amount of the insurance proceeds used to repair the sinkhole damage? NO ☐ YES ☐

b. of any past or present drainage or flood problems affecting the property or adjacent properties? NO ☐ YES ☐

c. of any past or present problems with driveways, walkways, patios, seawalls, or retaining walls on the property or adjacent properties due to drainage, flooding, or soil movements? NO ☐ YES ☐

If any answer to questions 4a-4c is yes, please explain: _____

5. **ENVIRONMENT:**

Was the property built before 1978? NO ☐ YES ☐

Are You Aware:

a. of any substances, materials, or products which may be an environmental hazard, such as, but not limited to, asbestos, urea formaldehyde, radon gas, mold, lead-based paint, fuel, propane or chemical storage tanks (active or abandoned), or contaminated soil or water on the property? NO ☐ YES ☐ If yes, explain: _____

i. of any damage to the structures located on the property due to any of the substances, materials or products listed in subsection (a) above? NO ☐ YES ☐ If yes, explain: _____

ii. of any clean up, repairs, or remediation of the property due to any of the substances, materials or products listed in subsection (a) above? NO ☐ YES ☐ If yes, explain: _____

b. of any condition or proposed change in the vicinity of the property that does or will materially affect the value of the property, such as, but not limited to, proposed development or proposed roadways? NO ☐ YES ☐

c. of wetlands, mangroves, archeological sites, or other environmentally sensitive areas located on the property? NO ☐ YES ☐

If any answer to questions 5a-5c is yes, please explain: _____

6. **ZONING:**

Are You Aware:

a. of the zoning classification of the property? NO ☐ YES ☐ If yes, identify the zoning classification _____

b. of any zoning violations or nonconforming uses? NO ☐ YES ☐

c. if the property is zoned for its current use? NO ☐ YES ☐

d. of any zoning restrictions affecting additions, improvements or replacement of the property? NO ☐ YES ☐

e. if there are any zoning, land use or administrative regulations which are in conflict with the existing or intended use of the property? NO ☐ YES ☐

f. of any restrictions other than association and flood area requirements affecting improvements or replacement of the property? NO ☐ YES ☐

If any answer to questions 6a-6f is yes, please explain: _____

7. **FLOOD:**

Are You Aware:

a. if any portion of the property is in a special flood hazard area? NO ☐ YES ☐

b. does the property require flood insurance? NO ☐ YES ☐

c. whether any improvements including additions, are located below the base flood elevation? NO ☐ YES ☐

d. whether such improvements have been constructed in violation of applicable local flood guidelines? NO ☐ YES ☐

e. if any portion of the property is seaward of the coastal construction control line? NO ☐ YES ☐

If any answer to questions 7a-7e is yes, please explain: _____

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8. **TERMITES, DRY ROT, PESTS, WOOD DESTROYING ORGANISMS:**

a. Do you have any knowledge of termites, dry rot, pests or wood destroying organisms on or affecting any improvements located on the property or any structural damage to the property by them? NO ☐ YES ☐ If yes, explain: _____

b. Have you ever had the property inspected for termites, dry rot, pest or wood destroying organism? NO ☐ YES ☐ Date of inspection _____ If so, what was the outcome of the inspection? _____

c. Has the property been treated for termites, dry rot, pest or wood destroying organisms? NO ☐ YES ☐ Date and type of treatment _____, Company name: _____

9. **STRUCTURE-RELATED ITEMS:**

Are You Aware:

a. of any structural damage which may have resulted from events including, but not limited to, fire, wind, flood, hail, landslide, or blasting, and which materially affect the value of the property? NO ☐ YES ☐

b. of any structural condition or, in the case of a homeowner association, any condition in the common elements that materially affects the value of the property? NO ☐ YES ☐

c. of any improvements or additions to the property, whether by you or by others, that have been constructed in violation of building codes or without necessary permits? NO ☐ YES ☐

d. of any active permits on the property which have not been closed by a final inspection? NO ☐ YES ☐

If any answer to questions 9a-9d is yes, please explain: _____

10. **ROOF-RELATED ITEMS:**

Are You Aware:

a. of any roof or overhang defects? NO ☐ YES ☐

b. if the roof has leaked since you owned the property? NO ☐ YES ☐

c. if anything was done to correct the leaks? NO ☐ YES ☐

d. if the roof has been replaced? NO ☐ YES ☐ If yes, when: _____

e. If there is a warranty on the roof? NO ☐ YES ☐ If yes, is it transferable? NO ☐ YES ☐

f. If the roof has been inspected within the last twelve months? NO ☐ YES ☐

If any answer to questions 10a-10f is yes, please explain: _____

11. **PLUMBING-RELATED ITEMS:**

a. What is your drinking water source? Public ☐ Private Well ☐ Other Source ☐. If your drinking water is from a well or other source, when was your water last checked for safety and what was the result of the test? _____

b. Do you have a water conditioning system? NO ☐ YES ☐ If yes, type: _____ Owned ☐ Leased ☐

c. What is the balance owed on the system? $ _____

d. Do you have a sewer ☐ or septic system ☐? If septic system describe the location of each system: _____

e. Are you aware of any septic tanks or wells on the property which are not currently being used? NO ☐ YES ☐ If yes, explain: _____

f. Are you aware of any plumbing leaks since you have owned the property? NO ☐ YES ☐ If yes, explain: _____

g. Are you aware of any conditions that materially affect the value of the property relating to the septic tank/drain field, sewer lines, or any other plumbing related items? NO ☐ YES ☐ If yes, explain: _____

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12. POOLS/HOT TUBS/SPAS:

a. Does the property have a swimming pool? NO ☐ YES ☐ Hot tub? NO ☐ YES ☐ Spa? NO ☐ YES ☐
b. If you answered yes to any part of 12a, was the certificate of completion received after Oct. 1, 2000 for the pool? NO ☐ YES ☐ For the spa? NO ☐ YES ☐ For the hot tub? NO ☐ YES ☐
c. Check the pool safety features (as defined by Section 515.27, Florida Statutes) your swimming pool, hot tub or spa has: Enclosure that meets the pool barrier requirements ☐ Approved safety pool cover ☐
Required door and window exit alarms ☐ Required door locks ☐ none ☐
d. Are you aware of any conditions regarding these items that materially affect the value of the property?
NO ☐ YES ☐ If yes, explain: _____

13. MAJOR APPLIANCES:

Indicate existing equipment:
Range ☐ Oven ☐ Microwave ☐ Dishwasher ☐ Garbage Disposal ☐ Trash Compactor ☐ Refrigerator ☐
Freezer ☐ Washer ☐ Dryer ☐
Are any of these appliances leased? NO ☐ YES ☐ Are any of these gas appliances? NO ☐ YES ☐
Is the water heater: owned ☐ leased ☐; Is the water heater: electric ☐ gas ☐
Are you aware of any problems with these appliances, including whether any of the appliances have leaked or overflowed, since you have owned the property? NO ☐ YES ☐ If yes, explain: _____

14. ELECTRICAL SYSTEM:

Are You Aware:
a. of any damaged or malfunctioning switches, receptacles, or wiring? NO ☐ YES ☐
b. of any conditions that materially affect the value or operating capacity of the electrical system? NO ☐ YES ☐
If answers to questions 14a or 14b is yes, please explain: _____

15. HEATING AND AIR CONDITIONING:

Indicate existing equipment:
Air conditioning:
Central ☐ Window/Wall ☐ Number of units _____
Heating:
Electric ☐ Fuel Oil ☐ Gas ☐ Other ☐
Solar Heating:
Owned ☐ Leased ☐
Wood-burning stove: NO ☐ YES ☐
Fireplace: NO ☐ YES ☐ Describe fireplace equipment: _____
Are you aware of any defects, malfunctioning or condensation problems regarding these items, since you have owned the property? NO ☐ YES ☐ If yes, explain: _____

16. OTHER EQUIPMENT:

Indicate existing equipment:
Security System: NO ☐ YES ☐ Leased ☐ Owned ☐ Connected to Central Monitor ☐ Monthly Fee $ _____
Smoke Detectors: NO ☐ YES ☐, Number of smoke detectors? _____
Lawn Sprinkler System: NO ☐ YES ☐ Sprinkler water source: _____ If well is source, is there an iron filter? NO ☐ YES ☐ Is there a timer? NO ☐ YES ☐ Is the timer automatic? NO ☐ YES ☐
Garage door openers? NO ☐ YES ☐, Number of transmitters? _____, Humidistat? NO ☐ YES ☐
Humidifier? NO ☐ YES ☐ Electric air filters? NO ☐ YES ☐ Vent fans? NO ☐ YES ☐
Paddle fans? NO ☐ YES ☐, Number of paddle fans? _____

17. OTHER MATTERS:

Is there anything else that materially affects the value of the property? NO ☐ YES ☐
If yes, explain: _____

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ACKNOWLEDGEMENT OF SELLER

The undersigned Seller represents that the information set forth in the above disclosure statement is accurate and complete to the best of the Seller's knowledge on the date signed below. Seller does not intend for this disclosure statement to be a warranty or guaranty of any kind. Seller hereby authorizes disclosure of the information contained in this disclosure statement to prospective Buyers of the property. Seller understands and agrees that Seller will notify the Buyer in writing within five business days after Seller becomes aware that any information set forth in this disclosure statement has become inaccurate or incorrect in any way during the term of the pending purchase by the Buyer.

Seller: _____ / _____ Date: _____
(signature) (print)

Seller: _____ / _____ Date: _____
(signature) (print)

RECEIPT AND ACKNOWLEDGEMENT OF BUYER

Seller is using this form to disclose Seller's knowledge of the condition of the real property and improvements located on the property as of the date signed by Seller. This disclosure form is not a warranty of any kind. The information contained in the disclosure is limited to information to which the seller has knowledge. It is not intended to be a substitute for any inspections or professional advice the Buyer may wish to obtain. An independent professional inspection is encouraged and may be helpful to verify the condition of the property and to determine the cost of repairs, if any. Buyer understands these representations are not made by any real estate licensee.

Buyer hereby acknowledges having received a copy of this disclosure statement.

Buyer: _____ / _____ Date: _____
(signature) (print)

Buyer: _____ / _____ Date: _____
(signature) (print)

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ORDINANCE NO. _____

AN ORDINANCE OF THE BOARD OF COUNTY COMMISSIONERS OF LEON COUNTY, FLORIDA, ENACTING A NEW SECTION OF ARTICLE I, "IN GENERAL," OF CHAPTER 12, "OFFENSES – MISCELLANEOUS," TO PROVIDE FOR PURPOSE; FINDINGS; DEFINITIONS; PROHIBITION OF FAILURE TO DISCLOSE KNOWN FLOOD CONDITIONS OF RESIDENTIAL PROPERTY TO PROSPECTIVE BUYERS OR TENANTS; EFFECT ON VALIDITY OF TRANSACTION AND TITLE; SEVERABILITY; SAVINGS CLAUSE; AND AN EFFECTIVE DATE.

WHEREAS, the Florida Constitution and Chapter 125, Florida Statutes, grants the authority to the Leon County Board of County Commissioners to perform any act, not inconsistent with law, which is in the common interest of the citizens of Leon County and to adopt ordinances necessary for the performance of such acts; and

WHEREAS, as a result of Tropical Storm Fay in 2008, and of other such storm events in past years, an abundance of Leon County citizens have suffered significant damages and have been driven from their homes due to the flooding of their residential property; and

WHEREAS, in many instances, those citizens affected by the flooding were unaware that their residential properties were prone to such flooding and, in fact, that their property had experienced similar such flooding events prior to their ownership or occupancy; and

WHEREAS, it is the policy of the Board of County Commissioners to protect the health, safety, and welfare of its citizens and to promote an environment free from the risk and fear of the damages and disruption of lives that result from such flooding; and

WHEREAS, the Board of County Commissioners desires to enact an ordinance creating a new Section 12-8 of Article I of Chapter 12 of the Leon County Code of Laws, relating to Miscellaneous Offenses.

DRAFT

BE IT ORDAINED by the Board of County Commissioners of the County of Leon, Florida, as follows, that:

Section 1. The Code of Laws of Leon County, Florida, is hereby amended at Chapter 12, "Offenses – Miscellaneous," by adding a new Section to Article I, "In General" to be numbered Section 12-8, which Section shall read as follows:

Section 12-8. Failure to Disclose Known Flood Conditions of Residential Property to Prospective Buyers or Tenants.

(a) *Purpose.* The purpose of this Ordinance is to protect the health, safety, and welfare of its citizens and to promote an environment free from the risk and fear of the damages and disruption of lives that result from the flooding of residential property.

(b) *Findings.* With regard to the flooding of residential property, the Board of County Commissioners finds as follows:

(1) that flooding of residential property may result in significant damages to real and personal property as well the displacement of residents to alternate housing;

(2) that, prior to experiencing such flooding, the owners and tenants are oftentimes not aware prior to the purchase or lease of their property that it had experienced flooding in the past or was otherwise prone to flooding;

(3) that, if the floodprone condition of the property had been disclosed to such owners and tenants prior to their purchase or lease, it would have changed their decision to purchase or lease the property thereby preventing any damages or displacement; and

DRAFT

(4) Florida law requires that a when a seller or landlord of residential property, including the seller's or landlord's Broker, knows of facts that materially affect the value of such property, and which are not readily observable and are not known to a prospective buyer or tenant, the seller or landlord is under a duty to disclose such facts to a prospective buyer or tenant. *Johnson v. Davis*, 480 So.2d 625 (Fla. 1985); *Syvrud v. Today Real Estate, Inc.*, 858 So.2d 1125 (Fla. 2d DCA 2003)

(c) *Definitions*. The following words, terms, and phrases, when used in this Section, shall have the following meanings, except where the context clearly indicates a different meaning:

(1) *Dwelling unit* shall mean a single room or unified combination of rooms, regardless of form of ownership that is designed for residential use by one family. The definition shall include, but not be limited to, condominium or cooperative units, mobile homes, manufactured housing, individual attached or detached apartments, and individual houses.

(2) *Flood, flooded*, or *flooding* shall mean a general and temporary condition of partial or complete inundation of normally dry surfaces from the overflow of streams, rivers, or other inland water, or the unusual and rapid accumulation of surface water runoff from any source.

(3) *Floodprone* shall mean susceptible to being flooded.

(4) *Residential property* shall mean any parcel of real property located in Leon County upon which is located an existing dwelling unit or which is the planned location of a dwelling unit to be constructed or installed by a prospective buyer or tenant.

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(5) *Seller* and *landlord* shall mean an owner of a residential property that offers such residential property for sale or for lease, respectively. The terms *seller* and *landlord* shall include an authorized agent of the owner. When an owner has retained the services of a Broker, as that term is defined in Section 475.01(a), Florida Statutes (2008), to assist in the sale or lease of a residential property, the terms *seller* and *landlord* shall include the Broker.

(d) *Prohibition.* It shall be unlawful for a seller or landlord of residential property, with knowledge that such property has experienced flooding or is otherwise floodprone, to fail to disclose such facts in writing to a prospective buyer or tenant when such flood conditions are not readily observable and are not known to the prospective buyer or tenant. The failure of a seller or landlord to provide such disclosure in advance of entering into either a purchase and sale agreement, in the case of a prospective buyer, or an oral or written lease agreement, in the case of a prospective tenant, shall create a rebuttable presumption that the seller or landlord has failed to disclose facts that materially affect the value of such property and shall entitle the purchaser or tenant to seek to recover from the seller, in accordance with the remedies available at law, any damages resulting from such failure to disclose.

(e) *Effect on Validity of Transaction or Title.* A seller's or landlord's failure to disclose flood conditions to a prospective purchaser or tenant, as prohibited by the Section, shall not impair the enforceability of a purchase and sale agreement between such seller and buyer or a lease agreement between such landlord and

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tenant, or impair the title to any residential property conveyed by a seller or landlord to a buyer or tenant, respectively.

(f) *Exemptions*. The sale or lease of commercial real property or any other real property deemed herein to not be a residential property, shall be exempt from the provisions of this Section.

Section 2. Conflicts.

All ordinances or parts of ordinances in conflict with the provisions of this Ordinance are hereby repealed to the extent of such conflict, except to the extent of any conflicts with the Tallahassee-Leon County 2010 Comprehensive Plan as amended, which provisions shall prevail over any parts of this Ordinance which are inconsistent, either in whole or in part, with the said Comprehensive Plan, and, further, that this Ordinance shall not repeal, amended, or replace the provisions found in Section 4-36 of the Leon County Code of Laws.

Section 3. Severability.

If any provisions or portion of this Ordinance is declared by any court of competent jurisdiction to be void, unconstitutional, or unenforceable, then all remaining provisions and portions of this Ordinance shall remain in full force and effect.

Section 4. Savings Clause.

An enforcement action which is pending on the effective date of this Ordinance and which arose from a violation of an ordinance repealed by this Ordinance, or an enforcement action which is started within one (1) year after the effective date of this Ordinance arising from a violation of an ordinance repealed by this Ordinance, shall be tried and determined exactly as if the ordinance had not been repealed.

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Section 5. Effective Date.

This Ordinance shall have effect upon becoming law.

DONE, ADOPTED AND PASSED by the Board of County Commissioners of Leon County, Florida this _____ day of _____, 2009.

LEON COUNTY, FLORIDA

By:_____
Bryan Desloge, Chairman
Board of County Commissioners

ATTESTED BY:
BOB INZER, CLERK OF THE COURT
LEON COUNTY, FLORIDA

By:_____
Bob Inzer, Clerk of Court
Leon County, Florida

APPROVED AS TO FORM:
COUNTY ATTORNEY'S OFFICE
LEON COUNTY, FLORIDA

By:_____
Herbert W. A. Thiele, Esq.
County Attorney

DRAFT

ORDINANCE NO. 09-____

AN ORDINANCE OF THE BOARD OF COUNTY COMMISSIONERS OF LEON COUNTY, FLORIDA, AMENDING CHAPTER 18, ARTICLE IV OF THE CODE OF LAWS OF LEON COUNTY, FLORIDA, RELATING TO STORMWATER UTILITY; DESIGNATING DIVISION 1 TO BE ENTITLED "GENERALLY"; CREATING DIVISION 2 TO BE ENTITLED "STORMWATER CONTROL AND DRAINAGE IMPROVEMENTS"; PROVIDING FOR PETITION GENERALLY, NOTICE TO PUBLIC, HEARING; PROVIDING FOR ACQUISITION AND COSTS OF EASEMENTS AND ADDITIONAL RIGHT-OF-WAY, LABOR, LOANS; PROVIDING FOR SPECIAL ASSESSMENT ROLL, NOTICE, PUBLIC HEARING, ERRORS; PROVIDING FOR SPECIAL ASSESSMENT LIEN, GENERALLY; PROVIDING FOR LIEN FOR PRELIMINARY COSTS WHEN IMPROVEMENTS NOT CONSTRUCTED; PROVIDING FOR NATURE OF LIEN; PROVIDING FOR SALE OF LIEN CERTIFICATES; PROVIDING FOR PROVISIONS CUMULATIVE; PROVIDING FOR CONFLICTS; PROVIDING FOR SEVERABILITY; AND PROVIDING AN EFFECTIVE DATE.

WHEREAS, the Board of County Commissioners has found as a result of certain storm events, some private subdivisions in the unincorporated areas of Leon County experience significant flooding events; and

WHEREAS, it is in the best interests of the citizens of Leon County for the Board of County Commissioners to provide for the availability of stormwater control and treatment facilities within the unincorporated area of Leon County; and

WHEREAS, the Board of County Commissioners wishes to provide a mechanism whereby the owners of real property located in areas subject to flooding events may request the County improve their real property by constructing and otherwise providing stormwater control and treatment facilities, providing for the mechanism by which the owners of such real property can pay for said improvements, and provide for the continued maintenance of such facilities.

NOW, THEREFORE, BE IT ORDAINED by the Board of County Commissioners of the County of Leon, Florida, as follows, that:

Section 1. The Code of Laws of Leon County, Florida, is hereby amended by designating a Division 1 and adding a Division 2 of Article IV, Chapter 18, which amendments shall read as follows:

ARTICLE IV. STORMWATER UTILITY

DIVISION 1. GENERALLY

. . .

DIVISION 2. STORMWATER CONTROL AND DRAINAGE IMPROVEMENTS

Sec. 18-126. Petition generally; notice to public; hearing.

Whenever the owner(s) of property consisting of not less than two-thirds of the lots or parcels of property located within a subdivision or residential tract of land in the unincorporated area of the county present to the Board of County Commissioners a petition signed by them requesting that their properties be benefited by local stormwater control and drainage improvements, including stormwater control and treatment facilities, the acquisition of additional right-of-way, utility and drainage easements, and associated facilities, or any combination thereof, the Board of County Commissioners shall consider such petition, and if the Board determines that the properties will be specially benefited by such stormwater control and drainage improvements, it may approve the petition, order such improvements to be made, and impose assessments equitably against the affected property for the costs of the stormwater control and drainage improvements, together with all administrative and funding costs incurred in connection therewith.

Upon presentation of the petition, the Board of County Commissioners shall publish, at least once, in a newspaper of general circulation in the county, a notice stating that at a regular meeting of the Board of County Commissioners on a date and time certain, to be held at least twenty days after the publication, the Board of County Commissioners will conduct a public hearing and hear all interested persons on the improvements proposed in the petition. The notice shall state in general terms a description of the proposed improvements, and location thereof, the estimated costs, and a description of the property to be specially benefited against which a special assessment is proposed to be made. A copy of the notice shall be mailed, by certified mail, to the record title owners of such property proposed to be benefited, at the address shown on the most recent county property appraiser's ad valorem tax assessment roll, such notice to be mailed at least twenty days prior to the public hearing. At the time designated in the notice, the Board of County Commissioners shall hear all interested persons, and may then or thereafter reject the petition, or by resolution, approve all or any part of the improvements sought by such petition to be made and authorize the levy of a special assessment upon the property specially benefited to be imposed upon completion of the improvements. The resolution shall contain the description of the property upon which the assessment is to be made which shall thereafter constitute a lien on the property.

Sec. 18-127. Acquisition and costs of easements and additional right-of-way; labor; loans.

If, to construct the improvements authorized by the resolution, it is necessary to acquire additional property, right-of-way or drainage or utility easements, which cannot be acquired by gift, bequest or devise, the Board of County Commissioners is hereby authorized to include in the costs assessed against the benefited properties all costs of the acquisition of such additional

rights-of-way or easements, including but not limited to, land acquisition, interest, attorney's fees and court costs.

The Board of County Commissioners may furnish or contract for the services, labor, material and equipment necessary for the improvements to be made. The Board of County Commissioners may pay out of its general funds or out of any special fund that may be provided for that purpose such portion of the cost of any improvement as it may deem proper. The Board of County Commissioners is authorized to borrow from any available source such sums of money as are necessary to defray the cost of such improvements; provided, however, the only security for such loan shall be the assignment of the special assessment lien certificates to be issued for such improvements.

Sec. 18-128. Special assessment roll; notice; public hearing; errors.

Within such time as the Board of County Commissioners may determine following the completion of the improvements and the determination of the total cost thereof, the Board shall prepare a special assessment roll containing the property descriptions and the amount of the benefit to and the assessment of costs to be imposed against each lot or parcel of property adjoining and contiguous or bounding and abutting such improvements or specially benefited thereby and, if said assessment is to be paid in installments, the number of annual installments in which the assessment is divided shall also be entered and shown upon such assessment roll.

Upon completion thereof, the Board of County Commissioners shall publish notice, at least once, in a newspaper of general circulation in the county, stating that such special assessment roll has been completed and is on file and open to public inspection. The notice shall further state that at a regular meeting of the Board of County Commissioners on a date and time certain, to be held at least twenty days after the date of publication, the Board of County

1 Commissioners will hear all interested persons on the proposed assessments. Such notice shall
2 state in brief and general terms a description of the improvements and the location thereof. A
3 copy of the notice shall be mailed, by certified mail, to the record title owners of such property
4 which has been benefited and is being proposed to be assessed, at the address shown on the most
5 recent county property appraiser's ad valorem tax assessment roll, such notice to be mailed at
6 least twenty days prior to the public hearing. At the time designated in the notice, the Board of
7 County Commissioners shall hear all interested persons, and may then or thereafter annul,
8 sustain or modify, in whole or in part, the special assessment roll according to the special
9 benefits which the Board of County Commissioners determines each lot or parcel of property has
10 received by virtue of such improvements. The Board of County Commissioners may apportion
11 the costs of such improvements as a special assessment based on the front or square footage of
12 each lot or parcel of property, or an alternative methodology, provided the amount of the
13 assessment for each lot or parcel of property is not in excess of the proportional benefits as
14 compared to other assessments on other lots or parcels of property.
15 In case of any omission, error or mistake in the special assessment roll imposing the
16 special assessment or in issuing special assessment lien certificates, the Board of County
17 Commissioners may at any time correct such omission, error or mistake by resolution, upon its
18 own motion, provided such correction does not impose a greater assessment on any such lot or
19 parcel of property. Any correction which increases any assessment on any lot or parcel of
20 property or which adds an assessment on any additional lot or parcel of property shall, in the
21 absence of written consent by the property owners involved, be made only by reaccomplishing
22 each and every procedural requirement of this section subsequent to the occurrence of such

omission, error or mistake. Such procedure shall be required with regard only to those lots or parcels for which a special assessment is increased or initially established.

Sec. 18-129. Special assessment lien; generally.

Immediately after the determination of the special assessments as hereinabove provided, the special assessment roll, as sustained or modified, shall be filed in the office of the clerk of the Board of County Commissioners and such determination of assessments shall be final and conclusive, except as provided above. The Board of County Commissioners shall adopt a resolution establishing the amount of the special assessment against all such lots or parcels of property in accordance with the special assessment roll heretofore adopted, which shall constitute a special assessment lien upon that property, and authorize the issuance of special assessment lien certificates as hereinafter provided. Such resolution shall include the legal description of each lot or parcel of property subject to such special assessment lien, together with the amount of such lien according to the special assessment roll. An executed copy of such resolution shall be recorded in the public records of the county not later than ten days after its adoption. Such resolution shall also state that such assessment liens are subject to modification in accordance with the provisions of this division. Notice shall be given that all such assessment liens shall become due and payable at the office of the tax collector of the county on a date to be determined by the Board of County Commissioners, which date shall not be before 30 days after the recording of such resolution in the public records of the county. The amount not paid within such period shall become payable in equal annual installments for a period of years, with interest at a rate, established by the Board of County Commissioners at a public hearing; provided, however, any assessment lien becoming so payable in installments may be paid at any time together with interest accrued thereon as of the date of payment.

1 **Sec. 18-130. Lien for preliminary costs when improvements not constructed.**

2 If, prior to adopting the resolution establishing the amount of the special improvement
3 assessment liens against benefited properties in accordance with the final assessment roll, it is
4 determined that the improvements shall not be constructed, the incidental costs associated with
5 the preparation of the preliminary special improvement assessment roll, including preliminary
6 and other surveys, preparation of plans, specifications, and estimates, printing and publishing of
7 notice and proceedings, authorization of lien certificates, legal services, engineering and fiscal
8 fees, abstracts and any other expenses necessary or proper in connection therewith, shall be
9 assessed against the property which would have been improved if the improvements had been
10 constructed. An assessment roll assessing such costs on a pro rata basis shall be prepared and,
11 following a public hearing in accordance with the notice provisions set forth above, the Board of
12 County Commissioners shall adopt a resolution imposing an assessment against all such lots or
13 parcels which shall constitute a lien upon such property, and authorizing the issuance of special
14 assessment lien certificates as provided in this division. The lien for such costs shall be of the
15 same nature as set forth below.

16 **Sec. 18-131. Nature of lien.**

17 All assessments for any improvements made under the provisions of this division shall
18 constitute liens upon the property specially improved and assessed from the date of the filing in
19 the public records of the county of the resolution adopted by the Board of County
20 Commissioners imposing the special assessment, and shall be of the same nature and to the same
21 extent as liens for general county taxes, and shall be collectible in the same manner with the
22 same fees, interest and penalties for default in payment, and under the same provisions as to sale
23 and forfeiture as apply to general county taxes. Collection of such special assessment with such

interest and penalties and with a reasonable attorney's fee may also be made by suit for foreclosure, and it shall not be unlawful to join in any such suit for foreclosure any one or more lots or parcels of property, by whomsoever owned, upon which such assessments are delinquent, if assessed for improvements made under the provisions of this division. Failure to pay any installment of principal or interest of any special assessment when such installment shall become due shall, without notice or other proceedings, cause all installments or principal remaining to be forthwith due and payable with interest due thereon at the date of default; but, if before the sale of the property for delinquent special assessment payments, the amount of such delinquency shall be paid together with all penalties, interest, costs and attorney's fees, further installments of principal shall cease to become due and payable and shall be due and payable at the times at which the same would be due if no such default had occurred.

Sec.132. Sale of lien certificates.

For the purpose of financing any of the improvements authorized under the provisions of this division, the Board of County Commissioners may sell any or all of the special assessment liens certificates imposed against the property benefited. Such liens shall be evidenced by special assessment lien certificates signed by the Chairman of the Board of County Commissioners and attested to by its clerk or deputy clerk. The clerk, as directed by the Board of County Commissioners, may sell, dispose of or assign any such certificate to any person offering to buy same; such sale, however, is to be made at not less than par of the principal of such certificate or certificates remaining then unpaid, together with accrued interest accumulated and computed to the date of sale or assignment. All payments on such lien certificates shall be made directly to the county and the responsibility for enforcement of such liens may be that of the holder of the certificate or that of the Board of County Commissioners in the manner

provided herein, as determined by resolution of the Board of County Commissioners. The holders of such special assessment lien certificates may sue in their own name or on behalf of the county to enforce such liens. Nothing in this Division shall be deemed to prohibit the Board of County Commissioners from appointing an officer of the county to serve as paying agent and/or registrar with respect to any special assessment lien certificates issued pursuant hereto.

Sec. 18-133. Provisions cumulative.

This division is declared to provide a supplemental and alternative method of making local stormwater control and drainage improvements in the unincorporated areas of the county and shall not operate to repeal any existing law.

Section 2. Conflicts.

All ordinances or parts of ordinances in conflict with the provisions of this ordinance are hereby repealed to the extent of such conflict, except to the extent of any conflicts with the Tallahassee-Leon County 2010 Comprehensive Plan as amended, which provisions shall prevail over any parts of this ordinance which are inconsistent, either in whole or in part, with the said Comprehensive Plan.

Section 3. Severability.

If any provisions or portion of this Ordinance is declared by any court of competent jurisdiction to be void, unconstitutional, or unenforceable, then all remaining provisions and portions of this Ordinance shall remain in full force and effect.

Section 4. Effective Date.

This ordinance shall have effect upon becoming law.

1 DONE, ADOPTED AND PASSED by the Board of County Commissioners of Leon
2 County, Florida this _____ day of _____, 2009.

3 LEON COUNTY, FLORIDA

4 By:_____
5 Bryan Desloge, Chairman
6 Board of County Commissioners

7 ATTESTED BY:
8 BOB INZER, CLERK OF THE COURT
9 LEON COUNTY, FLORIDA

10 By:_____
11 Bob Inzer, Clerk of Court
12 Leon County, Florida

13 APPROVED AS TO FORM:
14 COUNTY ATTORNEY'S OFFICE
15 LEON COUNTY, FLORIDA

16 By:_____
17 Herbert W. A. Thiele, Esq.
18 County Attorney

EXECUTIVE SUMMARY

In the summer of 1998, the Florida Department of Community Affairs provided funding to all Florida counties and municipalities to assist them in preparing a comprehensive Local Mitigation Strategy (LMS). The goal of the LMS was to help local officials identify and assess the various natural and technological disasters the county faced, and then identify locally developed strategies to reduce the impact of future disasters.

The Leon County LMS Working Group was formed in October 1998, and has met 13 times to identify and discuss the hazards facing Leon County and the City of Tallahassee. From these discussions, the steering committee conducted a hazard assessment and identified mitigation strategies to reduce the county's risk to the identified hazards. The final result of their actions is this document; the *Leon County Local Mitigation Strategy*.

The *Leon County Local Mitigation Strategy* is organized into three volumes. Volume I contains the procedures the working group used to develop the strategy and to keep the strategy current. Volume I also describes the existing and proposed mitigation programs, policies and projects identified by the working group. For the most part, program and policy initiatives are non-capital efforts, such as ordinances or updates to existing codes/plans, that the local governments can usually start and complete without outside assistance and/or funding. In many instances, the County and City already have the information they need to begin these initiatives and simply need direction from local elected authorities. Projects, on the other hand, are generally capital efforts, such as road paving and culvert repairs. For many of these efforts, the local governments may require outside funding assistance. In recognition of the importance of funding, the description of each mitigation initiative also includes a list of potential funding sources. A more detailed description of each funding source in contained in Volume III, Appendix F.

The working group has developed a very broad-based list of mitigation initiatives that will benefit all portions of Leon County. It is important to note, however, that the mitigation list is not a permanent list. The group recognized that the list will change as current projects are completed, new needs and problems are identified, and local priorities change. To help ensure the *Leon County Local Mitigation Strategy* remains current, the working group has identified procedures for at least an annual review and update of the strategy. These procedures are also contained in Volume I.

Volume II is the Hazard Identification and Vulnerability Assessment. This section provides an overview of the county's recent disaster history and a discussion of the types of natural and technological hazards the County faces. The more significant hazards identified and assessed by the working group include tropical storms, hurricanes, floods, tornadoes, hazardous materials releases, and wildfires. Droughts, dam failure, civil disturbances and power failure are also addressed, but they are not identified as significant hazards.

Volume III of the *Leon County Local Mitigation Strategy* is the technical appendix, containing the support data. Included in this section are the conflict resolution procedures developed by the working group; an analysis of local, regional and state programs, ordinances and policies as they

pertain to hazard mitigation; the identification of local, regional, state, federal and non-profit agencies and organizations with a role in hazard mitigation; and potential funding sources. The information contained in Volume III will be extremely useful in implementing the mitigation strategy. For example, many grant applications require that proposed projects conform to existing local policies. Thus, these policy summaries can be used to find the policy support needed for a local project or initiative. One of the most useful appendices in Volume III is the description of potential funding sources. This section can be used to initially identify which funding source(s) may be appropriate for a particular mitigation initiative. Included for each funding source is a general description of the program, eligibility criteria and a point of contact for additional information.

Finally, the Florida Department of Community Affairs requires that the strategy be submitted to the Leon County Board of Commissioners for adoption. Although it is not required by the grant, adoption of the strategy by the City of Tallahassee is strongly encouraged. Adoption of the *Leon County Local Mitigation Strategy* will not have any effect on the City/County Comprehensive Plan. The mitigation projects in the strategy do not have to be included in the Capital Improvements Element of the comprehensive plan, and there will be no review to see if the initiatives are being accomplished. However, adoption of the local mitigation strategy will give the County and City priority for disaster recovery and hazard mitigation funds from some state and federal sources.

City of Tallahassee/Leon County Local Mitigation Strategy
Hazard Mitigation Procedures Initiatives
2008 Progress Report

1. Increase intergovernmental coordination in the area of stormwater management.

   Status: In April of 2005, the City of Tallahassee and Leon County created the Interlocal Watershed Management Policy Board. The board is comprised of state and local officials charged with creating a joint watershed management plan to address stormwater issues by looking at the needs of the region's stormwater basins rather than focusing on stormwater management needs within jurisdictional boundaries. It is anticipated that the watershed management plans will include structural and non-structural recommendations such as public education and/or land development practices.

2. Improve the disaster resistance of existing site built housing stock.

   Status: The Capital Area Chapter of the American Red Cross facilitates various structural mitigation activities on low-income, owner occupied homes. To date, the Red Cross has retrofitted many homes in Leon County.

3. Advocate that FEMA provide greater flexibility to local communities that elect to establish more accurate flood elevations.

   Status: The City of Tallahassee and Leon County continue to cooperate with the Northwest Florida Water Management District in its efforts to initiate a Cooperating Technical Partnership with FEMA, which will be instrumental in accomplishing this goal.

4. Promote disaster resistant neighborhoods.

   Status: The community continues to partner with the local Red Cross and local media outlets to provide public service announcements and outreach programs supplying information to citizens related to disaster resistant neighborhood strategies.

5. Improvement in floodplain boundary identification and implementation of the FEMA map amendment process.

   Status: The City of Tallahassee continues to work with FEMA and its sub-contractors to adopt updates to the Flood Insurance Rate Maps. There is currently a county-wide map revision project under review. The Northwest Florida Water Management District is currently managing the project which will update the Flood Insurance Rate Maps for Leon County through its Cooperating Technical Partnership with FEMA.

City of Tallahassee/Leon County Local Mitigation Strategy
Hazard Mitigation Procedures Initiatives
2008 Progress Report

6. Explore methods to eliminate additional development in the 25-year floodplain.

   Status: The City of Tallahassee, Growth Management Department continues to consider new ordinance language to accomplish this goal.

7. Identify shuttering/hardening needs for Tallahassee Memorial Hospital (TMH) and Capital Regional Medical Center (CRMC).

   Status: Once a possible funding source is identified, the committee has discussed applying for window protection at TMH. TMH has developed an application for hazard mitigation and is ready to proceed, when funding becomes available. Tallahassee community hospital is now Capital Regional Medical Center, and they have hardened windows installed.

8. Strengthen the land development code dealing with finished floor elevation.

   Status: The Growth Management Department and Stormwater Management are continuing work on potential regulatory changes to the floodplain section of the municipal code. This initiative continues to be a priority, and it is under consideration by the Local Mitigation Strategy Steering Committee.

9. Expand the County's housing inspection program.

   Status: The Leon County Housing Inspection Program continues to focus on the inspection and rehabilitation of owner-occupied housing of low to moderate-income residents. Residents are made aware of the program through outreach projects, which advertise potential assistance availability. Once an inspection and rehabilitation project is completed, the house will meet current code requirements. Leon County also funds a Red Cross program that removes or trims trees that could damage a house if they fall during a storm.

10. Improve current efforts to remove dead, dying or diseased trees or branches next to roadways and power lines.

    Status: The City of Tallahassee Electric Department and City of Tallahassee Streets and Drainage Division in cooperation with the Leon County Public Works Department, continues to remove those trees and limbs that pose a hazard to overhead power lines and roadways.

City of Tallahassee/Leon County Local Mitigation Strategy
Hazard Mitigation Procedures Initiatives
2008 Progress Report

11. Flood related capital improvement projects.

    Status: See attached list of City of Tallahassee, Stormwater Capital Projects drainage improvement projects.

12. Identify equipment needs for responding to a weapons of mass destruction threat, a hazardous materials release or similar disaster.

    Status: Our community emergency management officials have identified the equipment needed and have purchased many of the items through the homeland security funding. There is a committee that outlines items to be purchased, and funding is coordinated through the Regional Domestic Security Task Force. However, available funding for this initiative is decreasing.

13. Require flood hazard disclosure in the deed for the sale or transfer of improved or unimproved property in the floodplain.

    Status: It continues to be standard practice for the City of Tallahassee Public Works Department, Real Estate Division to record development limitations and drainage easements on the deed of any property sold within the floodplain. In addition, all properties acquired using federal funding for flood relief such as the Flood Mitigation Assistance Program and the Hazard Mitigation Grant Program also must have deed restrictions recorded at the time of purchase.

14. Acquire parcels in the 100-year floodplain.

    Status: The City and County continue to evaluate potential acquisition projects and possible funding sources for property acquisitions within the 100-year floodplain. Many parcels within the 100-year floodplain have been purchased by the City of Tallahassee and Leon County during previous years to provide flood relief to flood prone property owners. Some of these acquisition projects were entirely funded using local dollars. Others were funded through state and federal programs while also making use of local matching funds. Examples of these programs include the Flood Mitigation Assistance Program and the Hazard Mitigation Grant Program, both of which are FEMA programs administered by the Florida Department of Community Affairs.

City of Tallahassee/Leon County Local Mitigation Strategy
Hazard Mitigation Procedures Initiatives
2008 Progress Report

15. Evaluate requirements and feasibility for the County's participation in the NFIP Community Rating System.

    Status: Leon County continues to consider its options regarding participation in the Community Rating System, but due to limitations in staffing and funds, entering the program remains unfeasible.

16. Establish audible warning systems at the dam.

    Status: The C. H. Corn, Hydroelectric Power Plant at the Lake Talquin Dam continues to operate warning siren and paging system that is used to warn boaters downstream of the dam to move further downstream prior to increasing flow through the dam.

17. Explore the feasibility of adding a full build-out component to the Leon County Master Stormwater Management Plan

    Status: Based on information from the Leon County Public Works Department, there are no plans to update the Master Plan at this time due to staffing limitations and current allocation of available resources.

18. Retrofit shelters to correct known deficiencies.

    Status: Local emergency management officials continue to assess the needs of local shelters for use in future disasters. A new shelter is planned for construction in the northeast section of the City.

19. Consider addressing the economic impact of different disaster scenarios, as information becomes available.

    Status: The City of Tallahassee and the Capital Area Chapter of the American Red Cross both continue to have programs in place to assess the impacts of disaster immediately following an event. The City's Rapid Damage Assessment Program will deploy City employees into all parts of the City to assess and relay damage information to the Emergency Operations Center to allow rapid assessment of economic impacts related to City infrastructure. In addition, Red Cross Damage Assessment Teams are also deployed following a disaster on a countywide basis to document disaster-related damages.

City of Tallahassee/Leon County Local Mitigation Strategy
Hazard Mitigation Procedures Initiatives
2008 Progress Report

20. Replacement of overhead electrical distribution lines with underground lines along Woodward Ave.

    Status: Underground distribution lines have been installed along Woodward Avenue from Jefferson Street north through the Florida State University campus to Tennessee Street. . Underground Distribution lines have also been placed along Park Ave from Magnolia to Capital Cir. SE. Underground Transmission lines have been placed along Dempsey Mayo from Mahan Dr. onto the Welaunee property as part of the Eastern Transmission Line project. The City of Tallahassee Electric department continues to place distribution lines underground where appropriate and cost effective.

21. Identify decontamination-training needs for Tallahassee Memorial Hospital and Tallahassee Community Hospital personnel.

    Status: The Leon County/State Health Department works with the area hospitals, and they all have adopted and tested decontamination operation procedures. On going by State and County Health. Note Tallahassee Community Hospital is now called Capital Regional Medical Center.

22. Identify needs for improving the disaster resistance of critical facilities.

    Status: The Local Mitigation Strategy Steering Committee continues to work to identify additional security measures to protect critical facilities within the community. The City has installed extra security measures at certain critical facilities throughout the City. The North Florida Regional Domestic Security Task Forces, is provided funding to address K-12, Universities, Court houses and communications towers, funding is still needed to protect utilities.

23. Identify, develop and implement training courses for emergency responders.

    Status: The City's Rapid Damage Assessment Program will deploy City employees into all parts of the City to assess and relay damage information to the Emergency Operations Center to allow rapid assessment of economic impacts related to City infrastructure. The City of Tallahassee Public Works Department recently held a training seminar for the Rapid Damage Assessment Teams to go over Rapid Damage Assessment procedures in the event of a disaster.

City of Tallahassee/Leon County Local Mitigation Strategy
Hazard Mitigation Procedures Initiatives
2008 Progress Report

24. Host an annual or semi-annual disaster fair.

    Status: The Capital Area Chapter of the American Red Cross regularly facilitates hurricane exercises for businesses and neighborhoods to increase community preparedness. Further information related to the Red Cross hurricane exercises can be found online at www.tallytown.com/biz.

25. Develop a program to promote a community-wide debate comparing community vulnerability with available resources.

    Status: The Local Mitigation Strategy Steering regularly meets to discuss these issues.

26. Develop program to deploy flood-warning devices at critical facilities and/or locations.

    Status: There are several flood-warning devices in place and functioning within the community, which include the flood warning system at Franklin Boulevard, the warning system at the Lake Talquin Dam as well as the Capital Area Flood Warning Network and City of Tallahassee Rainfall Data Telemetry System. The Capital Area Flood Warning Network and the City of Tallahassee Rainfall Data Telemetry System provide real-time rainfall totals and water levels at key points within the community. Emergency Management Officials can then use this information during major storm events to identify potential areas of flooding.

27. Develop regional hazardous materials response capability; identify needed assets, training and local agreements.

    Status: The Apalachee Regional Planning Council, Tallahassee, Gainesville, Thomasville, Valdosta and other surrounding communities have worked together on regional responses. In Florida, surrounding communities have agreed to support each other through the Fire Chief's Association and the Regional Domestic Security Tasks Forces. There are 7 of these in Florida, and they will support each other as needed. There has been no change in the status of this initiative since the previous publication of this report.

City of Tallahassee/Leon County Local Mitigation Strategy
Hazard Mitigation Procedures Initiatives
2008 Progress Report

28. Develop automated telephone warning/notice system tied to chemical releases at fixed facilities.

    Status: Funding needs to be identified, to support such a system.

29. Identify populations at risk under different scenarios.

    Status: The Local Mitigation Strategy Steering Committee regularly meets to discuss these issues. Additional coordination has also taken place using the digital information available through the community's Geographic Information System. In addition, the Florida Department of Health and the Florida Division of Emergency Management also considers this topic for hazardous materials.

30. Build a single, community-wide emergency operations center.

    Status: The American Red Cross has received $4,500,000 in funding to build a new Emergency Operations Center to house all non-profit human services agencies, which have a partnership role in disaster response and recovery. This facility is planned to be on-line by the summer of 2008. The City of Tallahassee and Leon County have committed to constructing a Joint Dispatch facility, while this facility does not include a joint emergency operation center, this facility lends itself to better communications and coordination between the City and County. Additional funding could be used to support such a facility in the future.

31. Develop and implement program(s) to promote better understanding between hospital and local emergency service provider personnel regarding hospital emergency plans and local emergency plans/capabilities.

    Status: The County/State Health Department conducts meetings and full scale exercises in an effort to bring all parties together to test plans and procedures.

32. Encourage the establishment of community-based emergency shelters.

    Status: The City of Tallahassee and Leon County have a total of 14 school campuses and 72 buildings, which meet the Red Cross standards and can be used as emergency shelters. In addition, the City of Tallahassee is now providing transportation to persons who regularly ride

StarMetro seeking shelter. Another shelter is planned for construction in the northeast section of the City.

33. Compile a more comprehensive hazardous materials database.

Status: According to Local Mitigation Strategy Steering Committee information, the Solid Waste Departments are responsible for maintaining the hazardous materials database. However, there is no record of a recent update to this information on file. Leon County Division of Emergency Management and the Local Emergency Planning Committee is responsible for identifying and mapping all facilities storing EPA section 302 chemicals. Annually, they publish a document identifying these locations as part of the community right to know act.

34. Establish a community emergency medical needs working group.

Status: According to Local Mitigation Strategy Steering Committee information, the Leon County Health Department is responsible for coordinating the emergency medical needs working group. Reports indicate this is being accomplished through the Regional Domestic Security Task Force.

35. Establish an exercise design team.

Status: Each time there is a regional or large-scale exercise, a design team has been formed including all key players, and usually the same people are involved. However, this group of individuals has not been formally assigned to a team. This approach will most likely continue to be used to allow flexibility in staffing for such exercises.

36. Develop and implement policy requiring health care providers (hospitals, adult congregate care living facilities, nursing homes, etc.) to provide necessary staff support at special needs shelters.

Status: This is now a requirement, which is met by the Leon County Health Department.

37. Establish an Emergency Services Working Group.

Status: The Local Mitigation Strategy Steering Committee includes Emergency Services Personnel, and Emergency Services needs are discussed during LMS meetings.

38. Identify and deploy typical resource needs prior to a disaster occurring.

Status: This is a standard procedure for all governmental departments when sufficient notice of impending disaster occurs. The local emergency management officials both City and County along with the staff from the Capital Area Chapter of the American Red Cross coordinate this deployment.

39. Place an audible warning system at the wastewater treatment plant and potable water sites.

Status: The City of Tallahassee Water Quality Administration has initiated a remote detection system to determine the run status and condition of the potable well facilities. This system achieves the goal of an audible alarm system for our potable water system. The Lake Bradford Road wastewater treatment plant has audible alarms on chlorine gas releases. In addition, a separate monitoring system has audible alarms for all equipment in the Thomas P. Smith wastewater treatment plant on Springhill Road.

40. Develop and disseminate a public awareness safety strategy.

Status: The City of Tallahassee, Leon County , and Capital Area Chapter of the American Red Cross performs this initiative on a regular basis.

41. Identify major land-based transportation corridors and establish safe zones around those corridors based on the exposure pathway for different chemicals.

Status: The Apalachee Regional Planning Council has developed a transportation study for hazardous materials. In addition, local Emergency Management officials have developed preliminary mapping of safe zones, 1-2 miles along the major routes through the community.

42. Deploy a low-power public radio station.

Status: This initiative has recently been a topic of discussion between emergency managers in the community. A meeting to look at a radio system was held this year involving emergency managers from the City of Tallahassee, Florida State University and Leon County. The system is similar to what is being used at Disney and on some major roadway projects. The coverage area has a 1-3 mile radius. Currently, no funding has been obtained to purchase the system. Therefore, Emergency Managers would make use of NOAA Alerts and Public Radio for required radio broadcasts of public announcements in the event of an emergency.

43. Establish community emergency response teams.

Status: The City of Tallahassee and the Capital Area Chapter of the American Red Cross both have emergency response teams in place to assess the impacts of disaster immediately following an event. Once activated, the City's Rapid Damage Assessment Program will deploy City employees into all parts of the City to assess and relay damage information to the Emergency Operations Center to allow early assessment of economic impacts related to City infrastructure. In addition, the Red Cross Damage Assessment Teams would be deployed following a disaster to document disaster-related damages throughout the County, which would allow further analysis of economic impacts of the disaster.

44. Establish regional mitigation teams.

Status: Each time there is a regional or large-scale exercise, regional mitigation teams are formed including all key players, and usually the same people are involved. However, this group of individuals has not been formally assigned to a team. This approach will most likely continue to be used to allow flexibility in staffing for such exercises.

45. Create an emergency management-coordinating group.

Status: There are numerous coordinating groups in Tallahassee and Leon County, which have emergency management officials as members including the Local Mitigation Strategy Steering Committee.

1991 Northwest Florida Water Management District Stormwater Master Plan

Map Identifier	Location	Basin	Problem Identification	Estimated Construction Cost
	PENDING			
A1	Munson Slough	Munson	Id: Black Swamp Restoration	----
A2	Munson Slough	Munson	Id: Lake Munson Restoration	----
A3	Fords Arm - Lexington Branch	Jackson	Id: Lexington Pond	$1,510,000
A4	Fords Arm - Overstreet Branch	Jackson	Id: Rhoden Cove Pond	$1,750,000
A5	Okeeheepkee Basin	Jackson	Id: Okeeheepkee Pond	$1,180,000
A6	North Creek	Fred George	Id: Wetlands Restoration	$303,000
			Pending total costs	$4,743,000
	COMPLETED			
A7	Alford Arm Tributary	Lafayette	Id: Centerville culvert replacement	$151,000
A8	Northeast Drainage Ditch	Lafayette	Id: West Weems Pond	$1,889,000
A9	Northeast Drainage Ditch	Lafayette	Id: East Weems Pond	$974,000
A10	W. Branch Gum Creek	Munson	Id: Gum Swamp restoration	----
A11	West Drainage Ditch	Munson	Id: Eisenhower Avenue Pond	$2,587,000
A12	West Drainage Ditch	Munson	Id: Lake Henrietta Restoration	$780,000
A13	South Creek	Fred George	Id: Railroad culvert enlargement	$22,000
A13	South Creek	Fred George	Id: Mission Rd. culvert enlargement	$42,000
A14	Meginnis Arm	Jackson	Id: I-10 Pond	$680,000
A15	Jackson Heights	Jackson	Id: Lake Charles Pond	$250,000
A16	Fords Arm	Jackson	Id: Yorktown Pond	$400,000
			Completed total costs	$7,775,000
			Master Plan Total Costs	**$12,518,000**

1995 CDM Stormwater Management Master Plan

Map Identifier	Location	Basin	Problem Identification	Estimated Construction Cost
	PENDING			
B1	Autumn Woods Way	Ochlockonee	P-1: overtops less than 10-yr	$20,000
B2	Miccosukee Rd	Bird Sink	P-1: overtops less than 25-yr	$355,000
B3	Crump Rd	Bird Sink	P-3: overtops less than 25-yr	$975,000
B4	Baum Rd (north of 90)	Bird Sink	P-4: overtops less than 25-yr	$120,000
B5	Bird Sink basin	Bird Sink	P-7: 100-year floodplain acquisition/access	$16,250,000
B6	Miccosukee Rd	Patty Sink	P-1: road overtops less than 25-yr	$723,000
B7	Veterans Memorial @ US90	Patty Sink	P-3: road overtops less than 100-yr	$1,300,000
B8	Jefferson Rd	Patty Sink	P-5: road overtops less than 10-yr	$1,300,000
---	Patty Sink basin	Patty Sink	P-6: 100-year floodplain acquisition/access	$10,000,000
B9	Buck Lake Rd. (east of Baum)	Copeland Sink	P-1: road overtops less than 100-yr	$160,000
B10	Baum Rd	Copeland Sink	P-2: road overtops less than 25-yr	$640,000
---	Copeland Sink Basin	Copeland Sink	P-3: 100-year floodplain acquisition/access	$14,000,000
B11	Wadesboro Rd	St. Marks	P-1: road overtops less than 10-yr	$180,000
B12	Buck Lake (west of Baum)	St. Marks	P-3: road overtops less than 100-yr	$500,000
B13	Buck Lake (@ Chaires Crossroad)	St. Marks	P-4: road overtops less than 100-yr	$980,000
B14	Benjamin Chaires Rd	St. Marks	P-5 @ RR less than 25-yr; also at Buck Lake Rd	$245,000
B15	Chaires Crossroad	St. Marks	P-6: road overtops less than 25-yr	$7,900,000
---	St. Marks Headwaters	St. Marks	P-7: wetlands protection and flood storage	$2,000,000
---	St. Marks River Basin	St. Marks	P-8: 100-year floodplain acquisition/access	$45,500,000
---	Basin wide	Woodville	Campbell Pond, area-wide	$2,500,000
B16	Moccasin Gap Rd	Hammock Sink	P-1: extended duration overtops road	$115,000
			Pending total costs	$105,763,000
	COMPLETED			
B17	Waters Meet, Haverhill, Bass Bay	Iamonia	P-2: roads overtop less than 10-yr	$316,000
B18	Proctor Watershed	Iamonia	P-1: homes at risk less than 100-yr event	$524,000
B19	McCracken	Bird Sink	P-2: overtops less than 25-yr	$1,000,000
			Completed total costs	$1,840,000
			Master Plan Total Costs	**$107,603,000**

FY 2009 Stormwater Capital Improvement Projects

Map Identifier	Location	Basin	Problem Identification	Project Cost Total
	Blueprint 2000 Water Quality Enhancements			
C1	Lake Munson Dam Replacement	Munson	Structural and foundation issues	$1,000,000
C2	Sharer Road Outfall Stabilization	Jackson	Channel erosion	$250,000
C3	Lake Heritage Outfall	Lafayette	Corroded outfall structure and line	$250,000
C4	Bradfordville Pond 4 Outfall Stabilization	Lafayette	Control structure and outfall line cracking	$276,000
C5	Bradfordville Pond 6 Facility Rehabilitation	Lafayette	Irrigation system and retaining wall	$100,000
C6	Killearn Acres Flood Mitigation	Lafayette	Channel improvements and pond construction	$3,560,000
C7	Killearn Lakes Plantation Stormwater	Multiple	Unit 1 and 2 conveyance improvements	$700,000
C8	Lafayette Street Stormwater	Munson	Drainage system construction	$2,545,000
C9	Lakeview Bridge	Munson	Bradford Brook crossing improvement	$723,000
C10	Lexington Regional SWMF	Jackson	Water quality and flooding improvements	$5,644,000
C11	Longwood Subdivision Retrofit	Munson	Flooding and erosion control	$225,000
C12	Rhoden Cove Wetland Restoration	Jackson	Invasive and exotic plant species replacement	$1,200,000
C13	Gum Creek Flood Study	Munson	Detailed flood study of Gum Creek area	$250,000
	Nearing Completion:			
C14	Harbinwood Estates Drainage	Jackson	Treatment and conveyance improvements	$6,900,000
C15	Lake Munson Restoration	Munson	Inflow stabilization and in-lake restoration	$11,730,000
C16	Okeeheepkee/Woodmont Pond	Jackson	Water quality and flooding improvements	$3,787,000
				$39,140,000

Attachment # 15
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Stormwater Master Plan and Capital Improvement Project Locations

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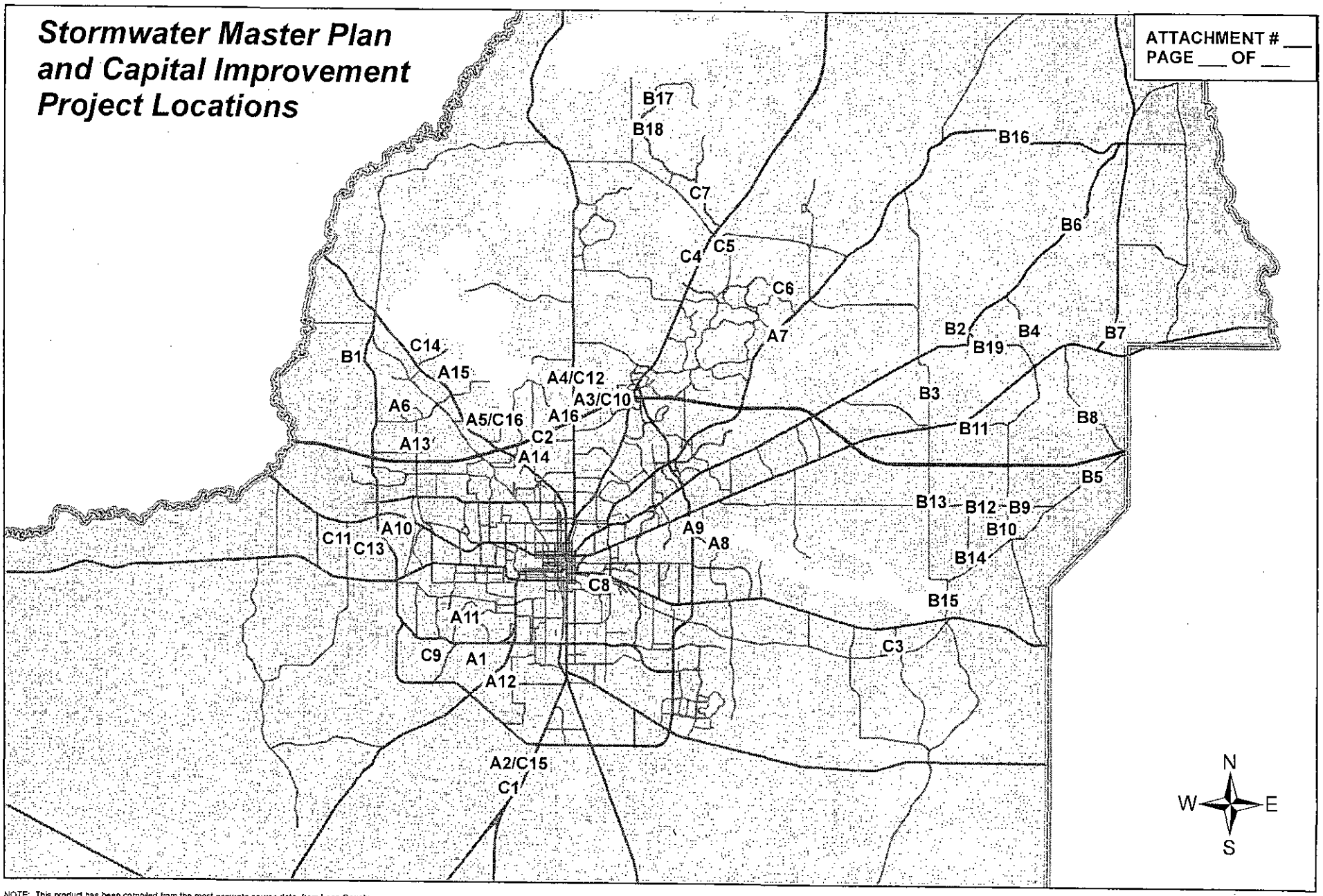

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Tallahassee-Leon County GIS

Leon County Neighborhoods Impacted by Flooding

Tropical Storm Fay and Other Severe Weather Events

Neighborhood	Basin	Identified in Prior Study	Property Location	Work Location	Year Est	Problem Type	Cause of Problem	Potential Solution *	Solution Estimated Cost	Parcels That Benefit	Cost Per Parcel
Issues to be Resolved by Capital Improvements Projects											
P1 - Alexandrite Court	Bird Sink	No	Public	Public	1998	Yard flooding outside of easement	Conveyance	Re-grade existing drainage way to prevent water from exiting onto private yards.	$230,000	4	$57,500
P2 - Autumn Woods	Ochlockonee	No	Public	Public	1979	Property is difficult to reach due to flooded roads.	Conveyance	Installation of an additional cross-drain to improve flow under Autumn Woods Way	$26,000	6	$4,333
P3 - Ben Boulevard	Jackson	No	Public	Public	1990	Structural flooding	Conveyance	Improve existing conveyances and establish new drainageways to route water away.	$350,000	4	$87,500
P4 - Edenfield/Barfield Roads Area	Lafayette	No	Public	Public	1952	Structural flooding. Property difficult to reach due to flooding.	Closed basin	Construct outfall north on Edenfield	$70,000	1	$70,000
P5 - Edinberg Estates	Jackson	No	Public	Public	1976	Yard flooding outside of easement	Conveyance	Enhance available storage in existing drainage easement.	$150,000	6	$25,000
P6 - Hawkbill Court	Jackson	No	Public	Public	1985	Structural flooding	Conveyance	Improve outfall through Lakeshore Estates to Fords Arm	$80,000	20	$4,000
P7 - Killearn Acres III	Lafayette	No	Public	Public	1971	Structural and driveway flooding. Property isolated due to flooded roads.	Conveyance	Killearn Acres Phase III will expand phases 1 and 2 to provide relief to additional properties.	$730,000	20	$36,500
P8 - Lakeview Drive	Munson	No	Public	Public	Prior to 1960	Structural and driveway flooding. Property isolated due to flooded roads.	Conveyance	Existing CIP has provided design but no const funds. Project will raise road & enhance cross-drains to protect homes in the area.	$730,000	25	$29,200
P9 - Lawndale Drive	Lafayette	No	Public	Public	1977	Structural flooding	Conveyance	Redirect outfall from Sedgefield Subdivision to bypass wetland and restrictive weir.	$70,000	3	$23,333
P10 - Maylor and Taylor Roads	Lafayette	No	Public	Public	1959	Property isolated due to flooded roads.	Closed basin	Construct drainage outfall to Mahan ROW.	$320,000	9	$35,556
P11 - Park Hill	Lafayette	No	Public	Public	Prior to 1965	Structural flooding	Conveyance	Roadside swale to Chaires, crossdrain under Chaires, swale in easement to be aquired.	$60,000	11	$5,455
P12 - Portsmouth Circle/ Apalachee Pkwy	Lafayette	No	Public	Public	1973	Structural flooding	Conveyance	Enhance existing concrete channel by adding 2 foot wall at top of one side to contain flow within channel	$80,000	6	$13,333
P13 - Raymond Tucker Road	Lafayette	No	Public	Public	1982	Property isolated due to flooded roads.	Conveyance	Improve conveyance from US 27 through to Lake Lafayette	$700,000	164	$4,268
P14 - Salamanaca & Palencia	St. Marks	No	Public	Public	1990	Structural and yard flooding	Conveyance	Construct interceptor swales and roadside ditches	$100,000	12	$8,333
P15 - Southbrooke/Otter Creek/Chadwick/Wildlife	Iamonia	CDM	Public	Public	1972	Structural flooding, yard flooding	Conveyance	Modify existing drainage system to regain some storage and purchase 3 homes impacted by flooding.	$2,000,000	27	$74,074
P16 - Sunflower Road	Munson	CDM	Public	Public	Prior to 1965	Regional access blocked by flooding	Munson Slough overflow	Raise Sunflower Road with extensive pass-through drainage system	$810,000	Regional	N/A
								Capital Improvements Projects Sub-Total	**$6,506,000**	**318**	**$20,459**
Issues to be Resolved by Joint Project Activity with Other Agencies											
JP1 - Alford Arm @ CSX Railroad Area	Lafayette	No	Public	Private	Regional	Structural flooding. Property isolated due to flooded roads.	Conveyance	Joint Project Agreement with CSX Railroad to enlarge flowway under railroad by construction of a 500 foot trestle	$2,820,000	Regional	N/A
JP2 - Stoneler Rd outfall	Ochlockonee	No	Public	Public	1972-1979	Property is difficult to reach due to flooded roads.	Conveyance	Update CDM Study to identify options for a joint project with State Forestry Services for improvements on State lands.	$200,000	150	$1,333
								Joint Projects Sub-Total	**$3,020,000**		

Leon County Neighborhoods Impacted by Flooding

Tropical Storm Fay and Other Severe Weather Events

Neighborhood	Basin	Identified in Prior Study	Property Location	Work Location	Year Est	Problem Type	Cause of Problem	Potential Solution *	Solution Estimated Cost	Parcels That Benefit	Cost Per Parcel
Issues to be Resolved by County Acceptance of Road and Drainage Systems Program (CARDS - generally referred to as Two-Thirds Projects)											
D1 - Clydesdale	St. Marks	No	Private	Private	Prior to 1968	Property isolated due to flooded roads.	St. Marks River overflow	Stormwater 2/3 to provide cross-drains and raise road to allow access during extreme storm events.	$800,000	44	$18,182
D2 - Earls Slough	Ochlockonee	No	Private	Private	Prior to 1990	Property is difficult to reach due to flooded roads.	Ochlockonee River overflow	Roadway 2/3 Project to raise access roads.	$260,000	9	$28,889
D3 - Franklin Oaks/Moore Woods/Private/Strawhill/Wakulla Springs/ Bartlett/Stonewood (Roadway Improvement)	Munson	CDM	Private	Private	1951 - 1986	Structural and driveway flooding. Property isolated due to flooded roads.	Munson Slough overflow	Roadway 2/3 Project to raise access road. Some homes in the area do not benefit.	$7,800,000	83	$93,976
D4 - Imaginary Road	Bird Sink	No	Private	Private	1978	Property isolated due to flooded roads.	Conveyance	Stormwater 2/3. Replace and enlarge cross-drains at subdivision entrance, including road repairs.	$130,000	13	$10,000
D5 - Lanier Street	Ochlockonee	No	Public	Private	Prior to 1955	Structural flooding, erosion threatening structure, pollution	Ochlockonee River inflow	Stormwater 2/3 to stabilize eroding channel and protect Lake Talquin from pollution.	$30,000	1	$30,000
D6 - Liberty Ridge/Oak Ridge/Wild Cherry/ Thunderbird/Wax Myrtle/Misty Dawn/ (Roadway Improvement)	Munson	CDM	Private	Private	1983	Structural and driveway flooding. Property isolated due to flooded roads.	Munson Slough overflow	Roadway 2/3 Project to raise access road. Some homes in the area do not benefit.	$12,690,000	387	$32,791
D7 - Louvenia Court	St. Marks	No	Private	Private	Prior to 1970	Property isolated due to flooded roads.	Conveyance	Roadway 2/3 Project to raise access roads.	$1,000,000	68	$14,706
D8 - Selena Road	Woodville Recharge	No	Private	Private	Prior to 1969	Property isolated due to flooded roads.	Closed basin	Roadway 2/3 Project to raise access road.	$540,000	147	$3,673
D9 - Sir Richard Road	Ochlockonee	No	Private	Private	Prior to 1974	Property isolated due to primary access road being washed out.	Conveyance	Stormwater 2/3. Replace and enlarge cross-drains at subdivision entrance, including road repairs.	$200,000	44	$4,545
D10 - Surrey Farms Subdivision	Moccasin Gap	No	Private	Private	1999	Property isolated due to flooded roads.	Closed basin	Stormwater 2/3 project to reconstruct entrance road at elevation above flooding	$180,000	10	$18,000
D11 - Timber Lake Subdivision	Lafayette	No	Private	Private	1986	Structural flooding. Property isolated due to flooded roads.	Closed basin	Stormwater 2/3. Permanent Stormwater Pumping Station	$700,000	240	$2,917
D12 - Tung Grove Road Neighbordhood	Lafayette	CDM	Private	Private	Prior to 1978	Property isolated due to flooded roads.	Conveyance	Stormwater 2/3 to provide cross-drains and raise road to allow access during extreme storm events.	$1,500,000	55	$27,273
D13 - Waters Meet/Haverhill	Iamonia	CDM	Public	Private	1973	Under-structure and driveway access to property flooding.	Closed basin	Stormwater 2/3. Construct piped discharge to drain affected area.	$290,000	2	$145,000
								CARDS (2/3 Projects) Sub-Total	**$26,120,000**	**1103**	**$23,681**
Issues to be Resolved by Reactivation and/or Expansion of the County Flooded Property Acquisition Program											
F1 - 9721 Waters Meet	Iamonia	No	Public	Private	1973	Structural flooding	Conveyance	Purchase the single home impacted by flooding	$820,000	1	$820,000
F2 - Almanac Road Area	Bird Sink	No	Private	Private	Prior to 1965	Structural flooding	Closed basin	Purchase the single home impacted by flooding (Costs included in original Flooded Property Acquisition Program below)	$0	0	$0
F3 - Benjamin Chaires/Buck Lake Area/Chaires/Capitola Area (Flooded Property Acquisition)	St. Marks	CDM	Public	Private	Prior to 1937	Structural flooding. Property isolated due to flooded roads.	St. Marks River overflow	Purchase 19 homes with structural flooding.	$5,210,000	19	$274,211
F4 - Celia Court/Lainey Lane	Munson	CDM	Private	Private	1986	Structural flooding. Property isolated due to flooded roads.	Munson Slough overflow	Purchase 8 homes impacted by flooding (4 homes on original FPAP list)	$1,950,000	9	$216,667
F5 - Circle J Drive	Lafayette	No	Public	Private	Prior to 1970	Structural flooding. Property difficult to reach due to flooding.	Conveyance and Closed basin	Purchase the single home impacted by flooding (Costs included in original Flooded Property Acquisition Program below)	$0	1	$0
F6 - Coffee Lane	Fred George	No	Public	Private	Prior to 1980	Structural flooding. Property difficult to reach due to flooding.	Closed basin	Purchase 4 homes impacted by flooding	$1,260,000	4	$315,000

Leon County Neighborhoods Impacted by Flooding

Tropical Storm Fay and Other Severe Weather Events

Neighborhood	Basin	Identified in Prior Study	Property Location	Work Location	Year Est	Problem Type	Cause of Problem	Potential Solution *	Solution Estimated Cost	Parcels That Benefit	Cost Per Parcel
F7 - Crooked Road	Ochlockonee	No	Public	Private	1958	Structural flooding. Property isolated due to flooded roads.	Ochlockonee River overflow	Purchase 27 homes impacted by flooding (One home on original FPAP list)	$10,420,000	39	$267,179
F8 - Fairbanks Ferry Road/John Henry	Ochlockonee	No	Public	Private	Prior to 1963	Structural flooding	Ochlockonee River overflow	Purchase 6 homes impacted by flooding	$380,000	6	$63,333
F9 - Franklin Oaks/Moore Woods/Private/Strawhill/Wakulla Springs/ Bartlett/Stonewood (Flooded Proeprty Acquisition)	Munson	CDM	Private	Private	1981-1986	Structural flooding. Property isolated due to flooded roads.	Munson Slough overflow	Purchase 55 homes that can't be benefitted by the roadway improvement project. (4 homes on original FPAP list)	$7,370,000	55	$134,000
F10 - Hanging Vine Way	Lafayette	No	Private	Private	Prior to 1975	Property is difficult to reach due to flooded roads.	Closed basin	Purchase 2 homes impacted by flooding	$590,000	2	$295,000
F11 - Houston Road	Ochlockonee	No	Public	Private	Prior to 1965	Structural flooding	Ochlockonee River overflow	Purchase 7 homes impacted by flooding	$2,000,000	7	$285,714
F12 - Liberty Ridge/Oak Ridge/Wild Cherry/ Thunderbird/Wax Myrtle/Misty Dawn/ (Flooded Property Acquisition)	Munson	CDM	Private	Private	1983	Structural flooding. Property isolated due to flooded roads.	Munson Slough overflow	Purchase 49 homes that can't be benefitted by the roadway improvement project. (14 homes on original FPAP list below)	$7,470,000	49	$152,449
F13 - Mystic Warrior Trail	Lafayette	No	Private	Private	Prior to 1964	Structural flooding	Conveyance	Purchase two homes impacted by flooding	$580,000	2	$290,000
F14 - Omaha Trail (Rajotte Family)	Lafayette	No	Public	Private	1969	Structural flooding. Property difficult to reach due to flooding.	Closed basin	Purchase or raise home and regrade property	$360,000	1	$360,000
F15 - Perker Lane	St. Marks	No	Private	Private	Prior to 1981	Structural flooding	Closed basin	Purchase the single home impacted by flooding	$520,000	1	$520,000
F16 - Regiment Loop	St. Marks	No	Private	Private	Prior to 1973	Structural flooding. Property isolated due to flooded roads.	St. Marks River overflow	Purchase 19 homes impacted by flooding (One home on original FPAP list below).	$3,940,000	19	$207,368
F17 - Scott Tower Road	Iamonia	No	Private	Private	Prior to 1970	Property isolated due to flooded roads.	Conveyance	Purchase 2 homes impacted by flooding	$700,000	2	$350,000
F18 - Sistowbell Lane / Tan Mouse Road	Bird Sink	No	Private	Private	Prior to 1974	Structural flooding	Conveyance	Purchase 12 homes impacted by flooding	$3,640,000	12	$303,333
F19 - Tanglewood Estates	Munson	No	Private	Private	Prior to 1986	Structural flooding	Conveyance	Purchase 14 homes impacted by flooding (Assumes that 14 parcels will be acquired via original FPAP below)	$430,000	14	$30,714
F20 - W. W. Kelley	St. Marks	No	Public	Private	1957	Structural flooding	St. Marks River overflow	Purchase the single home impacted by flooding	$420,000	1	$420,000
F21 - Waterfront Drive	Iamonia	No	Private	Private	Prior to 1962	Structural flooding	Lake Iamonia overflow	Purchase 25 homes impacted by flooding . (Assumes that 1 parcel will be acquired via original FPAP below)	$4,270,000	25	$170,800
F22 - Flooded Property Acquisition Program completion	Multiple	No	Varies	Private	Varies	Flooding	Multiple	Purchase 216 homes and conclude the previously authorized FPAP. Note - some homes in this group are necessary to resolve other projects.	$40,670,000	216	$188,287
								Flooded Property Acquisition Sub-Total	**$93,000,000**	**485**	**$191,753**
Issues to be Resolved by Capital Improvements Projects to Implement River Basin Flood Controls											
R1 - Chaires Cross Road Bridge from Capitola to US 27	St. Marks	CDM	Public	Public	Regional	Structural flooding. Property isolated due to flooded roads.	St. Marks River overflow	Raise roadway network above flood levels.	$37,850,000	Regional	N/A
R2 - Benjamin Chaires/Buck Lake Area/Chaires/Capitola Area (Roadway Improvement)	St. Marks	CDM	Public	Public	Regional	Structural flooding. Property isolated due to flooded roads.	St. Marks River overflow	Raise roadway network above flood levels.	$31,700,000	Regional	N/A
R3 - Fairbanks Ferry Court	Ochlockonee	No	Public	Public	Prior to 1963	Property isolated due to flooded roads.	Ochlockonee River overflow	Construct levee system similar to New Orleans to protect impacted homes. Will require study to confirm design feasibility.	$12,520,000	40	$313,000
								River Basin Flood Controls Sub-Total	**$82,070,000**		

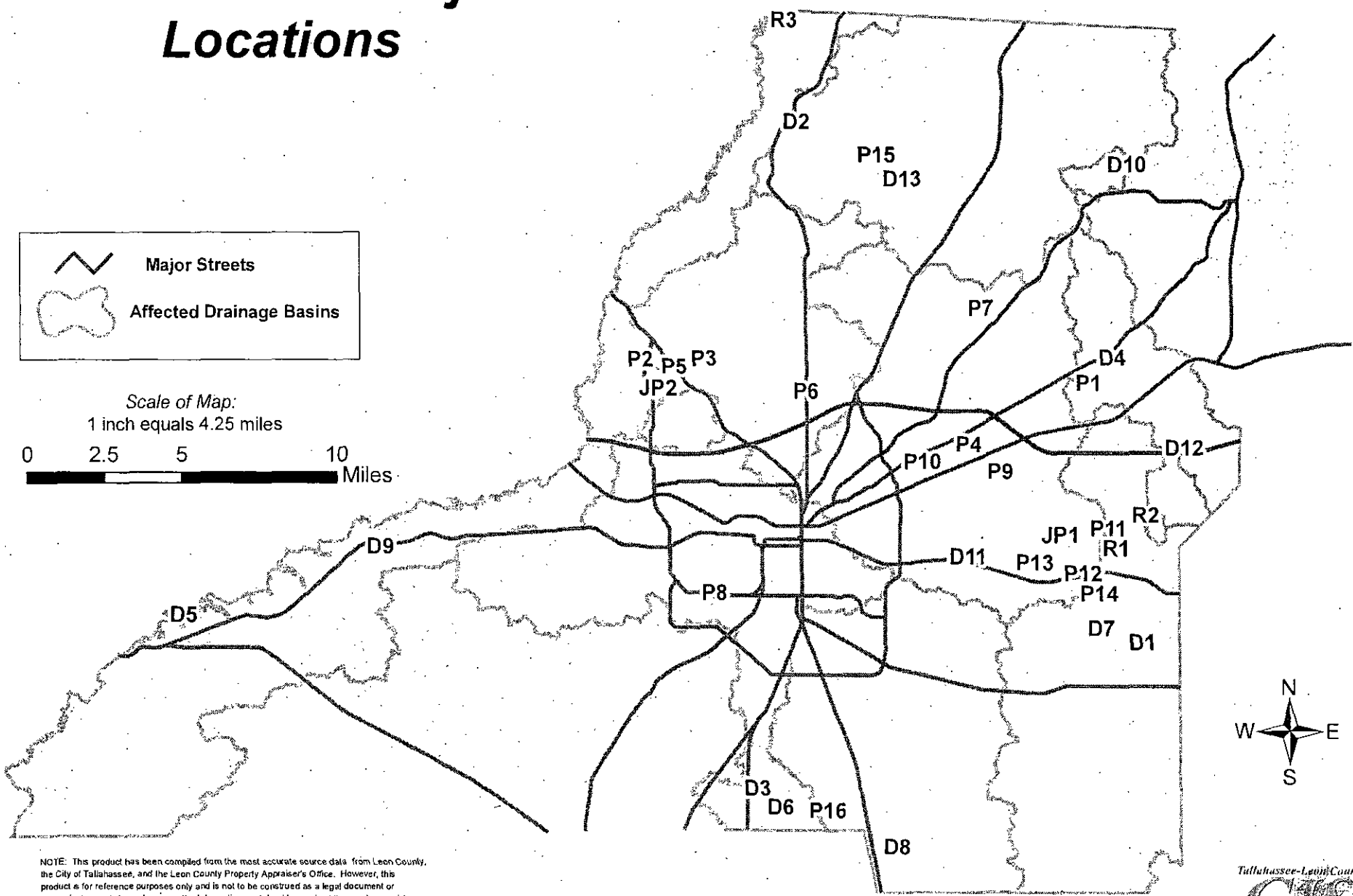
Leon County Neighborhoods Impacted by Flooding

Tropical Storm Fay and Other Severe Weather Events

Neighborhood	Basin	Identified in Prior Study	Property Location	Work Location	Year Est	Problem Type	Cause of Problem	Potential Solution *	Solution Estimated Cost	Parcels That Benefit	Cost Per Parcel
Issues Raised During TS Fay for which No Action Is Recommended											
N1 - 4632 Centerville Rd	Lafayette	No	Public	Private	1961	Yard flooding	Conveyance	No action recommended.	$0	1	$0
N2 - Farms Road Neighborhood	Lafayette	No	Private	Private	Prior to 1980	Property isolated due to flooded roads	St. Marks River overflow	No action. Alternate access exists.	$0	46	$0
N3 - Lonnie Road	Lafayette	No	Public	Private	1980	Structural flooding	Closed basin	No action recommended. Improvements have been provided. Property owner has not made connection to available improvements.	$0	1	$0
N4 - Walden Road (1158 & 1166)	Lafayette	No	Public	Public	1987	Yard flooding within easement	Conveyance	No action recommended. Flooding within easement to be expected.	$0	2	$0
								Grand Total	**$210,716,000**		

* Alternative solutions discussed in detailed project package

Infrastructure Project Locations



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P1 - Alexandrite Court (Emerald Acres Phase III)

Background Information

Drainage Basin:	Bird Sink
Prior Studies by NWFWMD and/or CDM that identified this issue:	None
Impacted parcels are served by road and/or drainage systems that are:	Public
Proposed improvements are located on property that is:	Public
Development of the impacted property occurred on or before:	1998

Emerald Acres is located on the west side of Crump Road, approximately 0.7 mile north of US 90.

Description of Problem

General Problem Type:	Yard and Street Flooding Outside Easement
Problem Source:	Inadequate Conveyance

Off-site runoff from Miccosukee Hills and Kimberly Hills is bypassed along the north subdivision boundary. The runoff from the lots along Alexandrite Court is intercepted and conveyed to the stormwater facility. High-intensity storm events overwhelm the bypass and the interceptor swales causing the water to overflow the system.

Recommended Solution:

Estimated Cost of Solution	$230,000
Number of Parcels Benefiting from Proposed Improvements	4
Estimated Cost per Parcel Benefiting	$57,500
Implementation Vehicle for Proposed Improvements	Capital Improvement Project

The proposed improvement consists of the construction of approximately 1000 feet of 36 inch concrete pipe to aid drainage along Alexandrite Court. The work also includes the reconstruction of several driveways and grading 800 feet of open channel behind several homes.

Alternate Solutions:

No action will result in continued yard flooding and street flooding and potential greater impacts in storm events more severe than those experienced to date.

Acquiring the four affected parcels is estimated to cost $1,990,000 which is significantly greater than the recommended solution.

Issues to be Resolved During Project Development:

Underground utility conflicts are always a potential within the project area and may result in delays to project implementation.

Attachments:

Vicinity Map
Project Map

P - 1: Alexandrite Ct Vicinity

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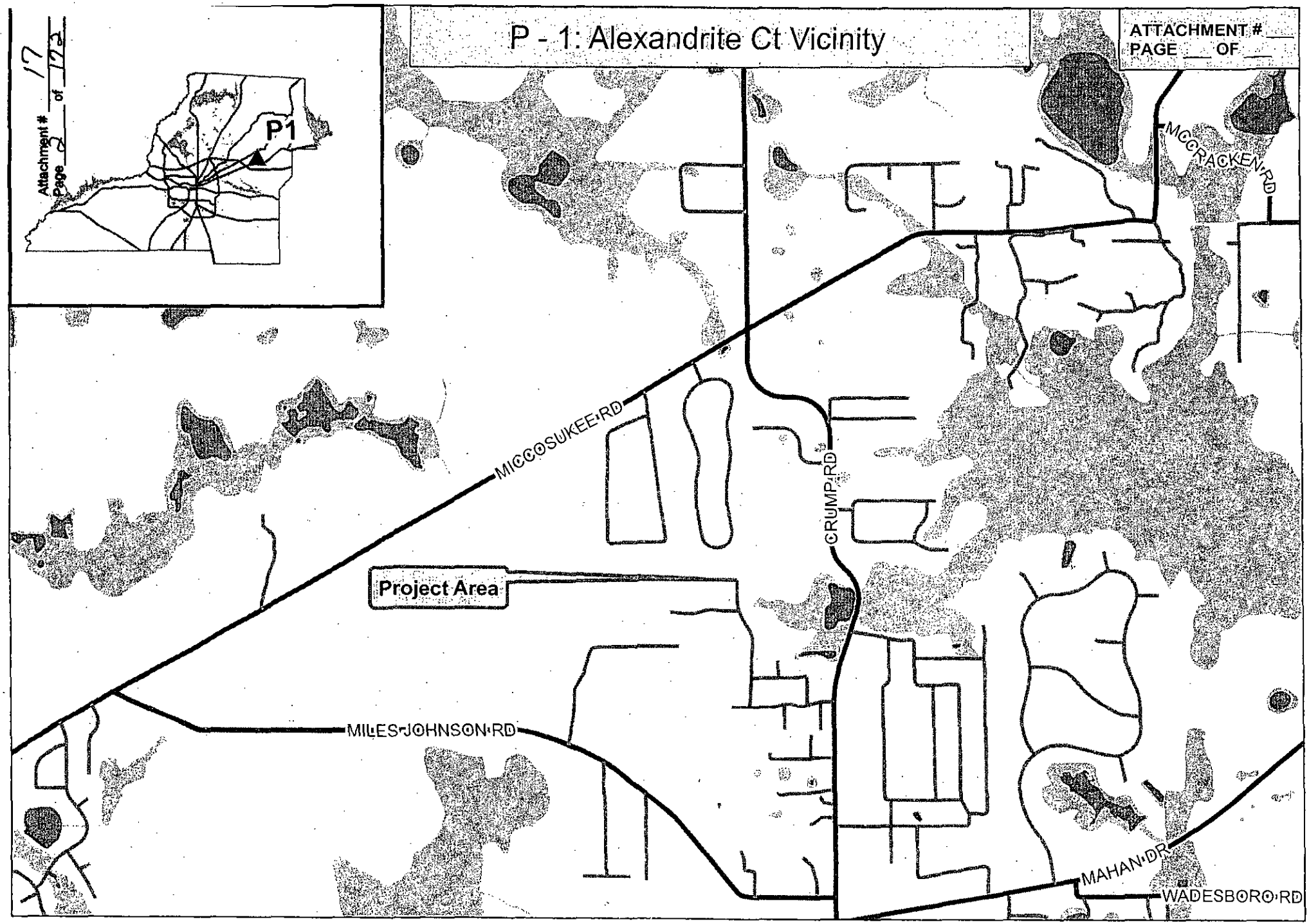

Tallahassee-Leon County GIS
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0 1 Miles

N W E S

Roads
Major Roads
Water Bodies
Wetland

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P - 1: Alexandrite Ct Rd

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Drainage Improvements

ARGYLE LN
KIMBERLY CIR
ALEXANDRITE CT
MARQUIS ST
TOPAZ WAY
SARAWOOD LN
CRUMP RD

N
W E
S

Tallahassee-Leon County GIS
www.tlcgis.org

0 500 1,000 Feet

Waterbody
Wetlands
Buildings
Parcels
Roads
Index Contours
Inter Contours

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P2 - Autumn Woods Way Drainage Improvement

Background Information

Drainage Basin:	Ochlocknee
Prior Studies by NWFWMD and/or CDM that identified this issue:	Yes
Impacted parcels are served by road and/or drainage systems that are:	Public
Proposed improvements are located on property that is:	Public
Development of the impacted property occurred on or before:	1976

Autumn Woods subdivision is located west of Capital Circle NW approximately one mile south of US 27, adjacent to the Lakewood Business Center.

Description of Problem

General Problem Type:	Accessibility
Problem Source:	Conveyance Deficiency

Runoff from approximately 96 acres is directed to a ditch between the Lakewood Business Center and the residential property which crosses under Autumn Woods Way. High-intensity storms overwhelm the cross-drain.

Recommended Solution:

Estimated Cost of Solution	$26,000
Number of Parcels Benefiting from Proposed Improvements	6
Estimated Cost per Parcel Benefiting	$4,300
Implementation Vehicle for Proposed Improvements	Capital Improvement Project

Based on the Stormwater Management Master Plan for Non-Urban Basins completed by CDM (May, 1995), a 24" Cross Drain needs to be added to Autumn Woods Way between Rustic Court and Doonesbury Way to convey the flow without flooding the road. The estimated cost is based on this recommendation.

Alternate Solutions:

No action will result in continued accessibility problems during major storm events.

Issues to be Resolved During Project Development:

There are potential underground utility conflicts within the project area that were not evaluated as part of the current cost estimate. Utilities will need to be located and a plan developed and implemented to relocate any conflicts prior to constructing the drainage improvements. This recommended improvement is based on the study completed by CDM in 1995; the stormwater model may need to be updated to confirm the recommendation with the current topographic data.

Attachments:

Vicinity Map
Project Map
Cost Estimate Detail

P - 2: Autumn Woods Vicinity

ATTACHMENT # ___
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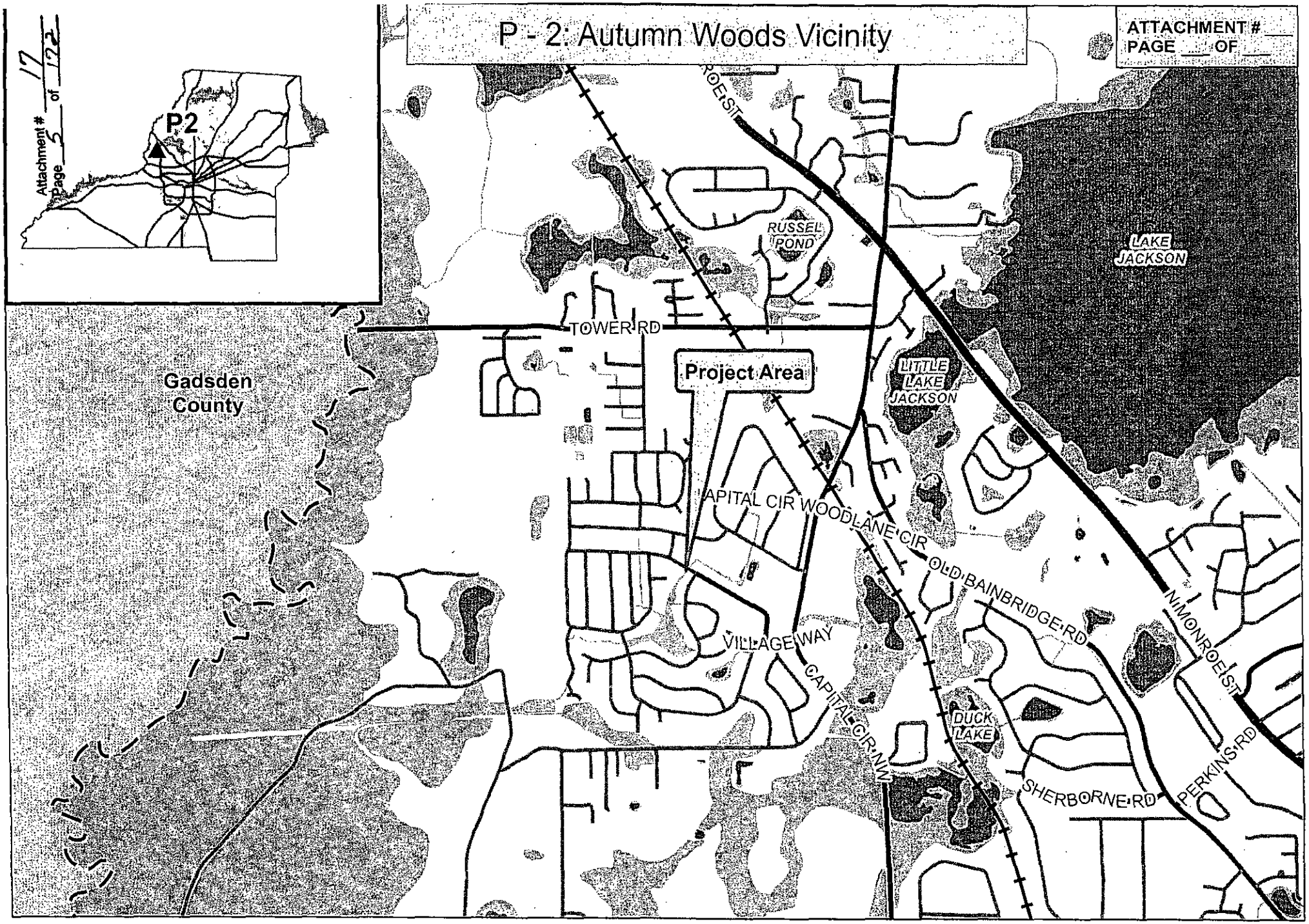

Tallahassee-Leon County GIS
www.tlcgis.org

0 1 Miles

N W E S

Railroad
Roads
Major Roads
Water Bodies
Wetland

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P - 2: Autumn Woods

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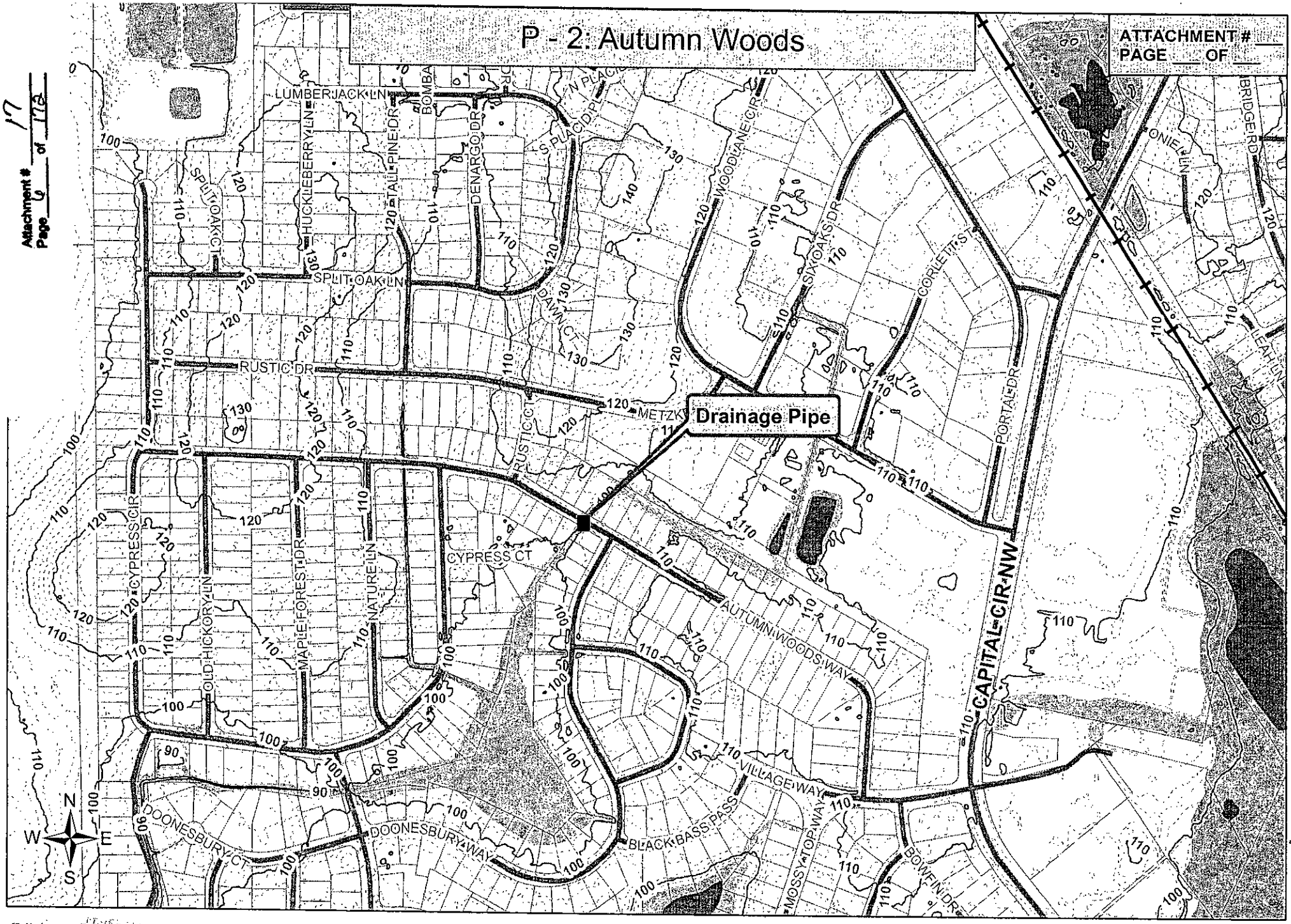

Tallahassee-Leon County GIS
www.tlcgis.org

0 500 1,000 Feet

Waterbody
Wetlands
Parcels
Roads
Railroad
Index Contours
Inter Contours

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P3 - Ben Boulevard

Background Information

Drainage Basin:	Lake Jackson
Prior Studies by NWFWMD and/or CDM that identified this issue:	None
Impacted parcels are served by road and/or drainage systems that are:	Public
Proposed improvements are located on property that is:	Public and Private
Development of the impacted property occurred on or before:	1990

Lakeview Acres is a private subdivision located on the northwest shore of Lake Jackson, adjacent to the Bent Tree and Harbinwood Estates subdivisions.

Description of Problem

General Problem Type:	Structure Flooding
Problem Source:	Conveyance

Lakeview Acres lies at the base of a fairly steep grade. Approximately 23 acres drains to the subdivision entrance at the intersection of McLeod Drive and Ben Boulevard. A shallow roadside ditch on Ben Boulevard is maintained by Leon County. The privately maintained section of McLeod Drive does not appear to adequately convey the runoff from its intersection at Ben Blvd. High-intensity storm events overwhelm the roadside systems resulting in reported structural, yard and road flooding.

Recommended Solution:

Estimated Cost of Solution	$350,000
Number of Parcels Benefiting from Proposed Improvements	4
Estimated Cost per Parcel Benefiting	$87,500
Implementation Vehicle for Proposed Improvements	Capital Improvement Project

The proposed improvement consists of establishing a conveyance system in the southern potion of the project area and regrading approximately 2000 feet of open ditches and associated outfall channel to aid drainage along Ben Boulevard and McLeod Drive. The work also includes the reconstruction of several driveways due to culvert enlargements.

Alternate Solutions:

No action will result in continued yard flooding and structural flooding and potential greater impacts in storm events more severe than those experienced to date. Acquisition of the impacted properties would require $1,782,000 which is significantly greater than the recommended solution.

Issues to be Resolved During Project Development:

Underground utility conflicts are always a potential within the project area and may result in delays to project implementation. Easements will need to be acquired to accomplish all improvements

Attachments:

Vicinity Map
Project Map

P - 3: Ben Blvd Vicinity

ATTACHMENT # ___
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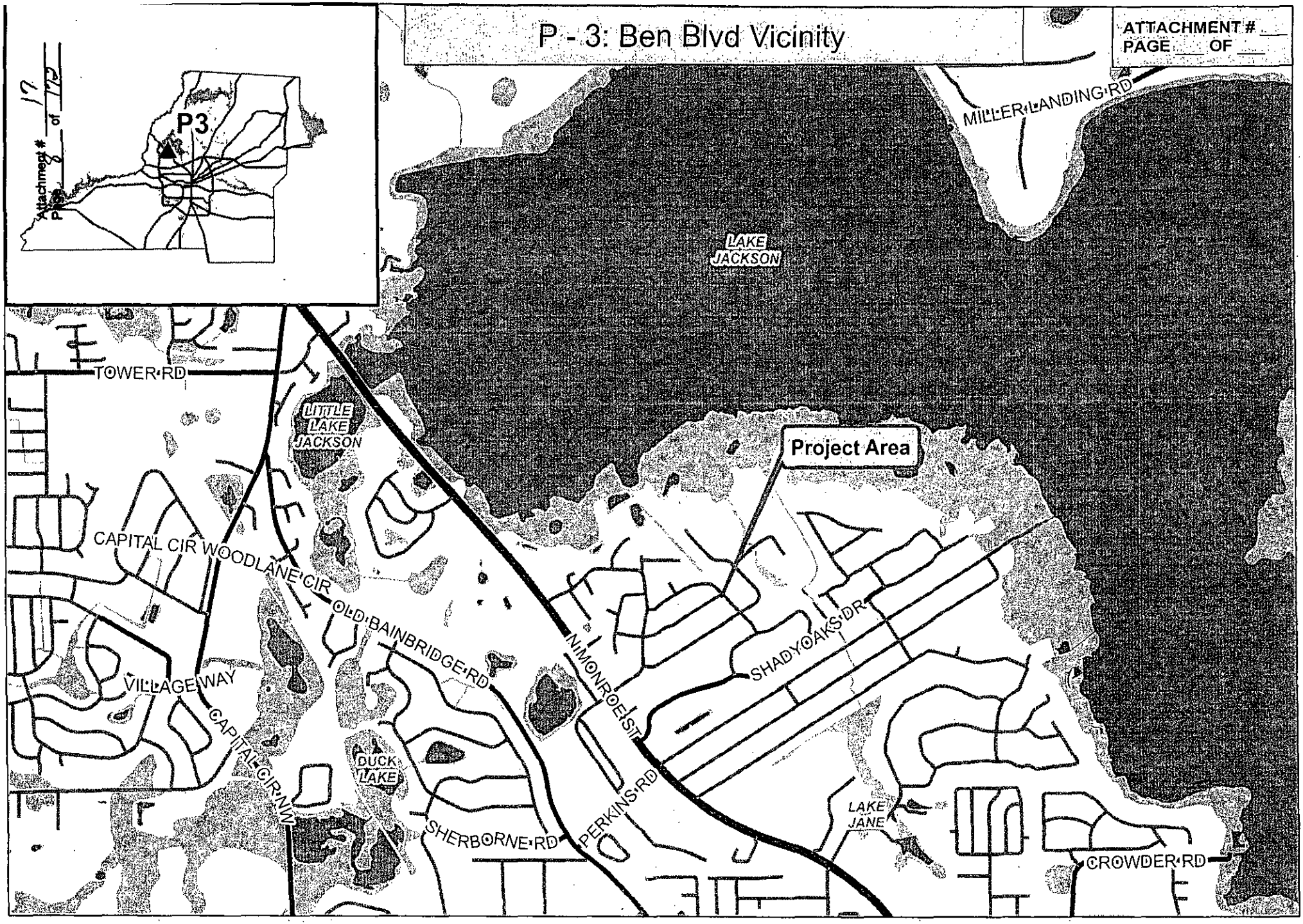

Tallahassee-Leon County GIS
www.TLCGIS.org

0 1 Miles

N W E S

Roads
Major Roads
Water Bodies
Wetland

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P - 3: Ben Blvd

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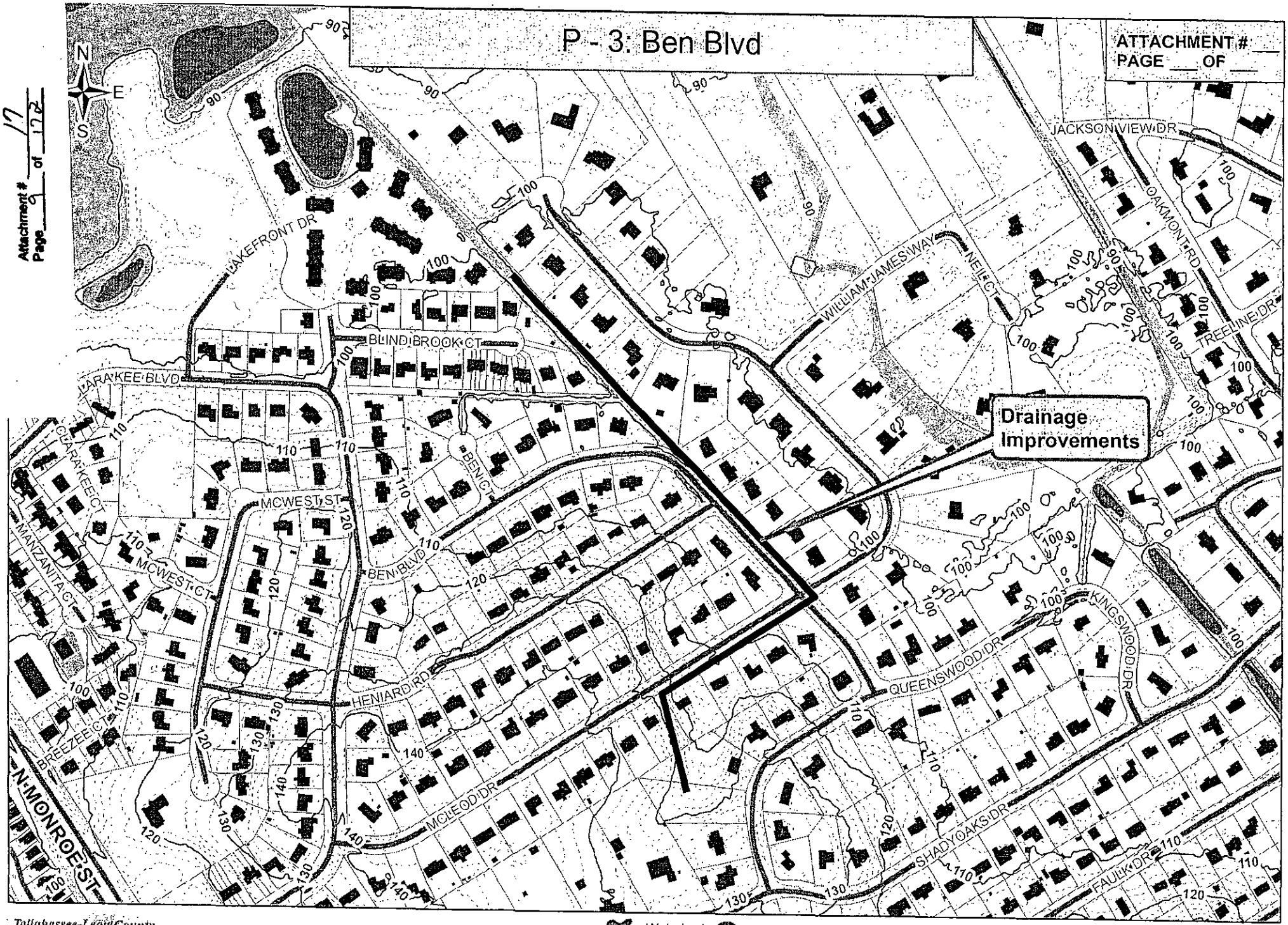

Tallahassee-Leon County

0 500 1,000 Feet

Waterbody
Wetlands
Buildings
Parcels
Roads
Index Contours
Inter Contours

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P4 - Edenfield – Barfield Road Area

Background Information

Drainage Basin:	Lafayette
Prior Studies by NWFWMD and/or CDM that identified this issue:	No
Impacted parcels are served by road and/or drainage systems that are:	Public
Proposed improvements are located on property that is:	Public
Development of the impacted property occurred on or before:	1952

Description of Problem

General Problem Type:	Structural Flooding & Access to Property
Problem Source:	Conveyance

Resident currently experiences structural and yard flooding during major storm events due to property located at the bottom of a 20-acre closed basin. Flooding condition prevents access to the residential home in the area.

Recommended Solution:

Estimated Cost of Solution	$70,000
Number of Parcels Benefiting from Proposed Improvements	1
Estimated Cost per Parcel Benefiting	$70,000
Implementation Vehicle for Proposed Improvements	CIP

The proposed improvement consists of the construction of a raised inlet and 300' of concrete pipe along Edenfield Road within Leon County Rights-of way. The inlet elevation will be set to protect the residence from structural flooding. The length of pipe will outfall within the existing roadside ditch.

Alternate Solutions:

No action will result in continued structural flooding to property in storm events more severe than those experienced to date. Acquisition of the impacted property for $415,000 is a significantly greater cost than the recommended solution.

Issues to be Resolved During Project Development:

Underground utility conflicts are always a potential within the project area and may result in delays to project implementation. The stormwater discharge to the Edenfield Road ditch will flow toward the Lafayette Oaks subdivision, but only in extreme storm events. Since the Lafayette Oaks outfall obstruction was removed in emergency conditions after the Pedrick Road Stormwater Facility was completed, the Edenfield Road discharge will ultimately be conveyed to the Pedrick facility. The modifications to the Lafayette Oaks Subdivision drainage system which were identified in the Tri-Basin Stormwater Study still must be completed by its homeowner's association.

Attachments:

Vicinity Map
Project Map

P - 4: Edenfield/Barfield Vicinity

ATTACHMENT # ___
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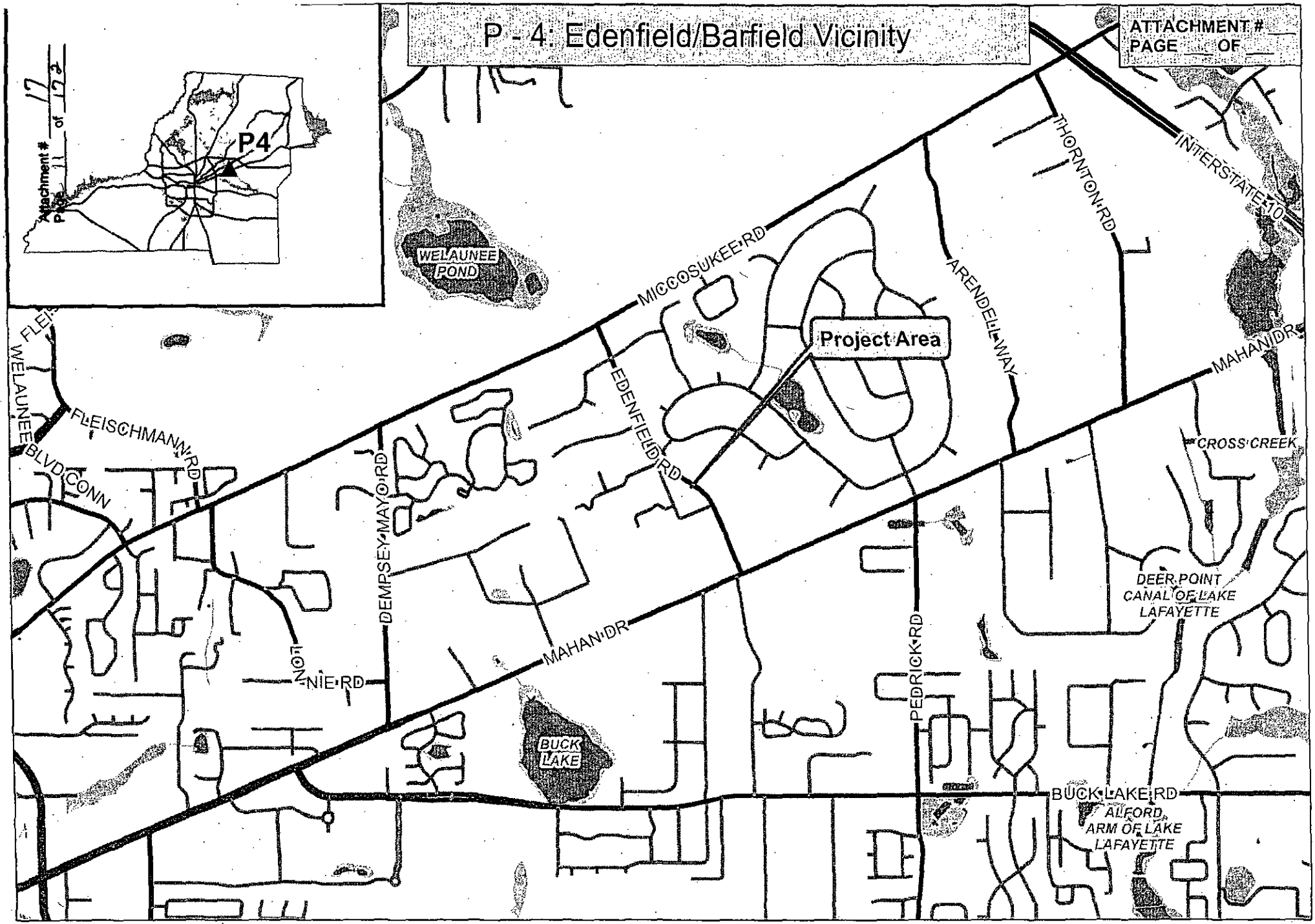

Tallahassee-Leon County GIS

0 1 Miles

N W E S

Roads
Major Roads
Water Bodies
Wetland

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P - 4: Edenfield/Barfield Roads Area

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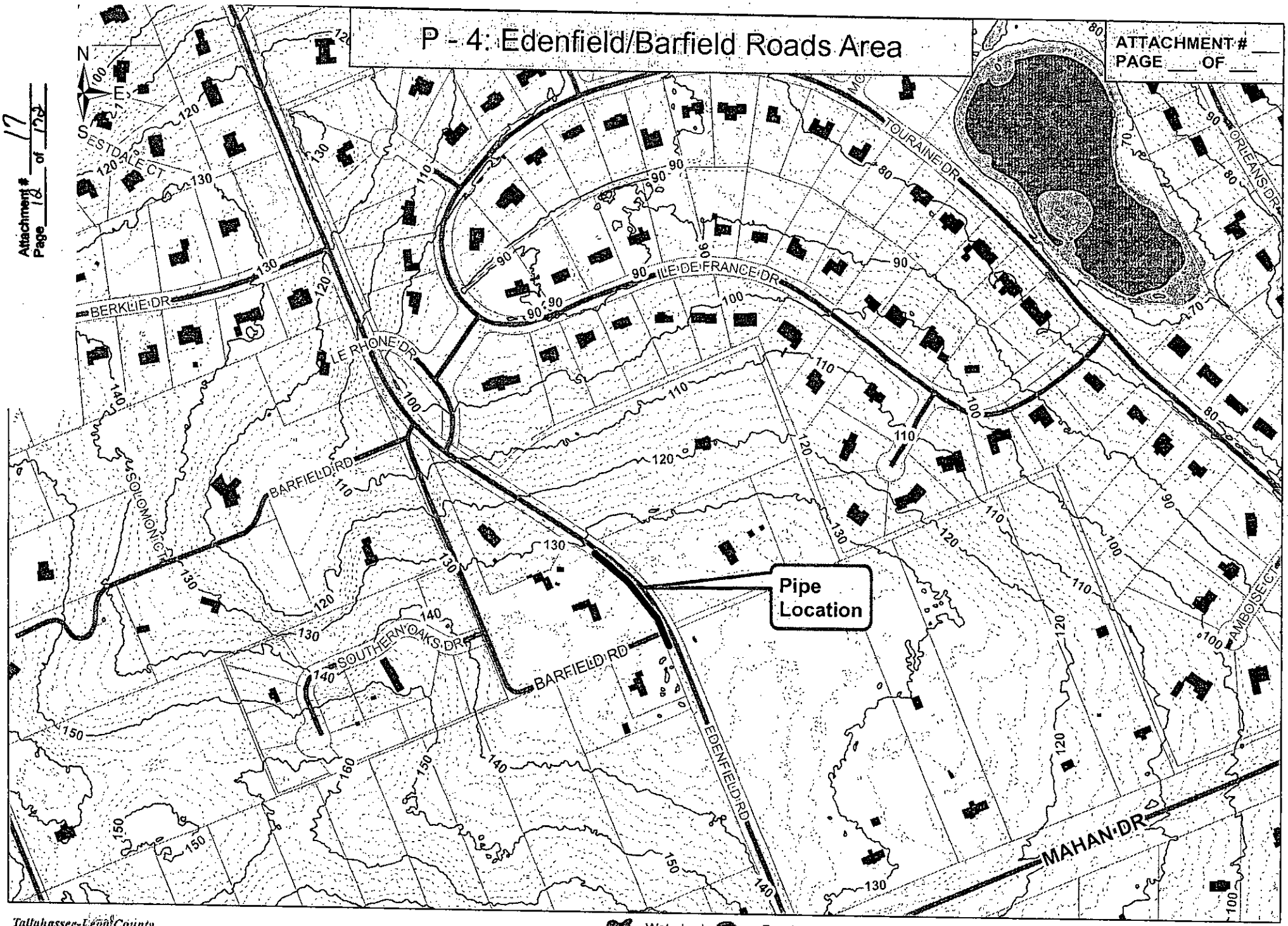

Tallahassee-Leon County GIS

0 500 1,000 Feet

Waterbody
Wetlands
Buildings
Parcels
Roads
Index Contours
Inter Contours

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P5 - Edinberg Estates

Background Information

Drainage Basin:	Lake Jackson
Prior Studies by NWFWMD and/or CDM that identified this issue:	No
Impacted parcels are served by road and/or drainage systems that are:	Public
Proposed improvements are located on property that is:	Public
Development of the impacted property occurred on or before:	1976

Edinberg Estates is located on Old Bainbridge Road across from the Canopy Oaks Elementary School.

Description of Problem

General Problem Type:	Yard Flooding
Problem Source:	Conveyance

Residents between Rockingham Road and Old Bainbridge Road currently experience yard flooding outside a Leon County Drainage Easement during major storm events. Approximately 56 acres drains to an attenuation area before crossing under Old Bainbridge Road. *High-intensity storms* overwhelm the pond and cross-drain, causing floodwater to spread beyond the easement limits. Damage to homes has not been reported.

Recommended Solution:

Estimated Cost of Solution	$150,000
Number of Parcels Benefiting from Proposed Improvements	6
Estimated Cost per Parcel Benefiting	$25,000
Implementation Vehicle for Proposed Improvements	CIP

The proposed improvement consists of expanding existing storage within Leon County Easement outside of the Canopy Road area. Replace and extend existing crossdrain under Old Bainbridge Road and acquire a 30'x60' easement on the north of Old Bainbridge Road.

Alternate Solutions:

No action will result in continued yard flooding to property in storm events more severe than those experienced to date. Acquiring the impacted properties would cost $2,470,000 which is significantly greater than the recommended solution.

Issues to be Resolved During Project Development:

Underground utility conflicts are always a potential within the project area and may result in delays to project implementation. Some of the construction is proposed within the Canopy Road area and may require special considerations.

Attachments:

Vicinity Map
Project Map

P - 5: Edinberg Estates Vicinity

ATTACHMENT # ___
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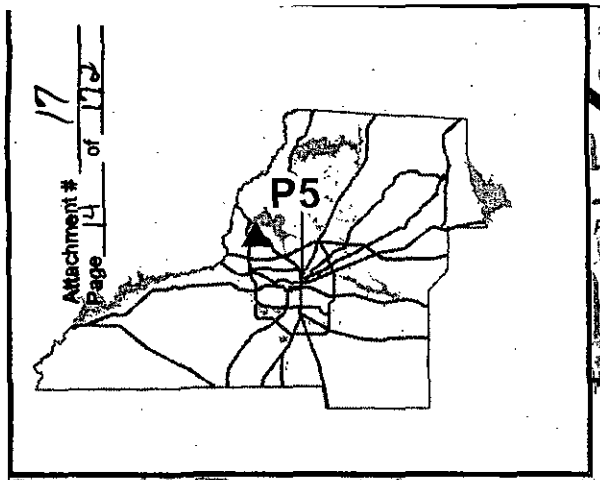

RUSSEL POND
LAKE JACKSON
LITTLE LAKE JACKSON
Project Area
CAPITAL CIR WOODLANE CIR
OLD BAINBRIDGE RD
N MONROE ST
SHADY OAKS DR
VILLAGE WAY
CAPITAL CIR NW
DUCK LAKE
SHERBORNE RD
PERKINS RD
LAKE JANE
FRED GEORGE RD
CROWDER RD

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0 1 Miles

N W E S

Roads
Major Roads
Water Bodies
Wetland

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P - 5: Edinberg Estates

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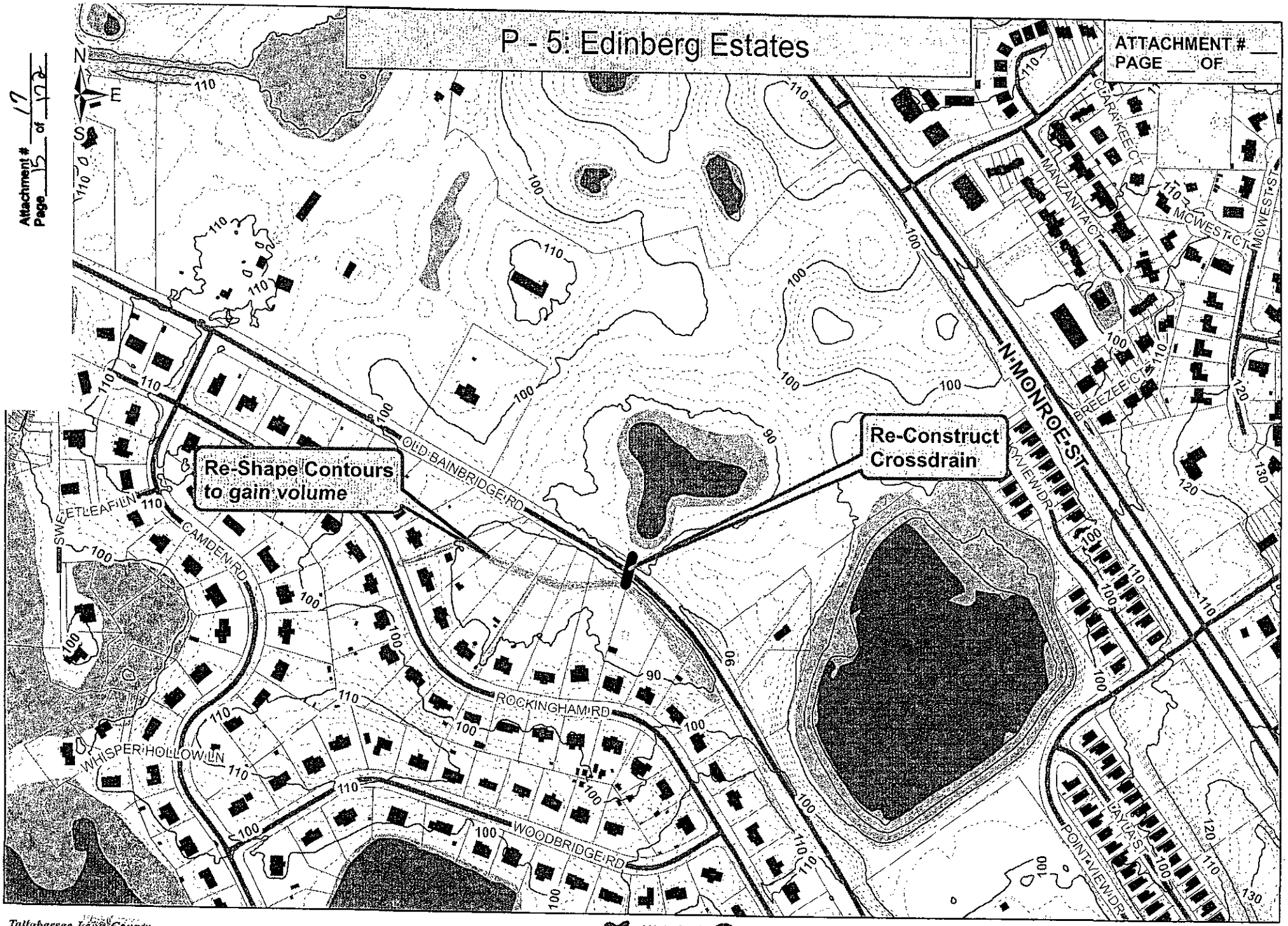

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0 500 1,000 Feet

Waterbody
Wetlands
Buildings
Parcels
Roads
Index Contours
Inter Contours

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P6 - Hawkbill Court

Background Information

Drainage Basin:	Lake Jackson
Prior Studies by NWFWMD and/or CDM that identified this issue:	None
Impacted parcels are served by road and/or drainage systems that are:	Public
Proposed improvements are located on property that is:	Public
Development of the impacted property occurred on or before:	1985

Hawkbill Court is part of Lakeshore Estates Unit 6, west of Meridian Road and north of Lakeshore Road.

Description of Problem

General Problem Type:	Structural Flooding
Problem Source:	Conveyance Deficiency

The resident adjacent to the cross-drain under John Hancock Drive reports structural flooding during major storm events. Approximately 80 acres drains from Linene Woods and Hunters Crossing upstream of this culvert. The area east of John Hancock is the primary flowway for the Lexington Branch of Ford's Arm and is also subject to flooding.

Recommended Solution:

Estimated Cost of Solution	$80,000
Number of Parcels Benefiting from Proposed Improvements	20
Estimated Cost per Parcel Benefiting	$4,000
Implementation Vehicle for Proposed Improvements	Capital Improvement Project

The proposed solution is to enlarge the downstream ditch for 150 ft to provide an equivalent cross sectional area to match one 24" CMP and double 3'x5' ECMP's. The improved ditch will be concrete lined with 3' depth, 8' bottom width and 26' top width. However, this is assuming no tail-water conditions because the area east of John Hancock Dr is subject to flooding during major storm events.

Alternate Solutions:

No action will result in continued yard flooding and minor structural flooding and potential greater impacts in storm events more severe than those experienced to date.
Acquisition of the site experiencing structural flooding would cost approximately $400,000.

Issues to be Resolved During Project Development:

The design and permitting process for this proposed project may identify additional work elements to ensure no adverse impact to the downstream properties. Also, the existing 30' wide easement will be a challenge for construction and future maintenance. Therefore, additional right-of-way acquisition may be necessary at the time of permit review.

Attachments:

Vicinity Map
Project Map

P - 6: Hawkbill Ct Vicinity

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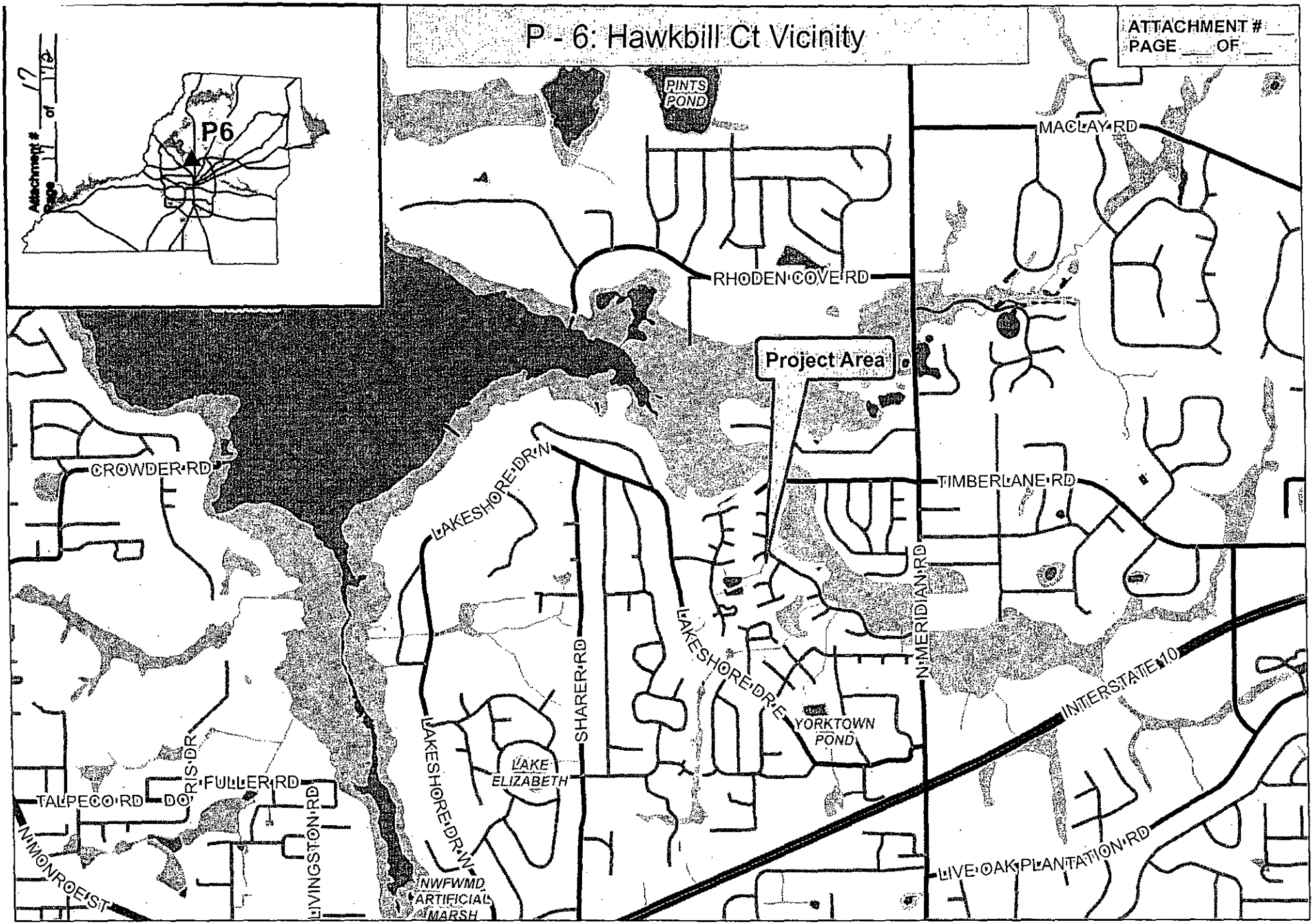

Tallahassee-Leon County GIS
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0 1 Miles

N W E S

Roads
Major Roads
Water Bodies
Wetland

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P - 6: Hawkbill Ct

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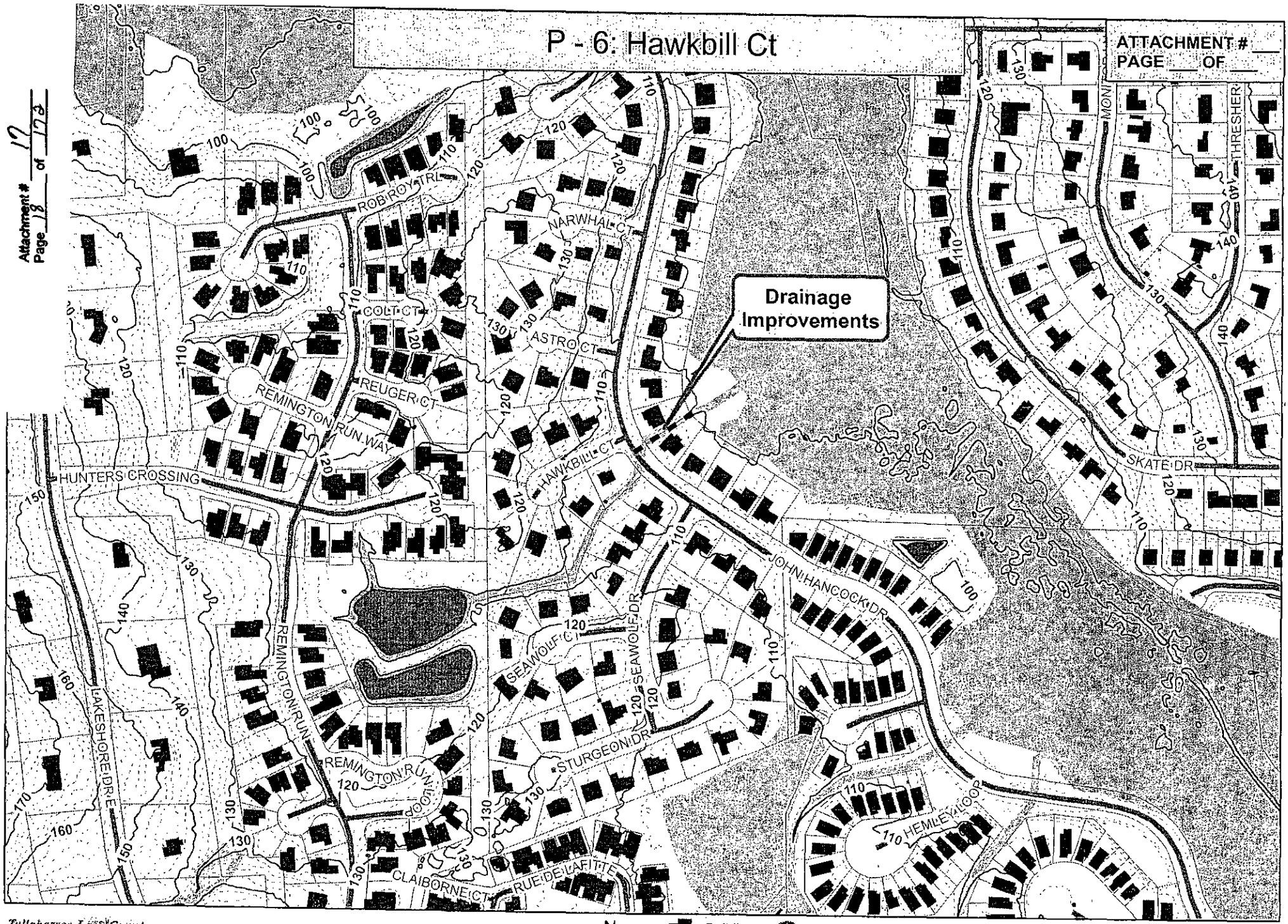

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0 500 1,000 Feet

N W E S

Buildings
Waterbody
Wetlands
Parcels
Roads
Index Contours
Inter Contours

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P7 - Killearn Acres III

Background Information

Drainage Basin:	Lafayette
Prior Studies by NWFWMD and/or CDM that identified this issue:	None
Impacted parcels are served by road and/or drainage systems that are:	Public
Proposed improvements are located on property that is:	Public
Development of the impacted property occurred on or before:	1971

Two separate areas within Killearn Acres are addressed: one drainage easement leading to Lake Sheelin and one flowway to Lake Kanturk.

Description of Problem

General Problem Type:	Parcel Isolation, Structural & Yard Flooding
Problem Source:	Conveyance Deficiency

High-intensity storm events overwhelm the existing drainage system for approximately 10 acres from Montrose Trail under Joe Cotton Trail and Alan-A-Dale Trail, causing structural and yard flooding. The drainage way between Forward Pass and Jet Pilot Trails lies near the bottom of over 1,600 acres and is also overwhelmed during high-intensity storms,

Recommended Solution:

Estimated Cost of Solution	$730,000
Number of Parcels Benefiting from Proposed Improvements	20
Estimated Cost per Parcel Benefiting	$36,500
Implementation Vehicle for Proposed Improvements	Capital Improvement Project

This project will realign and enlarge the existing cross drain under Joe Cotton Trail to provide a more direct flow path under the roadway, increase flow capacity, and minimize flooding outside of drainage easements. In addition, the project will enlarge the two existing open drainage ways that run between and behind the homes on Forward Pass Trail. These channels are located within existing County drainage easements. Replace double cross drain under Forward Pass Trail with single larger culvert to increase flow capacity and minimize debris fouling. Enlarge road side ditch along west side of Forward Pass Trail and replace driveway culverts to increase flow capacity.

Alternate Solutions:

No action will result in continued yard flooding and structural flooding and potential greater impacts in storm events more severe than those experienced to date. Acquiring the affected sites would cost $5,750,000 which is substantially greater than the proposed solution.

Issues to be Resolved During Project Development:

Underground utility conflicts are always a potential within the project area and may result in delays to project implementation. Easements may need to be acquired to accomplish all improvements.

Attachments:

Vicinity Map
Project Map

P - 7: Killearn Acres III Vicinity

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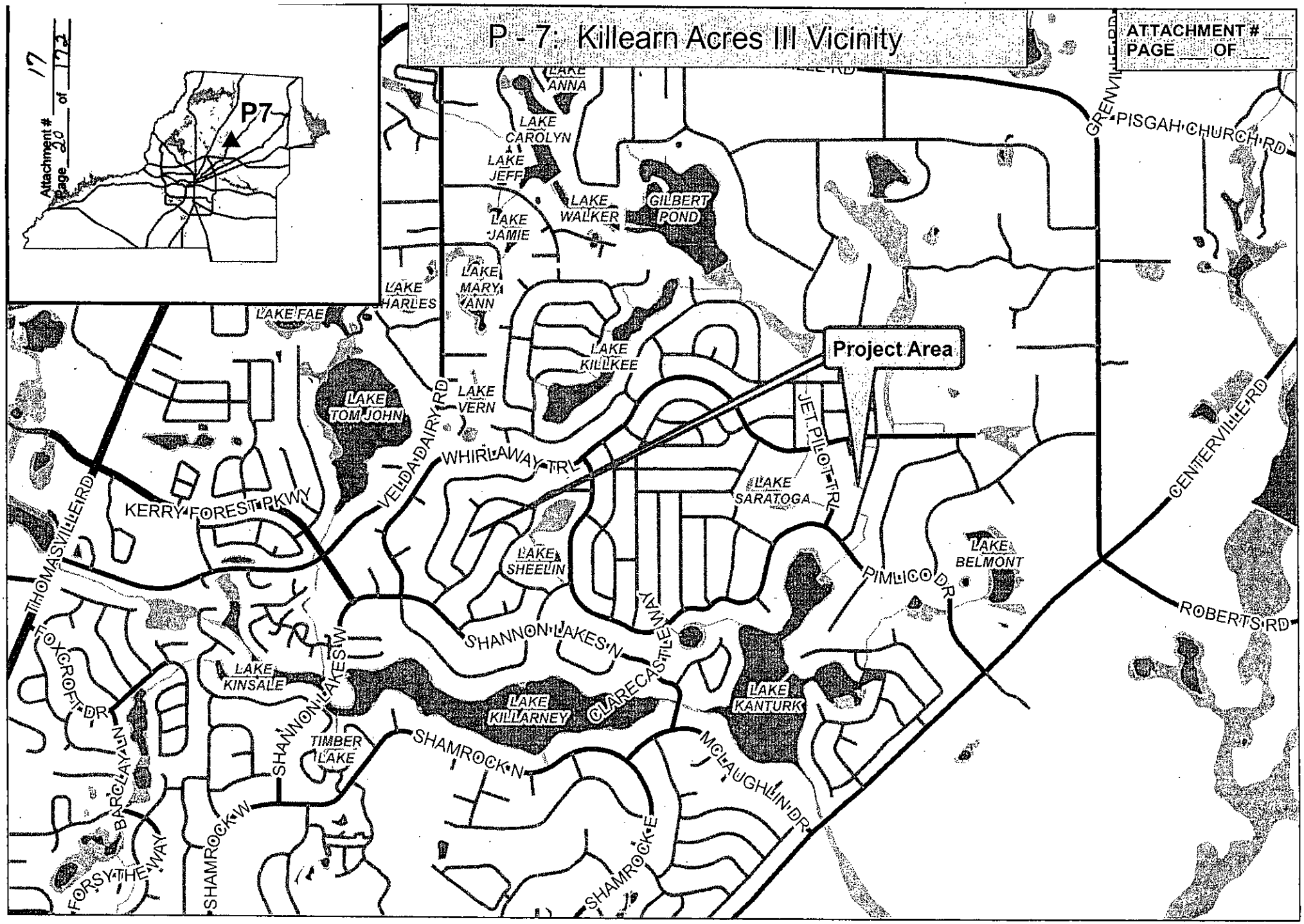

Tallahassee-Leon County GIS
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0 1 Miles

N W E S

Roads
Major Roads
Water Bodies
Wetland

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P - 7: Killearn Acres III

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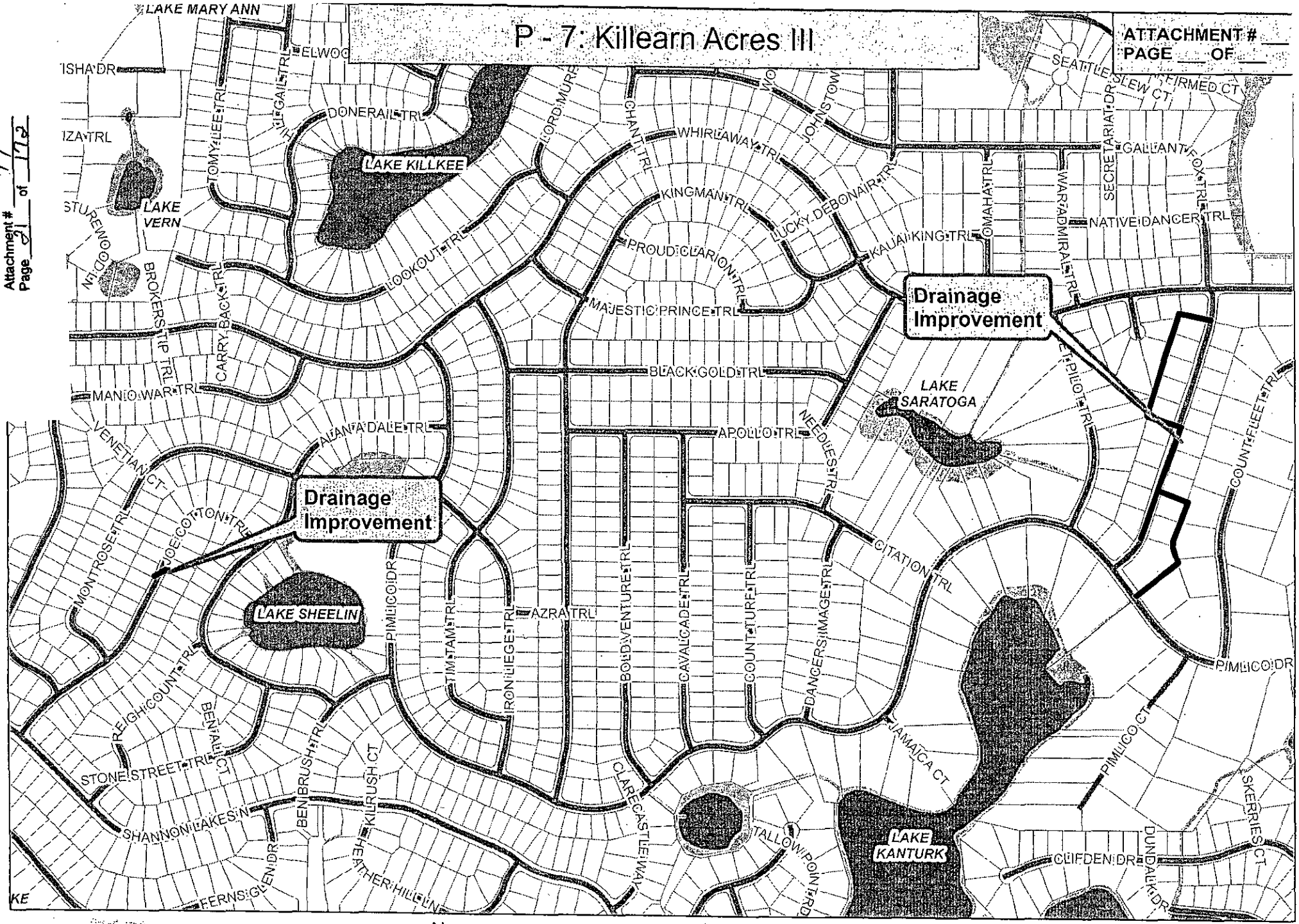

Tallahassee-Leon County GIS
WWW.TLCGIS.ORG

0 500 1,000 Feet

N W E S

Waterbody
Roads
Wetlands
Parcels

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P8 - Lakeview Drive

Background Information

Drainage Basin:	Lake Munson
Prior Studies by NWFWMD and/or CDM that identified this issue:	None
Impacted parcels are served by road and/or drainage systems that are:	Public
Proposed improvements are located on property that is:	Public & Private
Development of the impacted property occurred on or before:	1960

Lakeview Drive runs parallel to Orange Avenue and separates Grassy Lake from Lake Bradford.

Description of Problem

General Problem Type:	Structural, Driveway and Roadway Access, and Property Flooding
Problem Source:	Conveyance Deficiency

Flooding occurs when the Bradford Brook and the West Drainage Ditch combine to overtop Lakeview Drive. High-intensity rainfall within the developed urban area forces the West Drainage Ditch runoff south over Lakeview Drive into Lake Bradford. However, high-volume rainfall in the Apalachicola National Forest causes Bradford Brook to overtop Lakeview Drive flowing north into Grassy Lake.

Recommended Solution:

Estimated Cost of Solution	$730,000
Number of Parcels Benefiting from Proposed Improvements	25
Estimated Cost per Parcel Benefiting	$29,200
Implementation Vehicle for Proposed Improvements	Capital Improvement Project

The proposed solution is to raise Lakeshore Drive to Elevation 38.00 and install a 4' x 12' box culvert to keep the roadway in service during most storms. Environmental concerns were raised by Lake Bradford residents regarding the West Drainage Ditch flow impacts on Lake Bradford. Final design will restrict flow between Grassy Lake and Lake Bradford without increased flooding.

Alternate Solutions:

The Blueprint 2000 Capital Circle Southwest project has the potential to significantly impact flow conditions at this location. County efforts to coordinate the Lakeview Drive project development with the Blueprint project, including a possible joint project, have delayed implementation at Lakeview.

No action will result in continued yard flooding and minor structural flooding, with potentially greater impacts in storm events more severe than those experienced to date.

Issues to be Resolved During Project Development:

The proposed change in the Grassy Lake and Lake Bradford connection requires review by FEMA to ensure no increase in flood elevations results. Additional right-of-way is needed to elevate the road, but may difficult to obtain due to residential development. Final design and permitting may identify additional work elements to ensure no adverse impact to the downstream properties.

Attachments:

Vicinity Map
Project Map

P - 8: Lakeview Dr Vicinity

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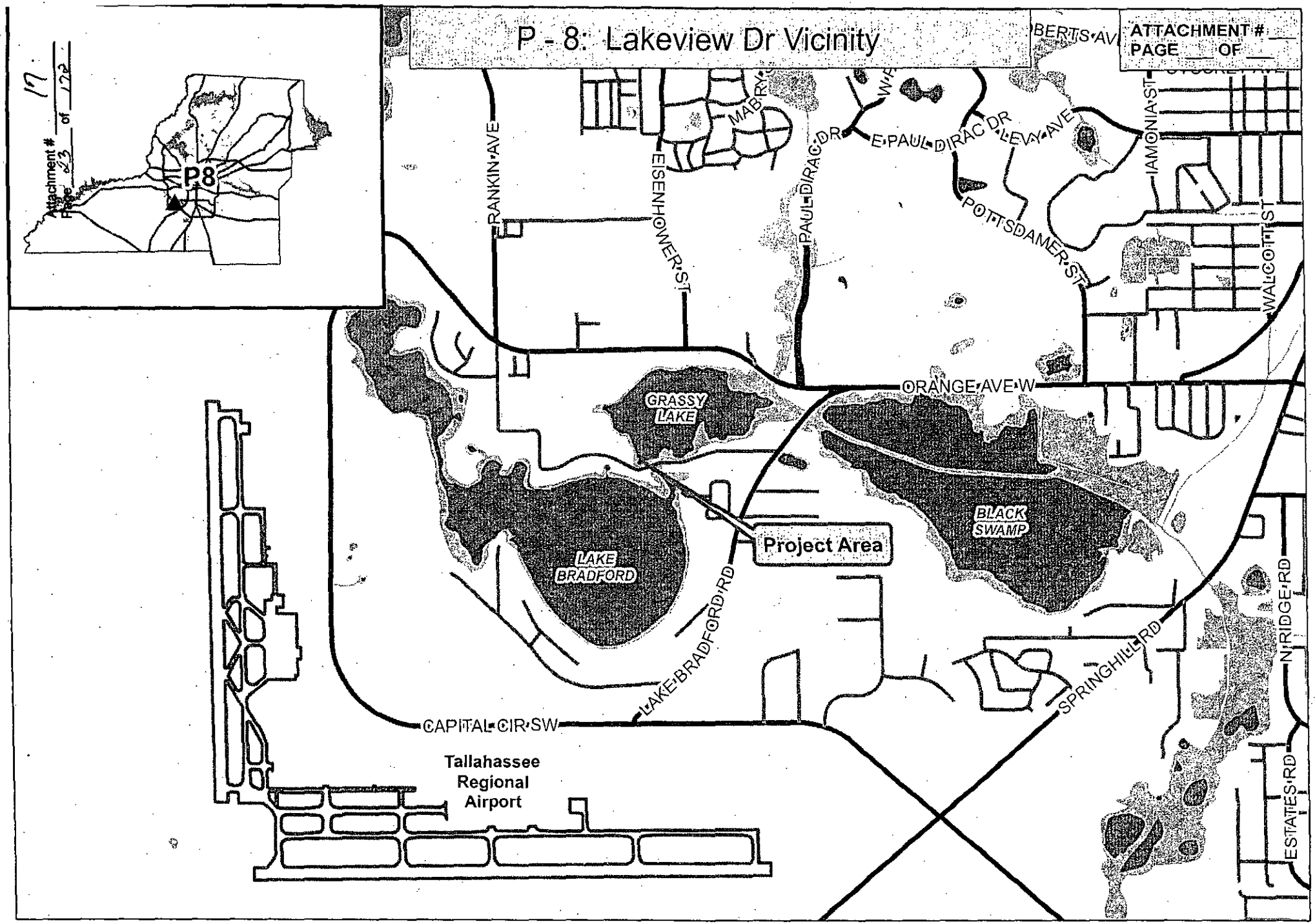

Tallahassee-Leon County GIS
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0 1 Miles

N W E S

Roads
Major Roads
Water Bodies
Wetland

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P - 8: Lakeview Dr

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GRASSY LAKE

Drainage Improvement

Road Improvement

LAKE BRADFORD

LAKEVIEW DR

LAKE BRADFORD RD

PHILBRICK DR

CYPRESS HAWK LN

MARISE ST

GEORGE ST

JEWELL DR

CATHEDRAL DR

GERALD DR

40

50

N
W
E
S

Tallahassee-Leon County GIS
www.tlcgis.org

0 500 1,000 Feet

Waterbody
Wetlands
Buildings
Parcels
Roads
Index Contours
Inter Contours

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P9 - Lawndale Road

Background Information

Drainage Basin:	Lake Lafayette
Prior Studies by NWFWMD and/or CDM that identified this issue:	None
Impacted parcels are served by road and/or drainage systems that are:	Public
Proposed improvements are located on property that is:	Public
Development of the impacted property occurred on or before:	1977

Lawndale Road is the westernmost road in the Sedgefield subdivision, and runs parallel to the City's main drainage ditch for Sugar Mill.

Description of Problem

General Problem Type:	Structural Flooding
Problem Source:	Conveyance Deficiency

Residents currently experience structural flooding during major storm events when the Sugar Mill ditch overflows through Sedgefield.

Recommended Solution:

Estimated Cost of Solution	$70,000
Number of Parcels Benefiting from Proposed Improvements	3
Estimated Cost per Parcel Benefiting	$23,000
Implementation Vehicle for Proposed Improvements	Capital Improvement Project

The proposed solution is to construct a 2-foot high earth embankment for 800 ft long along east side of the drainage ditch to prevent the overflow to Sedgefield. The required 10-foot wide easement is assumed to be dedicated to Leon County at no cost from the homeowners.

The Sugar Mill ditch overflow appears to result from high water levels in the Buck Lake Road ditch. To address this issue, 50 feet of 24" RCP will be constructed to drain roadside water from the north ditch to the south, into the existing wetland outfall flowing east to Nabb Road.

Alternate Solutions:

No action will result in continued yard flooding and minor structural flooding and potential greater impacts in storm events more severe than those experienced to date.

Issues to be Resolved During Project Development:

The additional easement acquisition is assumed to be no cost to Leon County. A detailed stormwater analysis will be required for design and permitting, particularly to ensure no adverse impact to the downstream properties. Additional work may be identified during the design and permitting.

The cross-drain construction is limited to the existing Buck Lake Road Right-of-Way.

Attachments:

Vicinity Map
Project Map

P - 9: Lawndale Dr Vicinity

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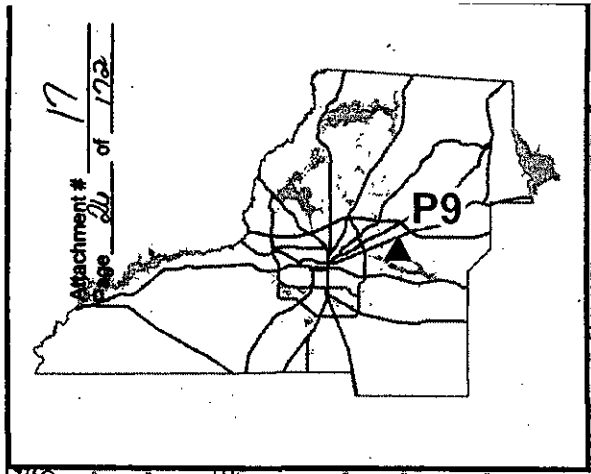

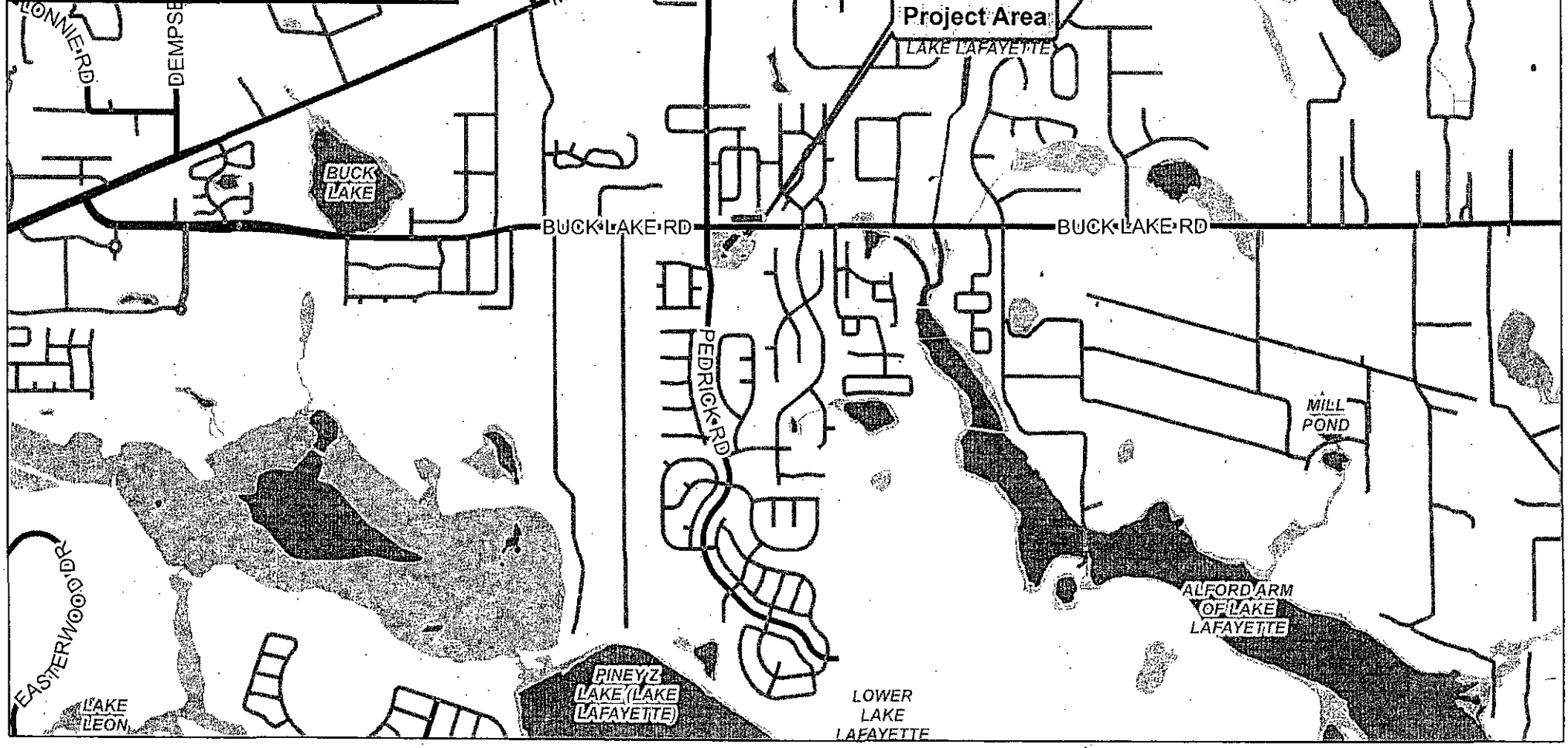

Tallahassee-Leon County GIS
www.tlcgis.org

0 1 Miles

N W E S

Roads
Major Roads
Water Bodies
Wetlands

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P - 9: Lawndale Dr

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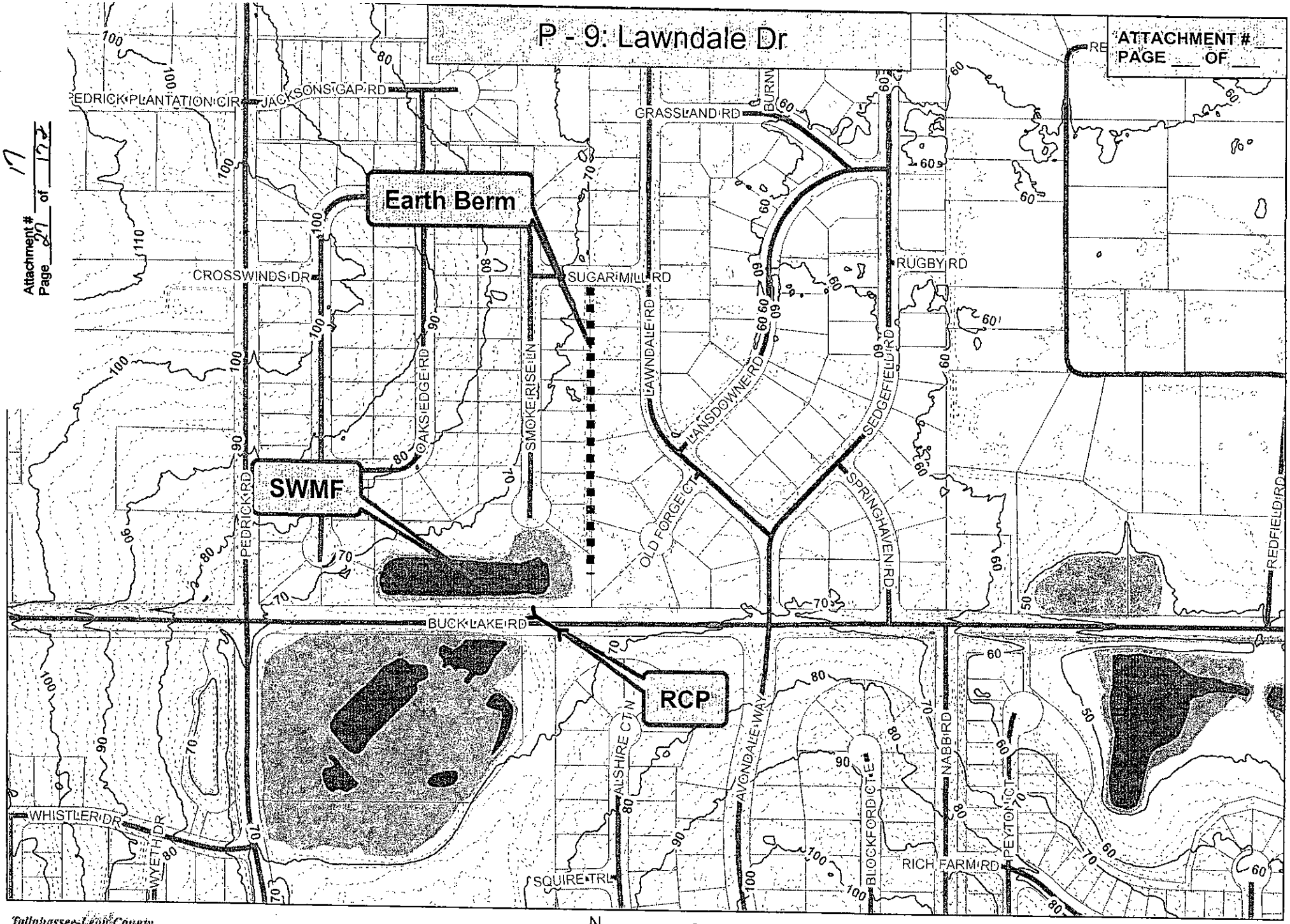

Tallahassee-Leon County GIS
www.tlcgis.org

0 500 1,000 Feet

N W E S

Waterbody
Wetland
Parcels
Roads
Index Contours
Inter Contours

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P10 - Maylor/Taylor Roads

Background Information

Drainage Basin:	Lafayette
Prior Studies by NWFWMD and/or CDM that identified this issue:	None
Impacted parcels are served by road and/or drainage systems that are:	Public
Proposed improvements are located on property that is:	Public
Development of the impacted property occurred on or before:	1959

Maylor Road crosses the bottom of a 431-acre closed basin located north of Buck Lake between Highway 90 and Miccosukee Road.

Description of Problem

General Problem Type:	Property isolated due to Flooded Roads
Problem Source:	Closed Basin

Flooding conditions prevent access to the residential homes in the area, and flooding is confined to roadway and yards.

Recommended Solution:

Estimated Cost of Solution	$320,000
Number of Parcels Benefiting from Proposed Improvements	9
Estimated Cost per Parcel Benefiting	$35,556
Implementation Vehicle for Proposed Improvements	Capital Improvement Project

The proposed improvement consists of the construction of approximately 1300 feet of concrete pipe to drain the closed basin south to the Highway 90 right of way.

Alternate Solutions:

No action will result in continued yard flooding and access issues. Acquiring the six most severely-impacted properties would cost $2.8 million, significantly more than the recommended solution.

Issues to be Resolved During Project Development:

Easements will need to be identified and obtained from the adjacent property owners. Permitting by the FDOT and regulatory agencies will address the interbasin transfer of stormwater, as well as ensure no adverse impact results from the discharge.

Attachments:

Vicinity Map
Project Map

P - 10: Maylor & Taylor Rds Vicinity

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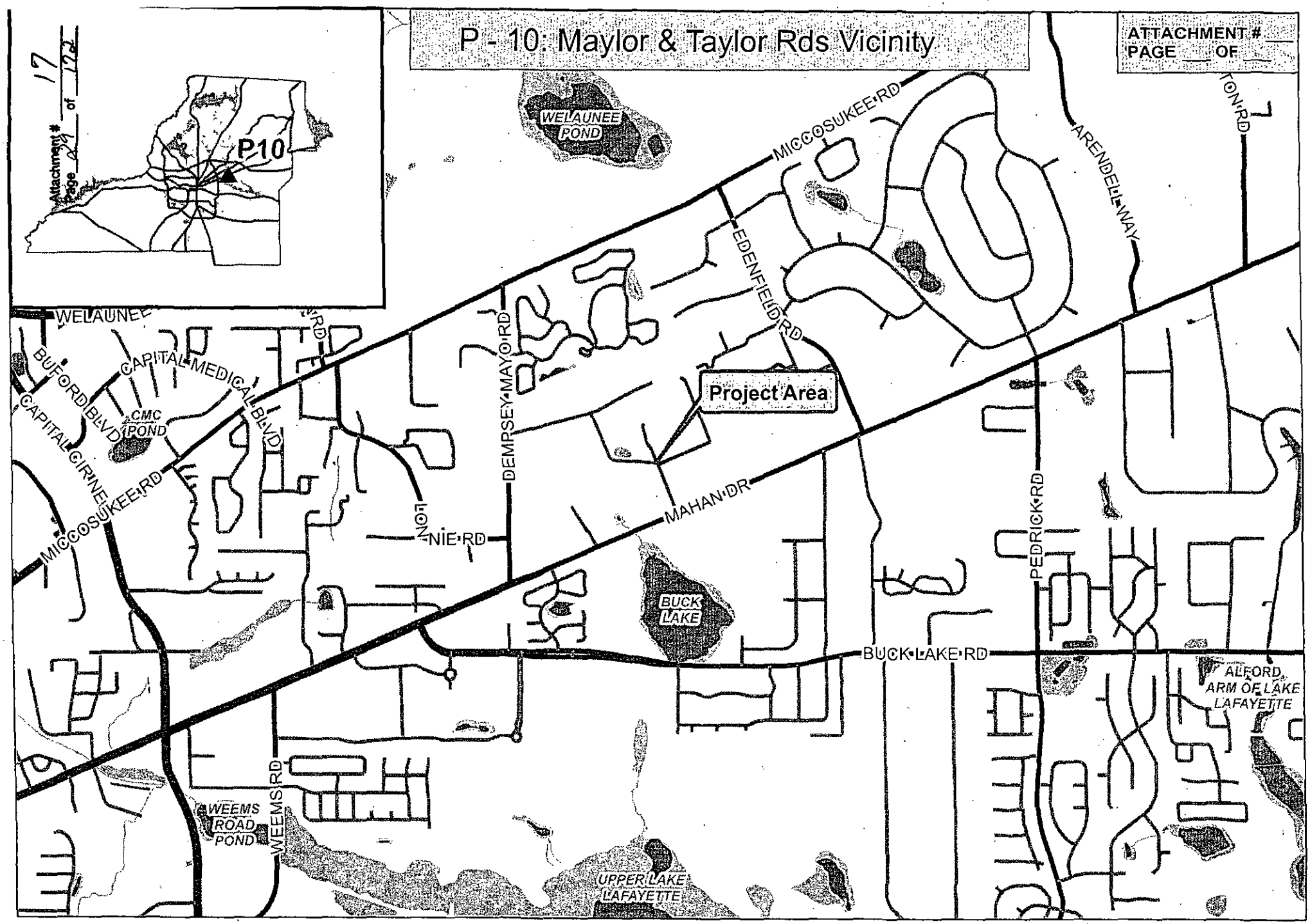

Tallahassee-Leon County GIS
www.tlcgis.org

0 1 Miles

N W E S

Roads
Major Roads
Water Bodies
Wetland

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P - 10: Maylor & Taylor Rds

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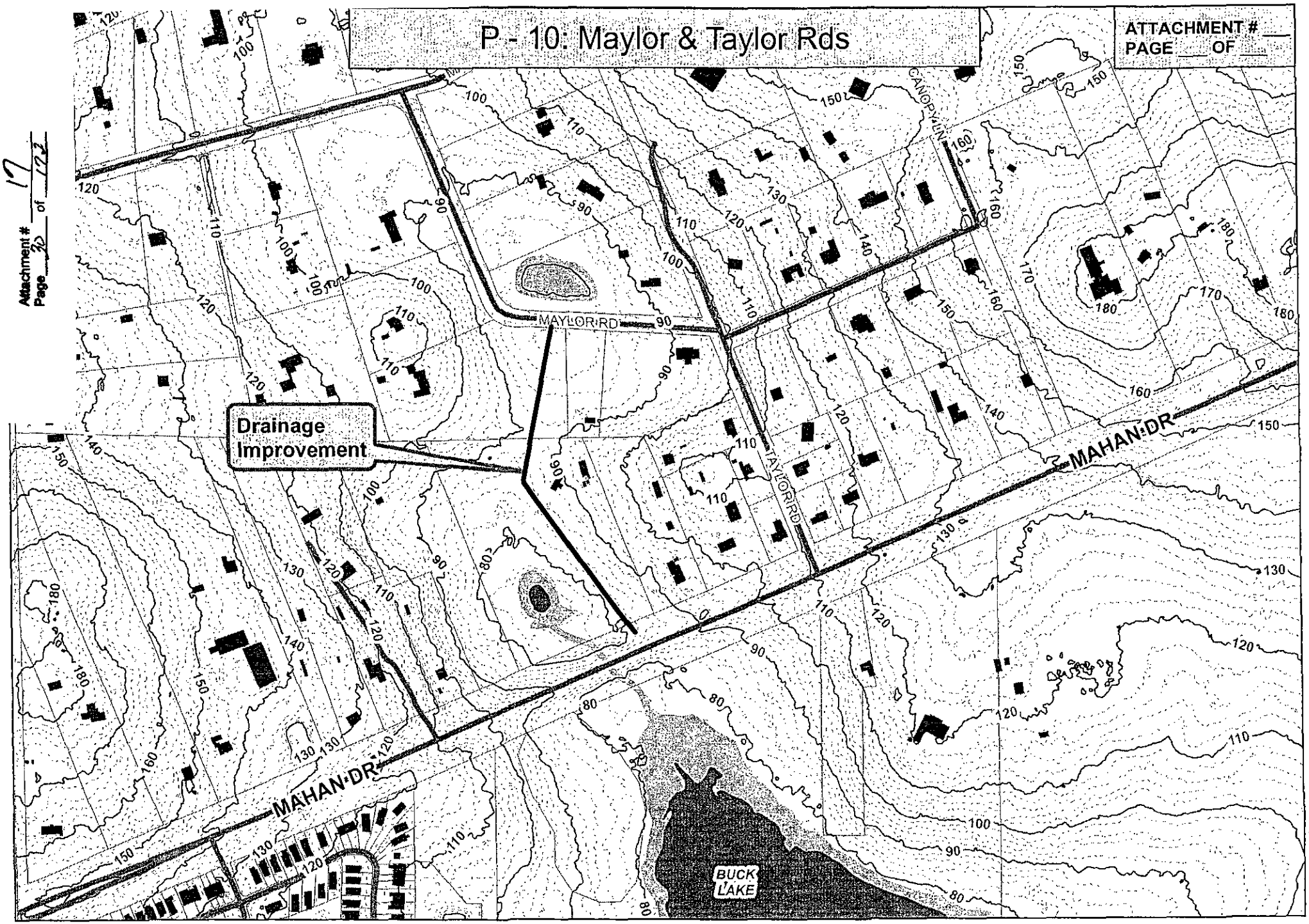

Tallahassee-Leon County GIS
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0 500 1,000 Feet

N W E S

Waterbody
Wetlands
Buildings
Parcels
Roads
Index Contours
Inter Contours

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P11 - Parkhill Road

Background Information

Drainage Basin:	Lake Lafayette
Prior Studies by NWFWMD and/or CDM that identified this issue:	None
Impacted parcels are served by road and/or drainage systems that are:	Public
Proposed improvements are located on property that is:	Public & Private
Development of the impacted property occurred on or before:	1965

Parkhill Road begins at Chaires Crossroad, immediately north of the CSX railroad, and extends approximately 0.7 mile to the northeast. Only the beginning 0.4 mile is County-maintained.

Description of Problem

General Problem Type:	Structural Flooding
Problem Source:	Conveyance

Property owners currently experience structural flooding during major storm events due to inadequate conveyance capacity along the existing roadway and Chaires Crossroad.

Recommended Solution:

Estimated Cost of Solution	$60,000
Number of Parcels Benefiting from Proposed Improvements	11
Estimated Cost per Parcel Benefiting	$5,455
Implementation Vehicle for Proposed Improvements	Capital Improvement Project

The proposed solution is to construct a 1,000-foot drainage ditch along Parkhill Road toward the Chaires Crossroad culvert near the school, and improve the stormwater pipes south to Lake Lafayette. A detailed stormwater analysis will be required to evaluate the proposed solutions at time of permit review. The additional right-of-way/easement is assumed to be donated by the property owners.

Alternate Solutions:

No action will result in continued yard flooding and structural flooding and potential greater impacts in storm events more severe than those experienced to date.

Issues to be Resolved During Project Development:

The additional easement acquisition is assumed to be at no cost to Leon County. A stormwater study for this proposed work is necessary to demonstrate no adverse impact to the downstream properties. The cost associated with additional work which may be identified during a detailed stormwater study is not included in the current cost estimate.

Attachments:

Vicinity Map
Project Map

P - 11: Parkhill Rd Vicinity

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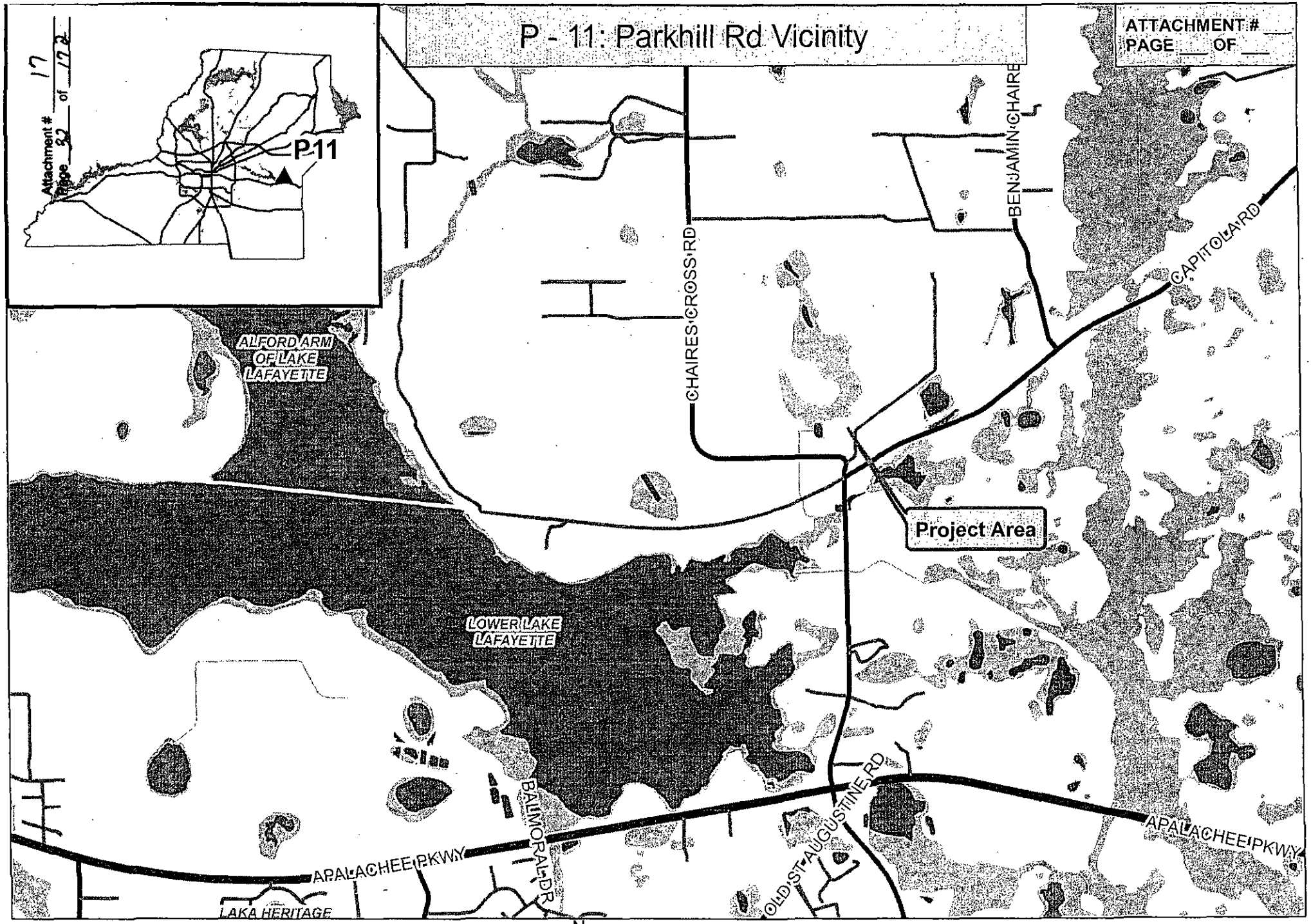

Tallahassee-Leon County GIS
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0 1 Miles

N W E S

Roads
Major Roads
Water Bodies
Wetland

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P - 11: Parkhill Rd

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Ditch Improvements

PARKHILL RD
CAPITOLA RD
CHAIRES CROSS RD
ROAD TO THE LAKE

Tallahassee-Leon County GIS
www.tlcgis.org

0 500 1,000 Feet

N W E S

Buildings
Waterbody
Wetlands
Parcels
Roads
Index Contours
Inter Contours

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P12 - Portsmouth Circle/Apalachee Parkway

Background Information

Drainage Basin:	Lafayette
Prior Studies by NWFWMD and/or CDM that identified this issue:	None
Impacted parcels are served by road and/or drainage systems that are:	Public
Proposed improvements are located on property that is:	Public
Development of the impacted property occurred on or before:	1973

Portsmouth Circle is located in the Meadows at Woodrun subdivision, extending from Louvinia Drive to Balmoral Drive.

Description of Problem

General Problem Type:	Structural and Yard Flooding
Problem Source:	Conveyance Deficiency

Residents currently experience structure and yard flooding during major storm events due to inadequate conveyance capacity in an existing drainage system north of Portsmouth Circle. The paved ditch intercepts runoff from the north and Louvinia Drive, then directs the off-site runoff around the homes to a cross-drain. Flooding conditions do not prevent access to the residential homes in the area.

Recommended Solution:

Estimated Cost of Solution	$80,000
Number of Parcels Benefiting from Proposed Improvements	6
Estimated Cost per Parcel Benefiting	$13,333
Implementation Vehicle for Proposed Improvements	Capital Improvement Project

The proposed improvement consists of constructing approximately 350 feet of 2-foot high concrete wall to raise the residential side of the existing concrete ditch. Also, 135 feet of existing 24-inch pipe downstream of the ditch will be increased to 36-inch pipe to better convey the runoff

Alternate Solutions:

No action will result in continued yard flooding and minor structural flooding and potential greater impacts in storm events more severe than those experienced to date. Acquisition of the impacted properties would cost $2.9 million, significantly more than the recommended solution.

Issues to be Resolved During Project Development:

Underground utility conflicts are always a potential within the project area and may result in delays to project implementation. Removal of fences or vegetation may be required on private property.

Attachments:

Vicinity Map
Project Map

P - 12: Portsmouth Circle Vicinity

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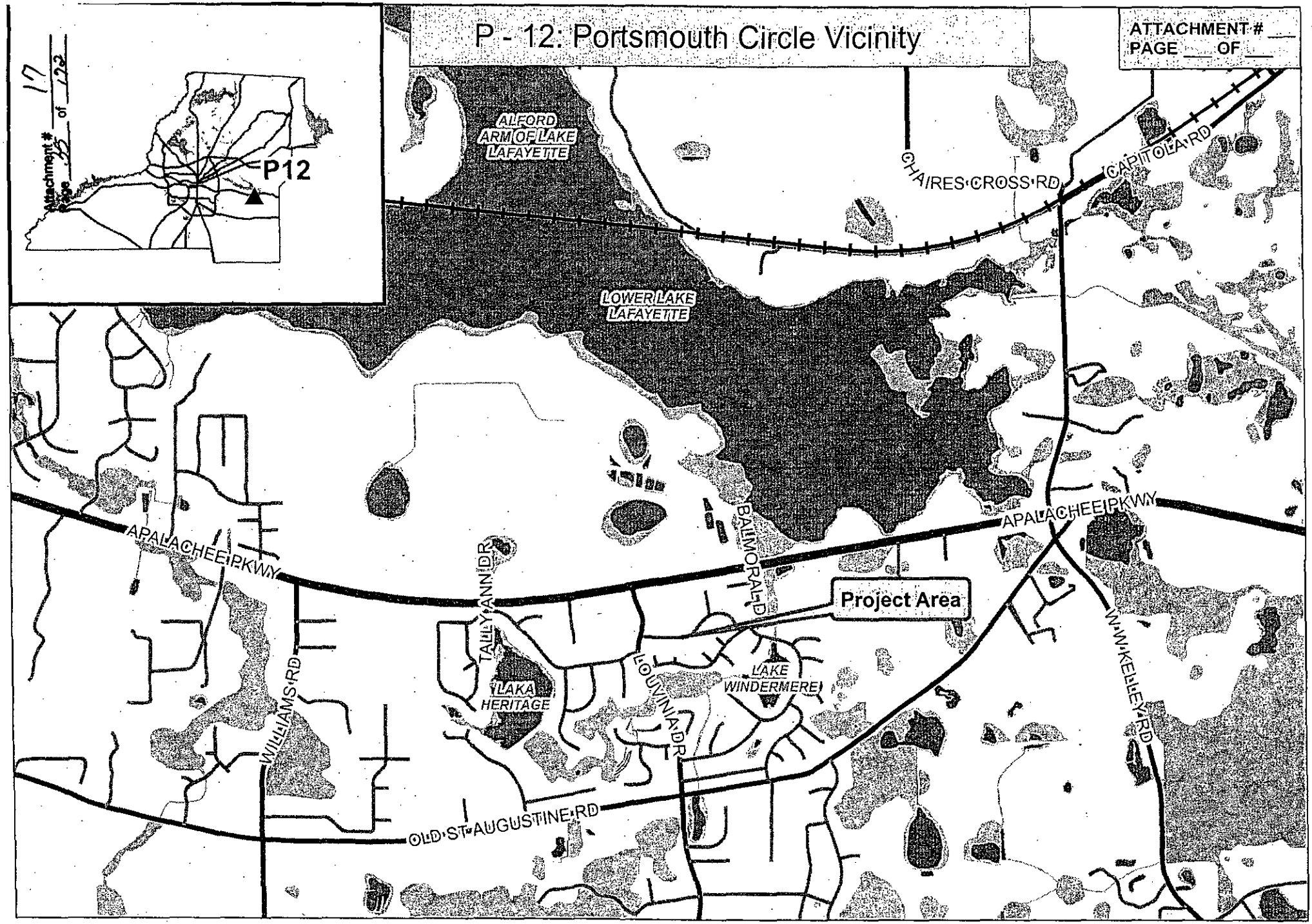

Tallahassee-Leon County GIS
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0 1 Miles

N W E S

Railroad
Roads
Major Roads
Water Bodies
Wetland

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P - 12: Portsmouth Circle

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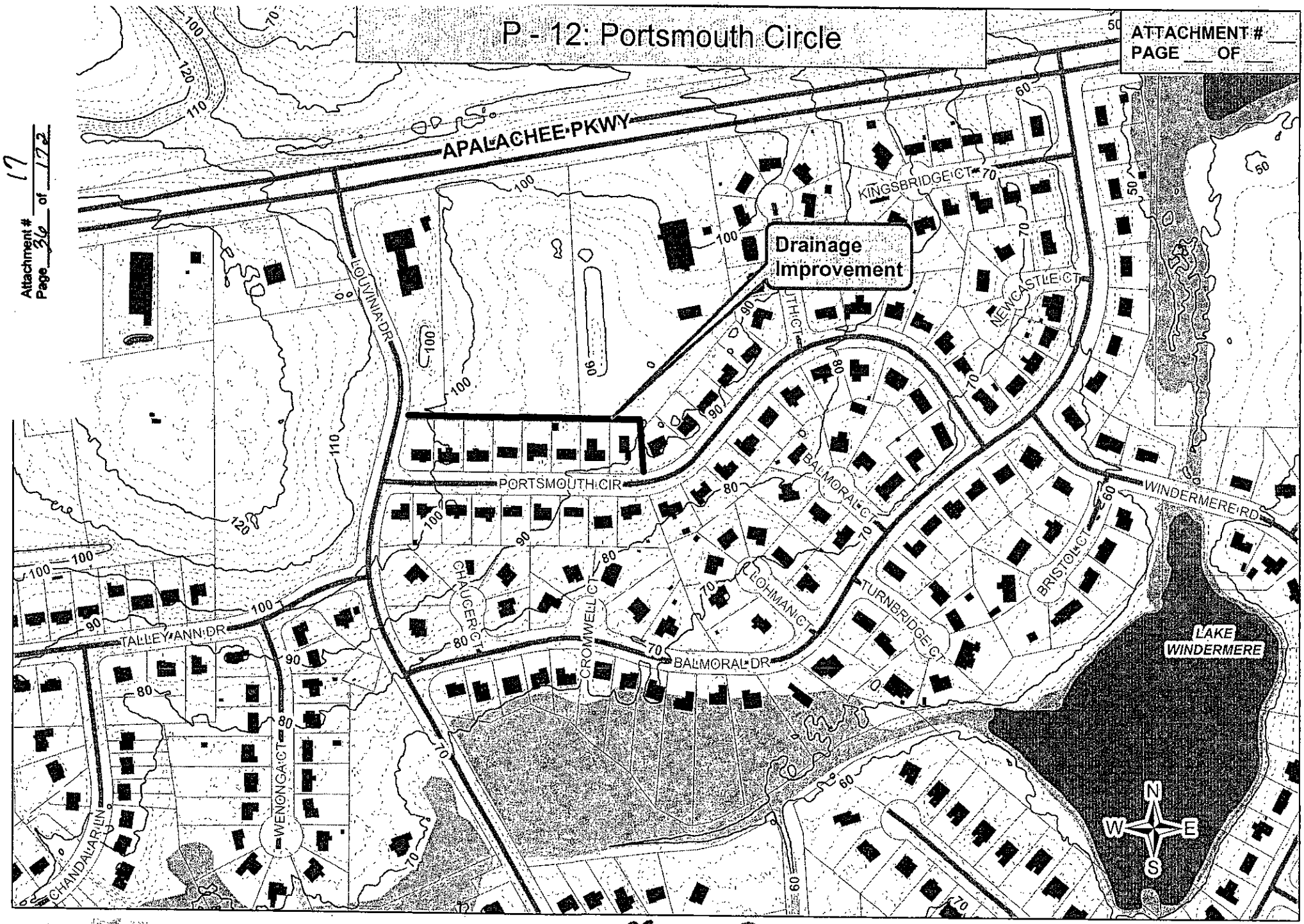

Tallahassee-Leon County GIS
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0 500 1,000 Feet

Waterbody
Wetlands
Buildings
Parcels
Roads
Index Contours
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P13 - Raymond Tucker Road

Background Information

Drainage Basin:	Lafayette
Prior Studies by NWFWMD and/or CDM that identified this issue:	No
Impacted parcels are served by road and/or drainage systems that are:	Public
Proposed improvements are located on property that is:	Public
Development of the impacted property occurred on or before:	1982

The project area is north of US 27 from Raymond Tucker Road on the east to Weeping Willow Way on the west. The contributing area south of US 27 includes 835 acres, extending more than ½ mile south of Old St. Augustine Road, and combines with 536 acres north of US 27 to flow into Lower Lake Lafayette.

Description of Problem

General Problem Type:	Property isolated due to flooded roads
Problem Source:	Conveyance

The low area of Raymond Tucker Road at the crossdrain goes underwater during high-intensity rainfall events, isolating residents north of crossdrain. Properties adjacent to the crossdrain experience yard flooding. The private roads west of Raymond Tucker Road have also been overtopped or washed-out by the floodwater, isolating residents of the Windwood Hills and Golden Pheasant subdivisions, due to the limited capacity of the road cross-drains and adjacent storage areas.

Recommended Solution:

Estimated Cost of Solution	$700,000
Number of Parcels Benefiting from Proposed Improvements	164
Estimated Cost per Parcel Benefiting	$4,268
Implementation Vehicle for Proposed Improvements	CIP

The cross-drains at Raymond Tucker Road, Golden Pheasant Drive, East Windwood Way and Weeping Willow Way will be enlarged and reinforced to accommodate the peak flows and water levels. An upland area will be excavated to provide additional storage and receive flow from the improved channel west of Raymond Tucker Road.

Alternate Solutions:

No action will result in continued roadway access flooding and potential greater impacts in storm events more severe than those experienced to date.

Issues to be Resolved During Project Development:

The design and permitting process for this proposed project may identify additional work elements to ensure no adverse impact to the downstream properties. Drainage easements will be required for the cross-drains in the private subdivisions.

Attachments:

Vicinity Map
Project Map

P - 13: Raymond Tucker Rd

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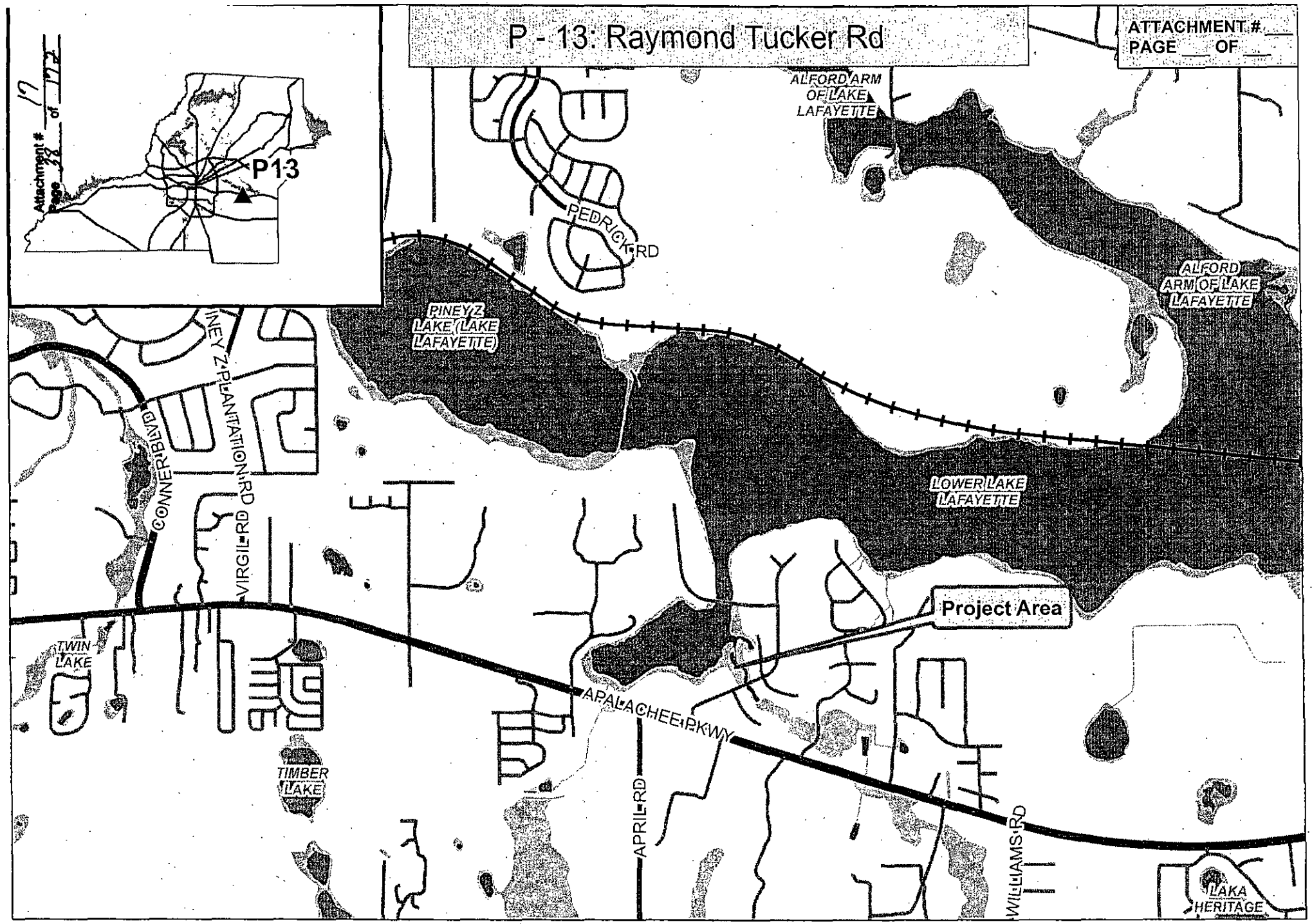

Tallahassee-Leon County GIS
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0 1 Miles

N W E S

Railroad
Roads
Major Roads
Water Bodies
Wetland

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P - 13: Raymond Tucker Rd

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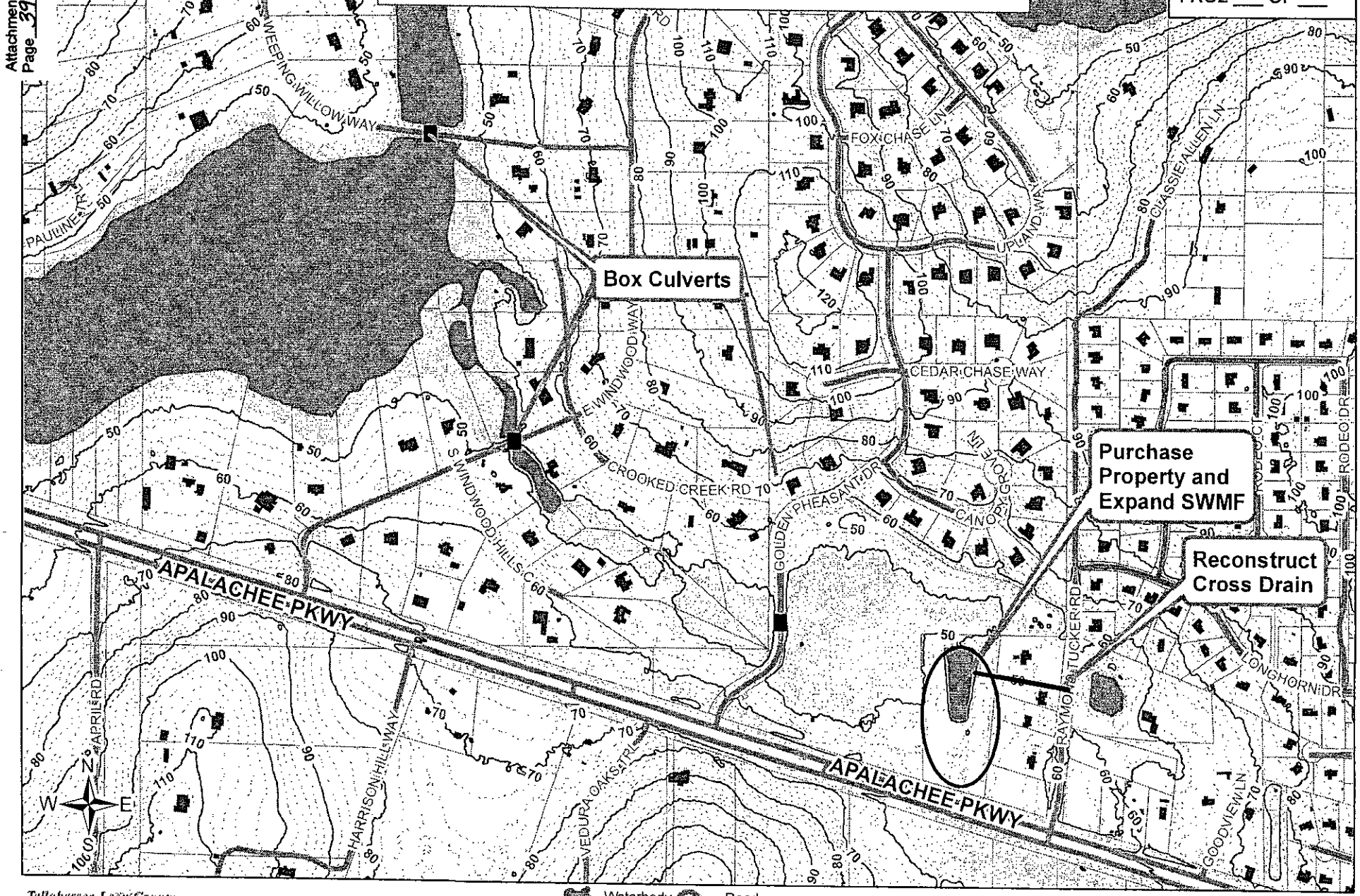

Tallahassee-Leon County GIS
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0 500 1,000 Feet

Waterbody
Wetlands
Buildings
Parcels
Roads
Index Contours
Inter Contours

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P14 - Salamanca and Palencia Courts

Background Information

Drainage Basin:	St. Marks River
Prior Studies by NWFWMD and/or CDM that identified this issue:	None
Impacted parcels are served by road and/or drainage systems that are:	Public
Proposed improvements are located on property that is:	Public
Development of the impacted property occurred on or before:	1990

The project involves 35 acres located in the Bosque De St. Augustine subdivision, south of Old St. Augustine Road and west of W. W. Kelley Road.

Description of Problem

General Problem Type:	Structural and Yard Flooding
Problem Source:	Conveyance Deficiency

Residents currently experience structure and yard flooding during high-intensity storm events due to inadequate conveyance capacity in the existing drainage system.

Recommended Solution:

Estimated Cost of Solution	$100,000
Number of Parcels Benefiting from Proposed Improvements	12
Estimated Cost per Parcel Benefiting	$8,300
Implementation Vehicle for Proposed Improvements	Capital Improvement Project

Approximately 1,300 feet of roadside ditches and interceptor swales between houses will be constructed to contain runoff along Salamanca and Palencia Courts. The work also includes reconstructing several driveways with cross-drains.

Alternate Solutions:

No action will result in continued yard flooding and structural flooding and potential greater impacts in storm events more severe than those experienced to date. Acquiring the 2 properties with known structural flooding would require $760,000, significantly more than the recommended solution.

Issues to be Resolved During Project Development:

Underground utility conflicts within the road right-of-way may result in delays to project implementation. Private encroachments such as fencing or shrubs in the existing drainage easements also require relocation or removal.

Attachments:

Vicinity Map
Project Map

P - 14: Salamanca & Palencia Vicinity

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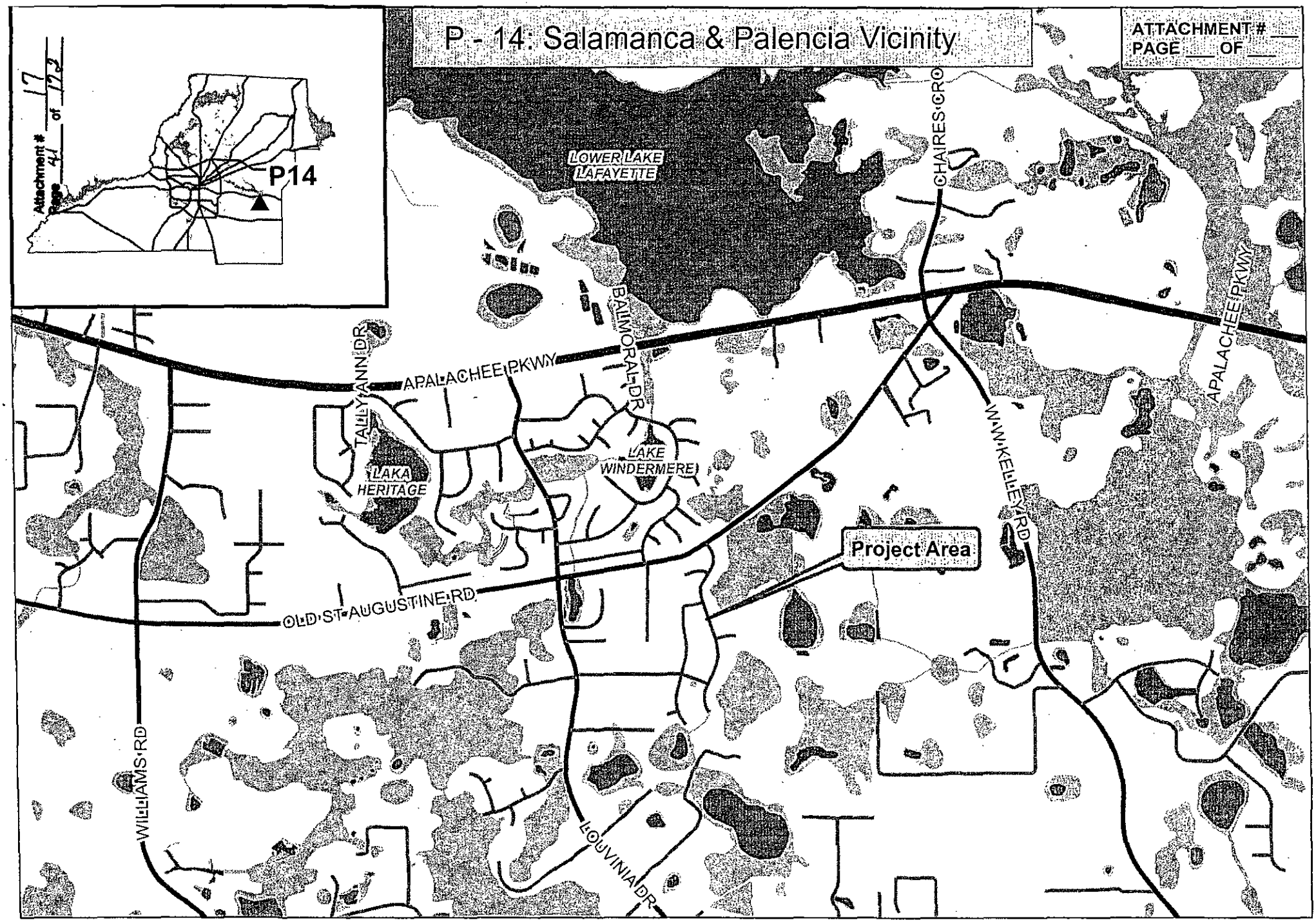

Tallahassee-Leon County GIS
www.tlcgis.org

0 1 Miles

N W E S

Railroad
Roads
Major Roads
Water Bodies
Wetland

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P - 14: Salamanca Ct & Palencia Ct

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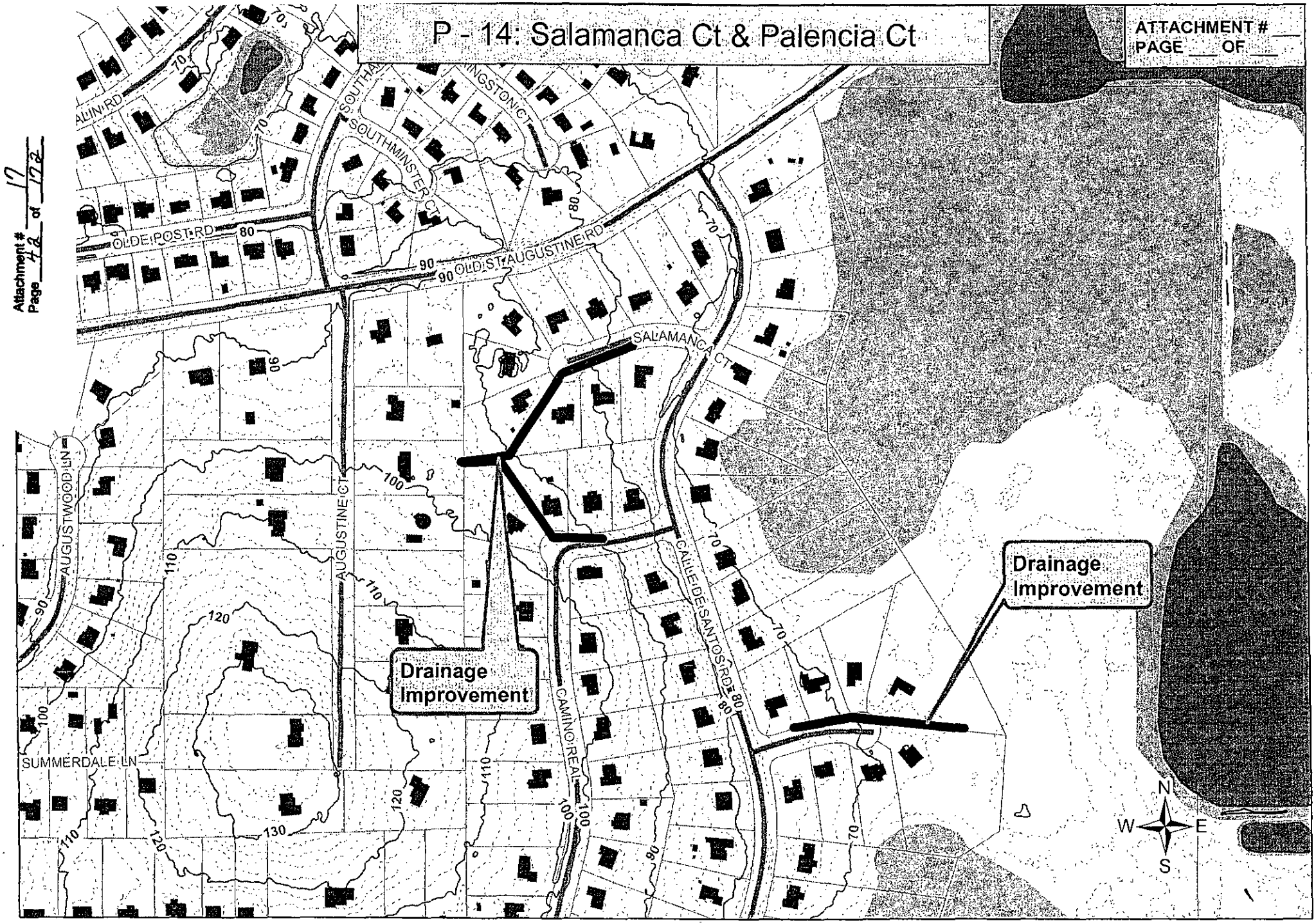

Tallahassee-Leon County GIS
WWW.TLCGIS.ORG

0 500 1,000 Feet

Waterbody
Wetlands
Buildings
Parcels
Roads
Index Contours
Inter Contours

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P15 - Southbrook/Otter Creek/Chadwick/Wildlife

Background Information

Drainage Basin:	Iamonia
Prior Studies by NWFWMD and/or CDM that identified this issue:	CDM
Impacted parcels are served by road and/or drainage systems that are:	Public
Proposed improvements are located on property that is:	Public
Development of the impacted property occurred on or before:	1972

The project is located in the Killearn Lakes subdivision with a 750-acre contributing area extending beyond Bull Headley Road on the west, Deerlake on the east, and Birschbach Way on the south. This project involves construction in the Killearn Lakes Homeowners Association green space, while the previous Proctor Watershed project upstream was restricted to road right-of-way.

Description of Problem

General Problem Type:	Structural and Yard Flooding
Problem Source:	Conveyance Deficiency

Residents currently experience structure and yard flooding during high-intensity storm events due to inadequate conveyance capacity in the greenways, which serve as the natural drainage system. In high-volume events, Lake Iamonia rises and prevents flow under Chadwick Way, the final crossing before the lake. Flooding conditions do not prevent access to the residential homes in the area.

Recommended Solution:

Estimated Cost of Solution	$2,000,000
Number of Parcels Benefiting from Proposed Improvements	27
Estimated Cost per Parcel Benefiting	$74,074
Implementation Vehicle for Proposed Improvements	Capital Improvement Project

The proposed project creates approximately 11 acres of flood storage area within the greenways north of Otter Creek Trail and Wildlife Trail. Two homes on Southbrook Lane and one home on Otter Creek Trail cannot be protected and will be purchased to expand the greenway flood storage area.

Alternate Solutions:

No action will result in continued yard flooding and structural flooding and potential greater impacts in storm events more severe than those experienced to date. Acquiring all affected properties would require $12.7 million, significantly more than the recommended solution.

Issues to be Resolved During Project Development:

Permitting may identify flooplain and wetland mitigation issues which are not included in the current cost estimate. The Killearn Lakes Homeowners Association retains control of the greenways and must approve any modifications.

Attachments:

Vicinity Map
Project Map

P - 15: Southbrook/Otter Creek Vicinity

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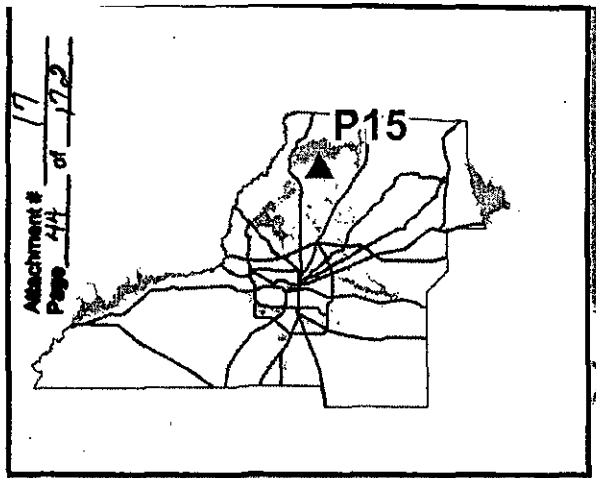

LAKE IAMONIA

MITCHELL ARM OF LAKE IAMONIA

Project Area

KINHEGA LODGE DR

DEERLAKE W

DEERLAKE N

DEERLAKE

BULLHEADLEY RD

UPPER LAKE DIANNE

LOWER LAKE DIANNE

DEERLAKE E

Tallahassee-Leon County GIS
www.tlcgis.org

0 1 Miles

N W E S

Roads
Major Roads
Water Bodies
Wetland

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P - 15: Southbrook/Otter Creek/Chadwick Rds

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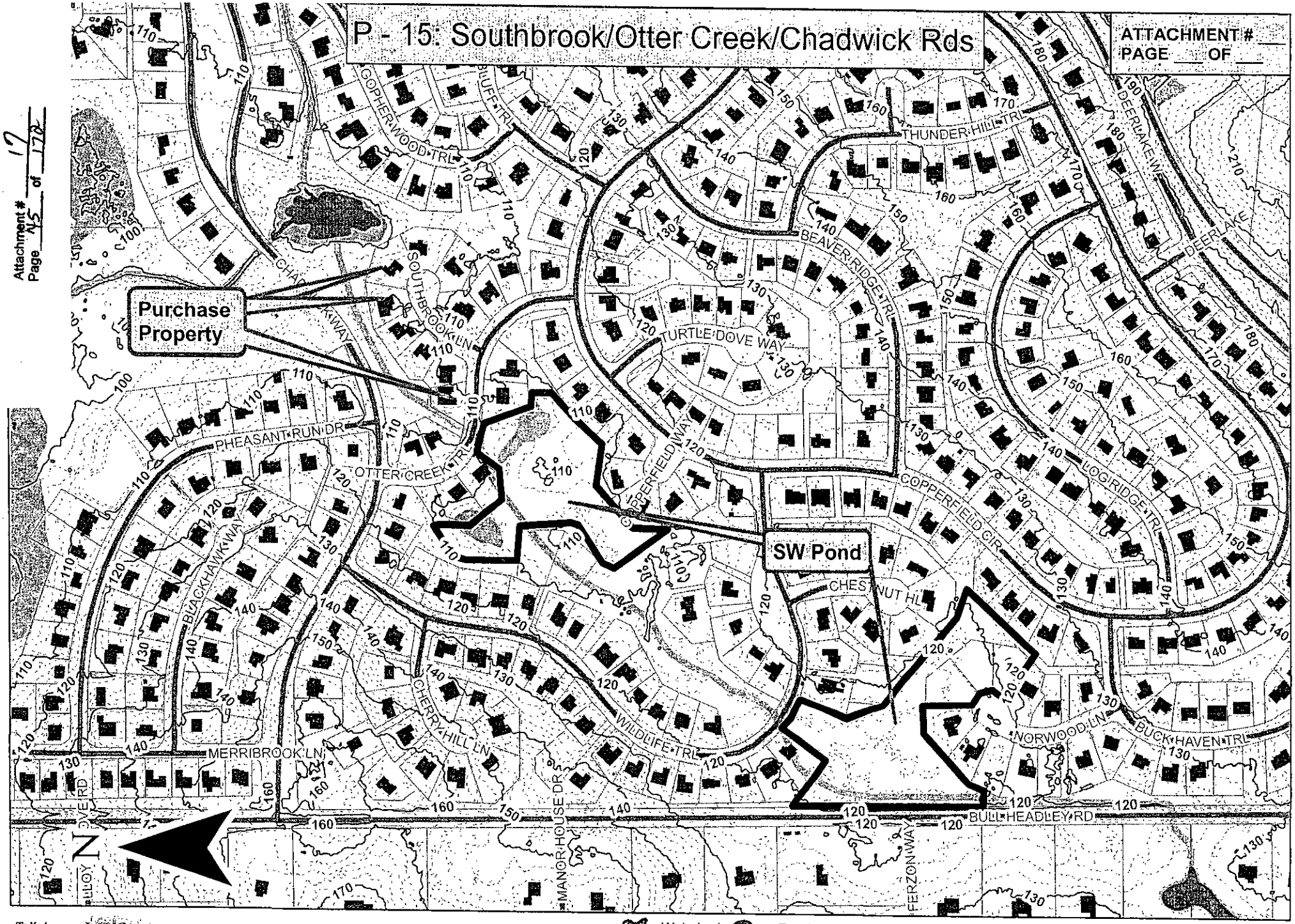

Tallahassee-Leon County GIS
www.tlcgis.org

0 500 1,000 Feet

Waterbody
Wetlands
Buildings
Parcels
Roads
Index Contours
Inter Contours

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P16 - Sunflower Road

Background Information

Drainage Basin:	Munson
Prior Studies by NWFWMD and/or CDM that identified this issue:	CDM
Impacted parcels are served by road and/or drainage systems that are:	Public
Proposed improvements are located on property that is:	Public
Development of the impacted property occurred on or before:	Prior to 1965

Sunflower Road runs parallel to and over one mile south of Oak Ridge Road, connecting County Line Road to Elgin Road.

Description of Problem

General Problem Type:	Regional Access blocked by flooding
Problem Source:	Munson Slough Overflow

A portion of Sunflower Road west of Celia Court goes underwater during high-volume rainfall events. This section of Sunflower Road becomes impassable, disrupting access between Wakulla Springs Highway and Woodville.

Recommended Solution:

Estimated Cost of Solution	$810,000
Number of Parcels Benefiting from Proposed Improvements	Regional
Estimated Cost per Parcel Benefiting	N/A
Implementation Vehicle for Proposed Improvements	CIP

The project will raise Sunflower Road between Celia Court and Sipsey Way, but include a series of cross-drains to maintain the current floodway and prevent additional upstream flooding. The connecting side streets will be raised to match the new grade of Sunflower Road.

Alternate Solutions:

No action will result in continued roadway access flooding and potential greater impacts in storm events more severe than those experienced to date

Issues to be Resolved During Project Development:

The design and permitting process for this proposed project may identify additional work elements to ensure no adverse impact to upstream or downstream properties. Additional rights-of-way may be required along Sunflower Road and side roads to accommodate the grading at additional cost.

Attachments:

Vicinity Map
Project Map

P - 16: Sunflower Rd Vicinity

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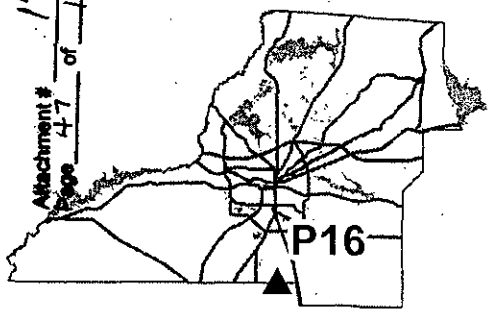

OAK RIDGE RD W
OAK RIDGE RD E
PAGE RD
Project Area
NATURAL BRIDGE RD
CHURCH ST
ELGIN RD
SUNFLOWER RD
WOODVILLE HWY
Wakulla County

Tallahassee-Leon County GIS
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0 1 Miles

N W E S

Roads
Major Roads
Water Bodies
Wetland

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P - 16: Sunflower Rd

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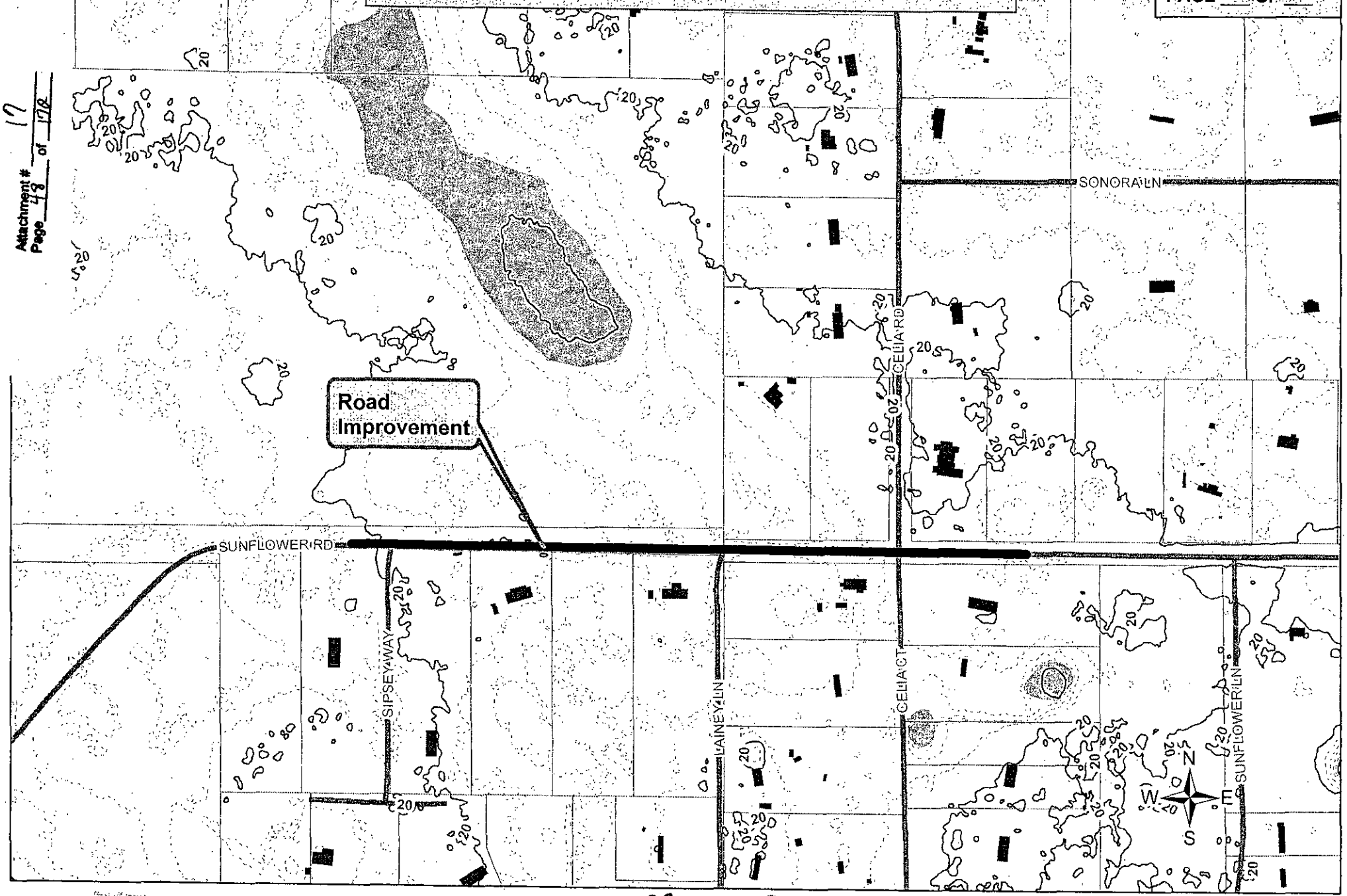

Tallahassee-Leon County GIS
www.tlcgis.org

0 500 1,000 Feet

Waterbody
Wetlands
Buildings
Parcels
Roads
Index Contours
Inter Contours

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JP1 – Alford Arm at CSX Railroad Tracks

Background Information

Drainage Basin:	Lafayette
Prior Studies by NWFWMD and/or CDM that identified this issue:	None
Impacted parcels are served by road and/or drainage systems that are:	Private
Proposed improvements are located on property that is:	Public
Development of the impacted property occurred on or before:	N/A

Improvement to the flow way will involve use of the property controlled by the railroad

Description of Problem

General Problem Type:	Isolated Parcels and Structural Flooding
Problem Source:	Conveyance Deficiency

Residents in a large area north and east of the railroad currently experience structure and yard flooding during major storm events due to inadequate conveyance capacity underneath the track bed. Flooding conditions also prevent access to many residential homes in the area due to road flooding.

Recommended Solution:

Estimated Cost of Solution	$2,820,000
Number of Parcels Benefiting from Proposed Improvements	N/A
Estimated Cost per Parcel Benefiting	N/A
Implementation Vehicle for Proposed Improvements	Joint Project Agreement

The proposed improvement consists of the construction of approximately 500 feet of elevated train trestle to establish a free flow condition. The project will require a Joint Project Agreement with the CSX Railroad. Project costs include $300,000 for an extensive stormwater study of the area to be used in designing the project.

Alternate Solutions:

1. No action will result in continued structure and yard flooding. Isolation and parcel access issues will persist
2. Acquisition of the impacted properties would result in significantly greater costs than the recommended solution.
3. A comprehensive regional river basin study would be necessary to define and analyze additional solutions.

Issues to be Resolved During Project Development:

Downstream impacts of opening up this long standing flow constriction will have to be understood before proceeding with the project design and implementation. Multiple flooplain and wetland issues will need to be addressed that are not included in the current cost estimate. Extensive stormwater modeling will be necessary to determine the regional impacts.

Attachments:

Vicinity Map
Project Map

JP - 1: Alford Arm & CSX Railroad Vicinity

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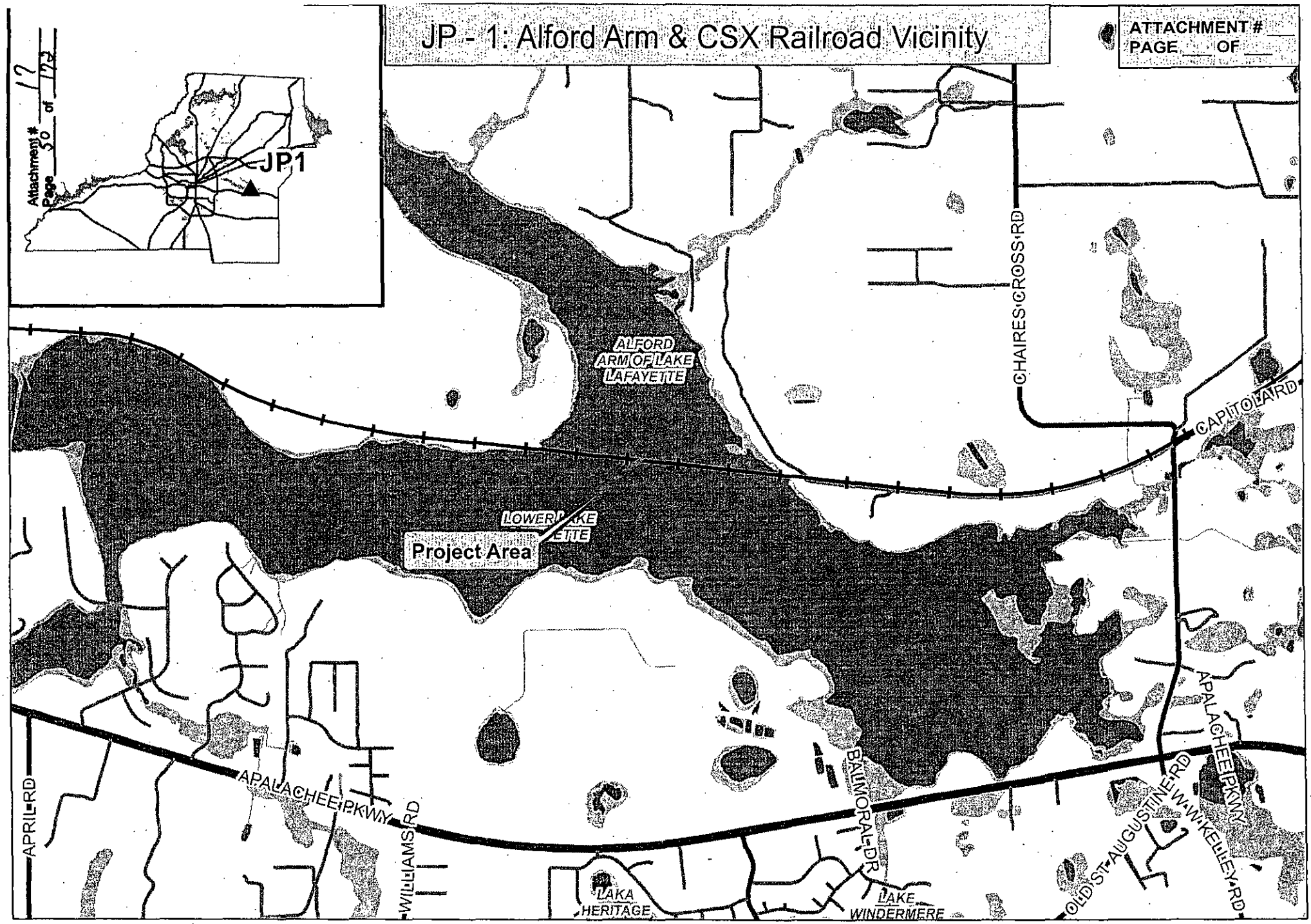

Tallahassee-Leon County GIS
WWW.TLCGIS.ORG

0 1 Miles

N W E S

Railroad
Roads
Major Roads
Water Bodies
Wetland

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JP - 1: Alford Arm & CSX Railroad Area

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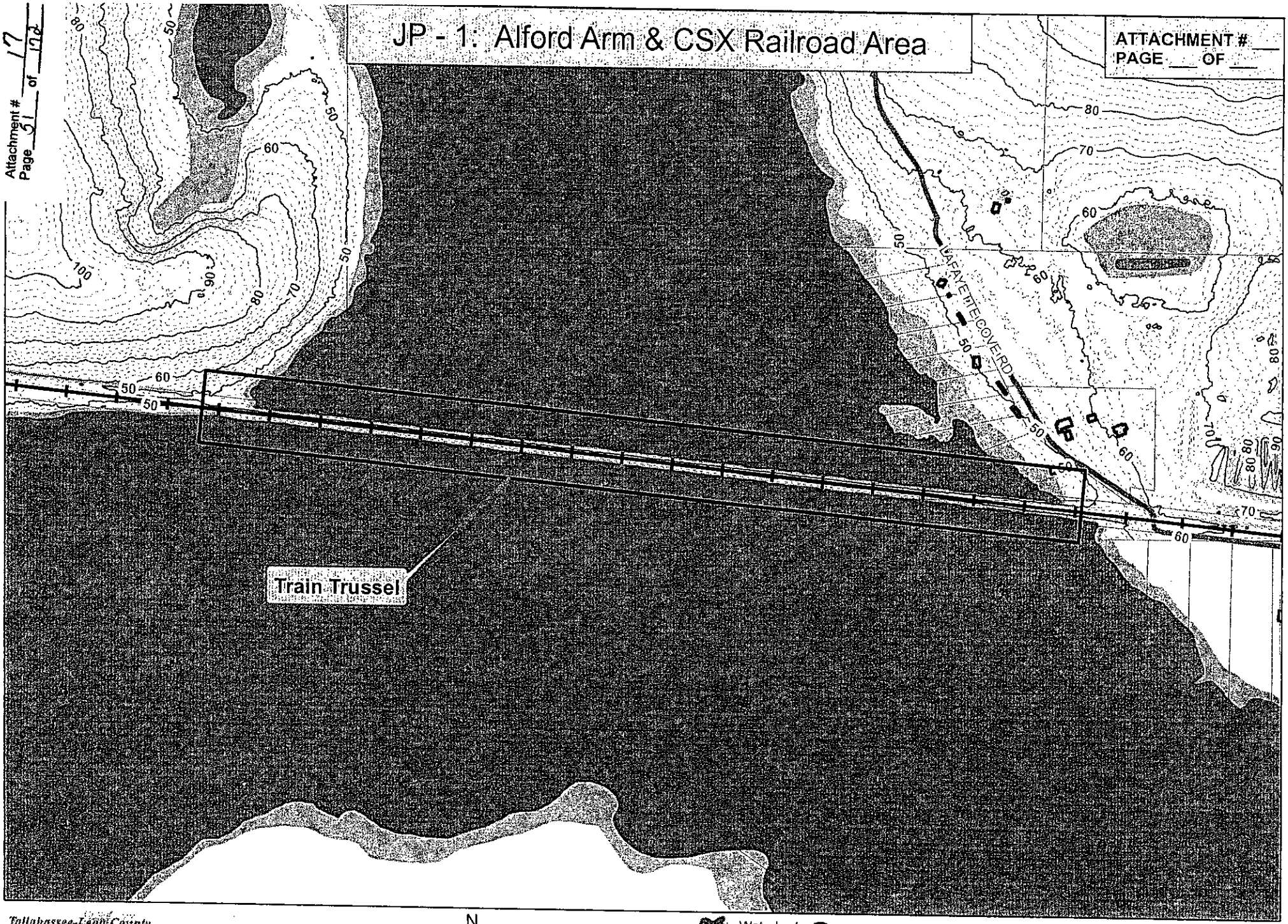

Tallahassee-Leon County GIS
www.tlcgis.org

0 500 1,000 Feet

N W E S

Waterbody
Wetlands
Buildings
Parcels
Railroad
Roads
Index Contours
Inter Contours

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JP2 – Stoneler Road Outfall

Background Information

Drainage Basin:	Ochlockonee
Prior Studies by NWFWMD and/or CDM that identified this issue:	None
Impacted parcels are served by road and/or drainage systems that are:	Public
Proposed improvements are located on property that is:	Public
Development of the impacted property occurred on or before:	1972

The Ochlockonee River tributary receives flow from 2,700 acres between Tower Road on the north to I-10 on the south, east to Old Bainbridge Road and Capital Circle.

Description of Problem

General Problem Type:	Access
Problem Source:	Conveyance

The creek drains through a series of wetlands and ponded areas before crossing through the Talquin State Forest to the river. The shallow flow channel appears to cause the water to spread into yards and overtop roads during intense storm events.

Recommended Solution:

Estimated Cost of Solution	$200,000
Number of Parcels Benefiting from Proposed Improvements	150
Estimated Cost per Parcel Benefiting	$1,333
Implementation Vehicle for Proposed Improvements	Joint Project

The improved contour information available from the updated GIS identified an opportunity to improve the drainage in a limited section of the flowway. The area is located within existing powerline easements in the State Forest. A joint project would be developed with the State agency to protect the competing interests.

Alternate Solutions:

No action will result in continued flooding.

Issues to be Resolved During Project Development:

A joint project agreement will be required with the State of Florida Division of Forestry.

Attachments:

Vicinity Map
Project Map

JP - 2: Stoneler Rd Vicinity

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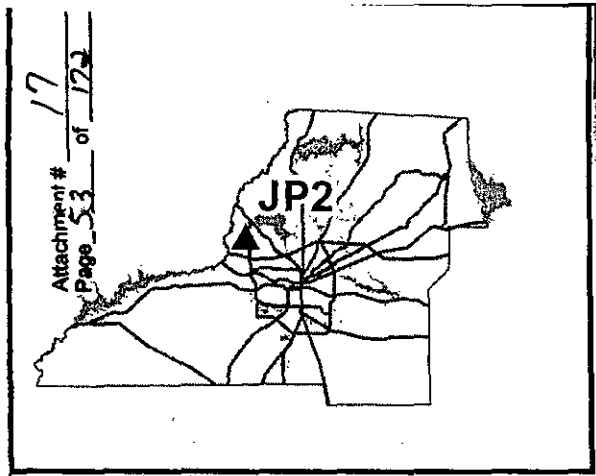

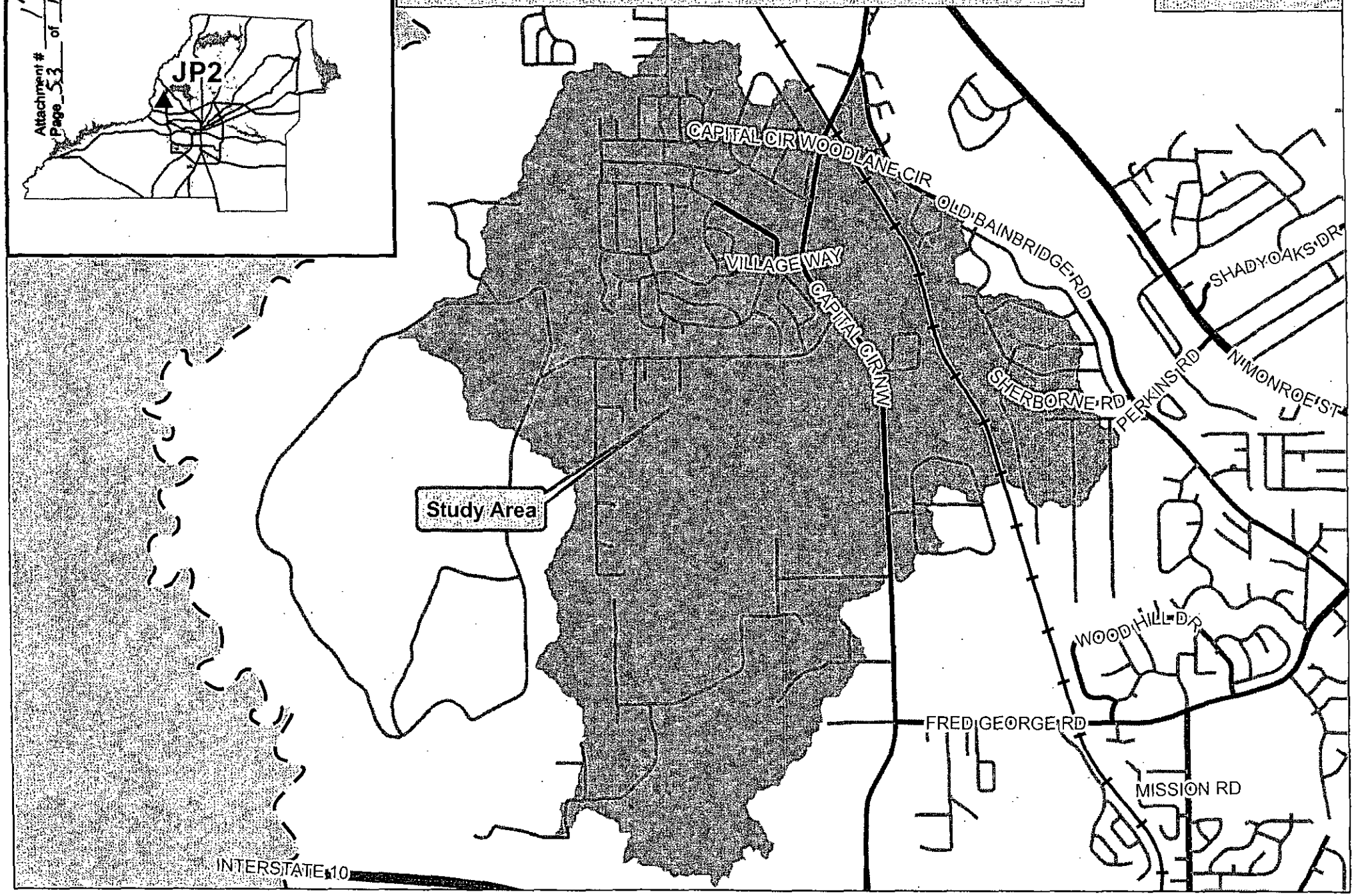

Tallahassee-Leon County GIS
www.tlcgis.org

0 1 Miles

N W E S

Railroad
Roads
Major Roads

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JP - 2: Stoneler Rd

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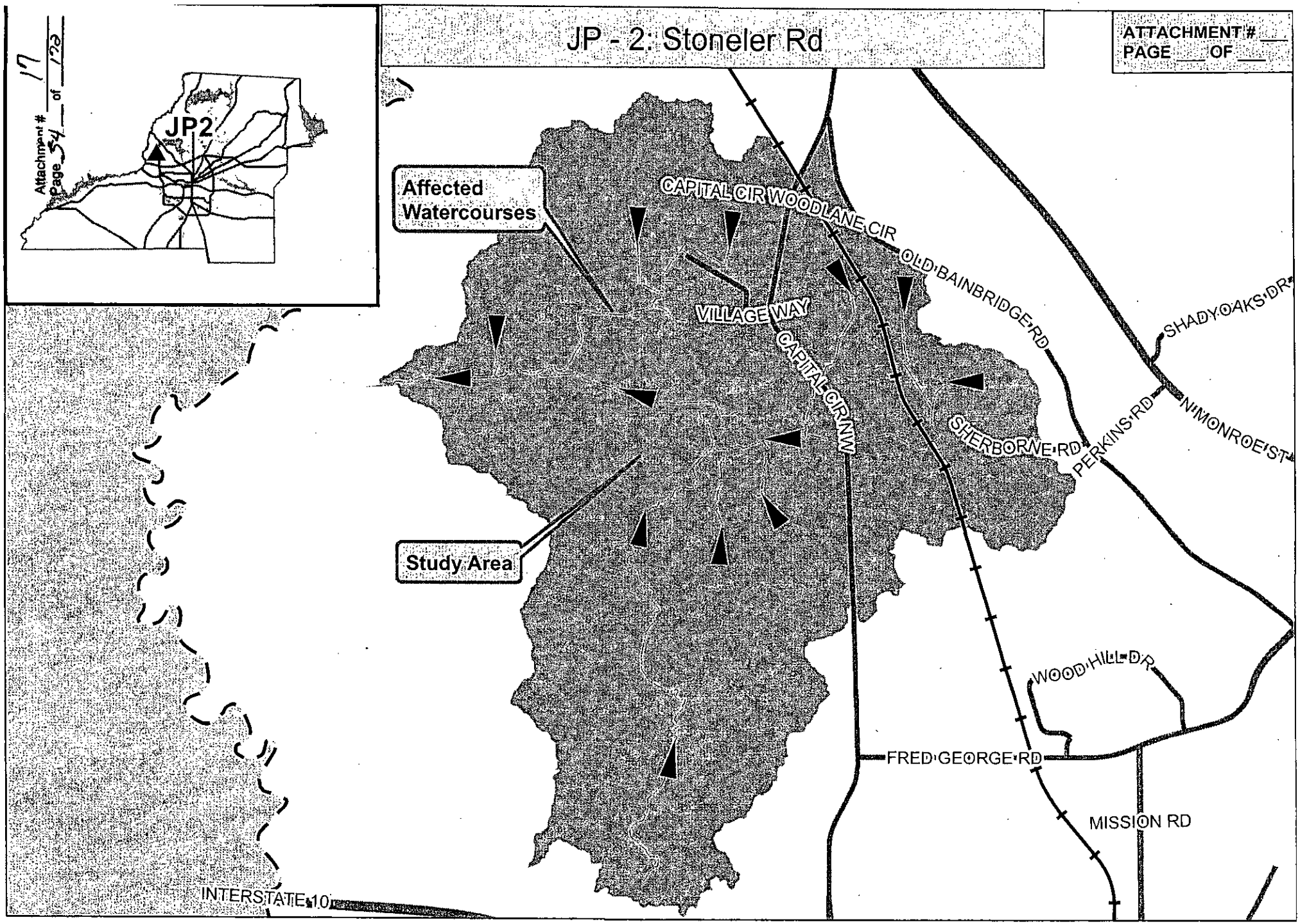

Tallahassee-Leon County GIS
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0 1 Miles

N W E S

Water Courses
Study Area
Railroad
Major Roads

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D1 - Clydesdale Drive

Background Information

Drainage Basin:	St. Marks
Prior Studies by NWFWMD and/or CDM that identified this issue:	No
Impacted parcels are served by road and/or drainage systems that are:	Private
Proposed improvements are located on property that is:	Private
Development of the impacted property occurred on or before:	1968

Clydesdale Drive is a private dirt road east of W. W. Kelly providing access to the Timber Run and Childers Property subdivisions.

Description of Problem

General Problem Type:	Roadway access and property flooding
Problem Source:	St. Marks River overflow

Residents currently experience property and roadway access flooding during major storm events due to St. Marks River overflow to the existing dirt road.

Recommended Solution:

Estimated Cost of Solution	$800,000
Number of Parcels Benefiting from Proposed Improvements	44
Estimated Cost per Parcel Benefiting	$18,182
Implementation Vehicle for Proposed Improvements	CARDS

The proposed CARDS Project will construct an 18-foot wide paved road for 3,300 ft with associated stormwater facilities to stabilize access to W.W. Kelley Rd. The 60 ft right-of-way is to be donated by the home owners.

Alternate Solutions:

No action will result in continued property flooding and roadway access flooding and potential greater impacts in storm events more severe than those experienced to date.

Issues to be Resolved During Project Development:

The design and permitting process for this proposed project may identify additional work elements to ensure no adverse impact to the downstream properties.

Attachments:

Vicinity Map
Project Map

D - 1: Clydesdale Dr Area

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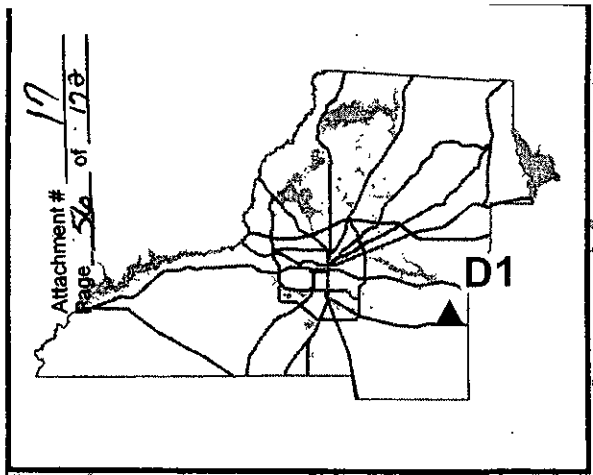

Project Area

Jefferson County

WILLIAMS RD

WAKELLEY RD

TWIN LAKES

LAKE WEEKS

MARY LAKE

LAKE HOMER

TRAM RD

TRAM RD

LAKE SUE

LAKE GUY

LAKE MATTIE

LAKE ERIE

BIG LAKE

OLD PLANK RD

Tallahassee-Leon County GIS

0 1 Miles

N W E S

Roads
Major Roads
Water Bodies
Wetlands

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D - 1: Clydesdale Dr

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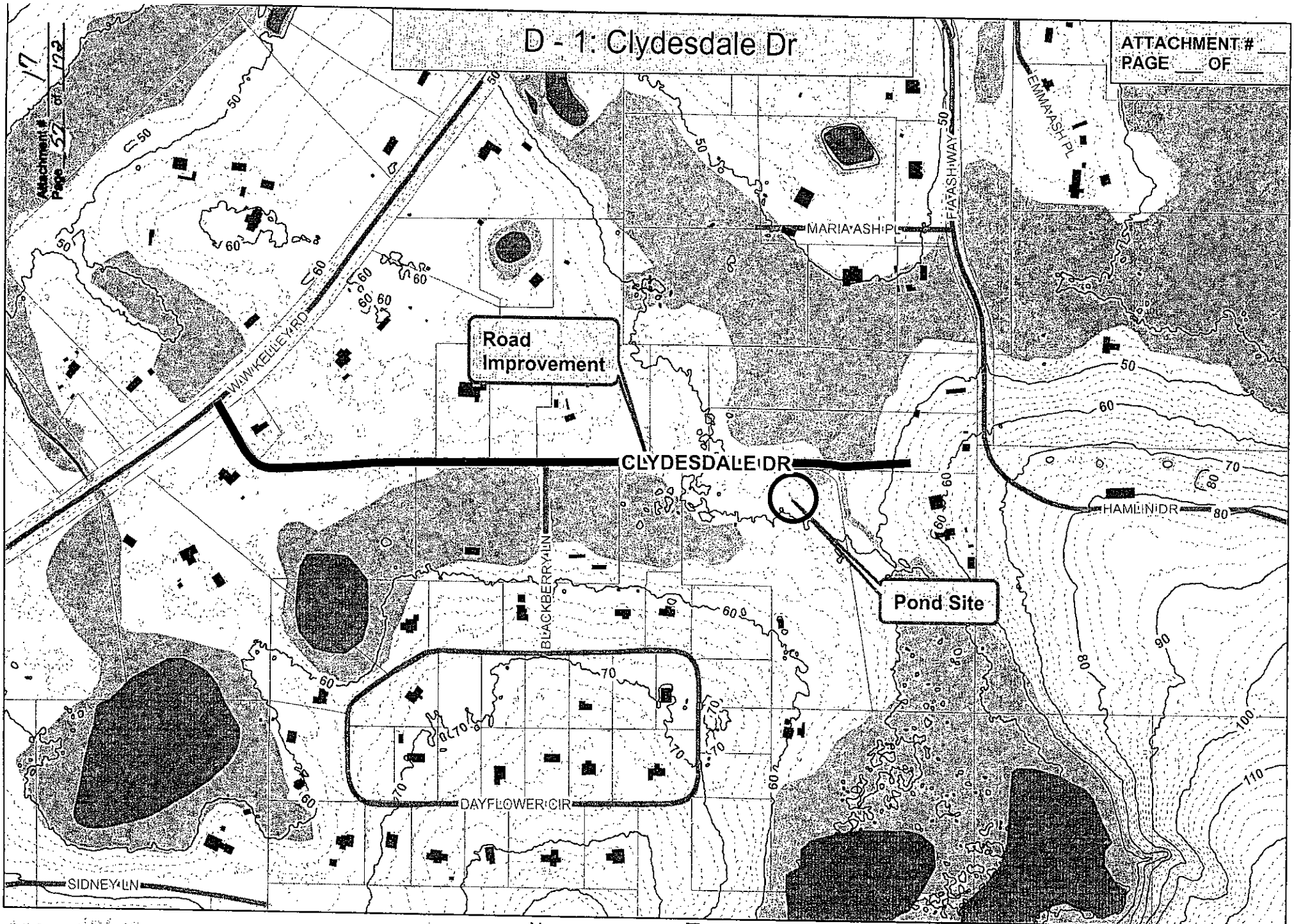

Tallahassee-Leon County GIS
WWW.TLCGIS.ORG

0 500 1,000 Feet

N W E S

Buildings
Waterbody
Wetland
Parcels
Roads
Index Contours
Inter Contours

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D2 - Earl's Slough

Background Information

Drainage Basin:	Ochlockonee
Prior Studies by NWFWMD and/or CDM that identified this issue:	None
Impacted parcels are served by road and/or drainage systems that are:	Private
Proposed improvements are located on property that is:	Private
Development of the impacted property occurred on or before:	Prior to 1990

Earl's Slough Court is a private road east of Meridian Road on the northwest shore of Lake Iamonia.

Description of Problem

General Problem Type:	Access due to Flooded Roads
Problem Source:	Ochlockonee River Overflow

Residents currently lose access to their homes during high-intensity and high-volume storm events which cause flooding of the Ochlockonee River.

Recommended Solution:

Estimated Cost of Solution	$260,000
Number of Parcels Benefiting from Proposed Improvements	9
Estimated Cost per Parcel Benefiting	$28,889
Implementation Vehicle for Proposed Improvements	CARDS

The CARDS project consists of the raising and paving of approximately 950 feet of roadway with associated stormwater management facilities.

Alternate Solutions:

No action will result in continued access issues experienced to date.

Acquisition of the impacted properties would cost $923,000, significantly more than the recommended solution.

Issues to be Resolved During Project Development:

Underground utility conflicts are always a potential within the project area and may result in delays to project implementation. Due to the location of the improvements, flooplain and wetland issues may need to be addressed that are not included in the current cost estimate

Attachments:

Vicinity Map
Project Map

D - 2: Earls Slough Vicinity

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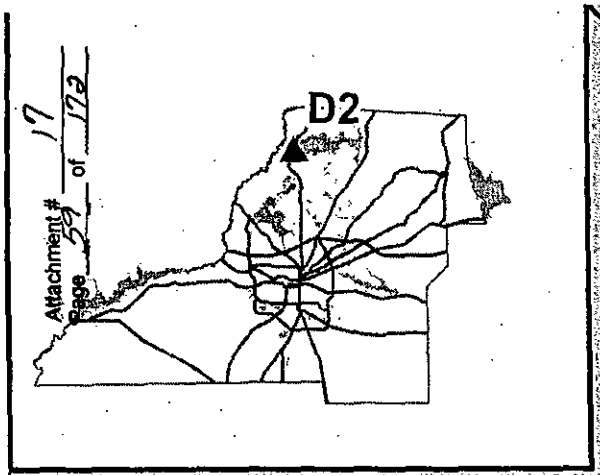

Gadsden County

Lake Talquin

N MERIDIAN RD

Project Area

Tallahassee-Leon County GIS

0 1 Miles

N W E S

Roads
Major Roads
Water Bodies
Wetland

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D - 2: Earls Slough

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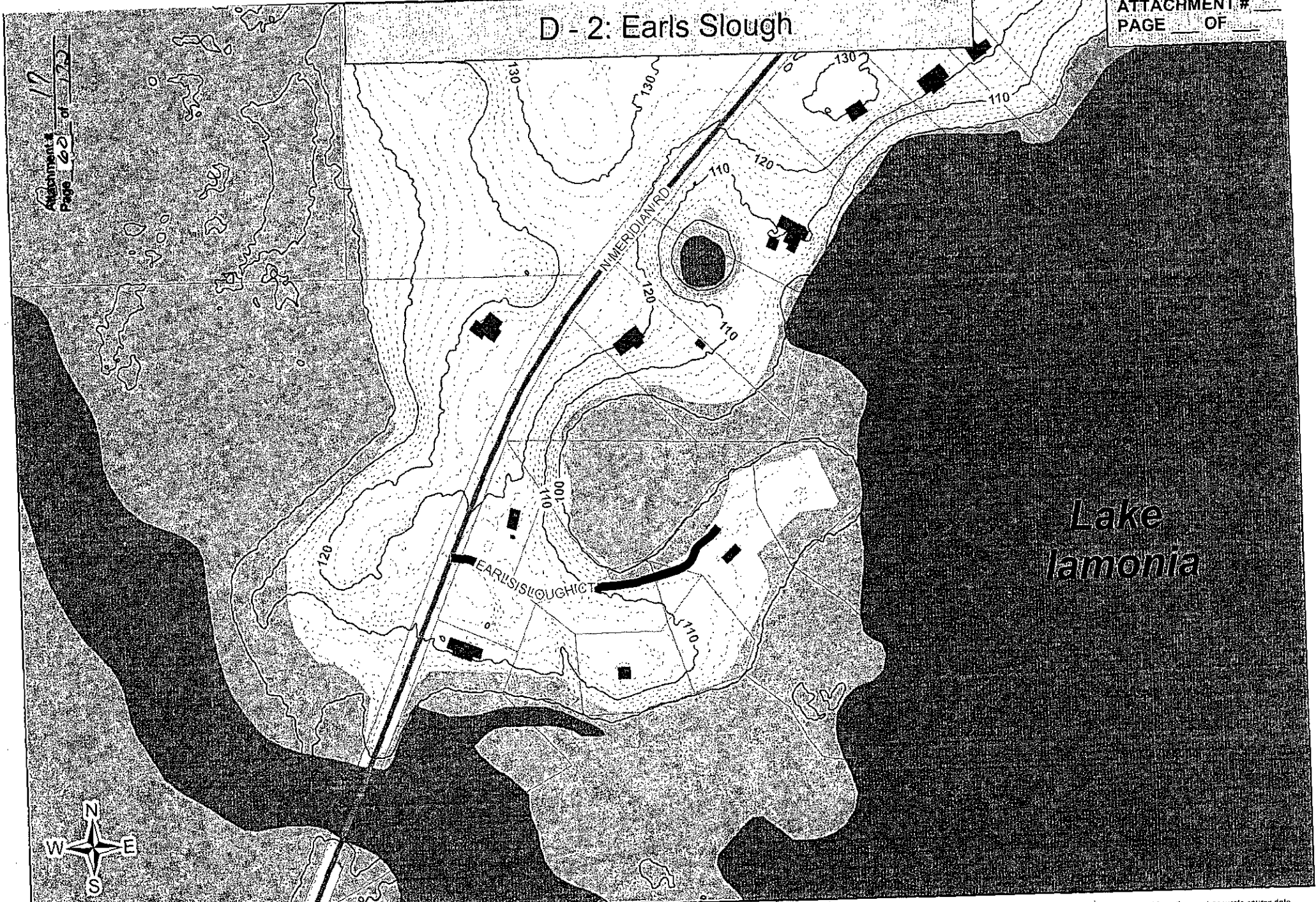

Waterbody
Wetlands
Buildings
Parcels
Roads
Index Contours
Inter Contours

0 500 1,000 Feet

Tallahassee-Leon County GIS
www.tlcgis.org

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D3 - Franklin Oaks\Moorewoods\Strawhill\ Private\Bartlett\Stonewood

Background Information

Drainage Basin:	Munson
Prior Studies by NWFWMD and/or CDM that identified this issue:	CDM
Impacted parcels are served by road and/or drainage systems that are:	Private
Proposed improvements are located on property that is:	Private
Development of the impacted property occurred on or before:	1951-1986

The project area focuses on the private subdivisions west of Wakulla Springs Highway and south of Oak Ridge Road.

Description of Problem

General Problem Type:	Structure and Driveway Flooding, Property Isolated due to road flooding
Problem Source:	Munson Slough Overflow

Residents currently experience structure flooding and limited access to their homes following high-volume storm events which overwhelm Ames Sink. Munson Slough will spread west to this area after inundating the properties southeast of Ames Sink.

Recommended Solution:

Estimated Cost of Solution	$7,800,000
Number of Parcels Benefiting from Proposed Improvements	83
Estimated Cost per Parcel Benefiting	$93,975
Implementation Vehicle for Proposed Improvements	CARDS

The project involves raising and paving approximately 2.5 miles of private dirt roads, with associated stormwater management facilities. The project provides access for residents who become isolated but do not experience site flooding. (Project F9 addresses the purchase of properties subject to site and/or structural flooding which cannot be improved.)

Alternate Solutions:

No action will result in continued access issues experienced to date. Acquisition of properties which are isolated would cost $8.9 million, significantly more than the recommended solution.

Issues to be Resolved During Project Development:

Due to the location of the improvements, floodplain and wetland issues may need to be addressed that are not included in the current cost estimate. Additional property may need to be acquired to construct stormwater treatment facilities.

Attachments:

Vicinity Map
Project Map

D - 3: Franklin Oaks Vicinity

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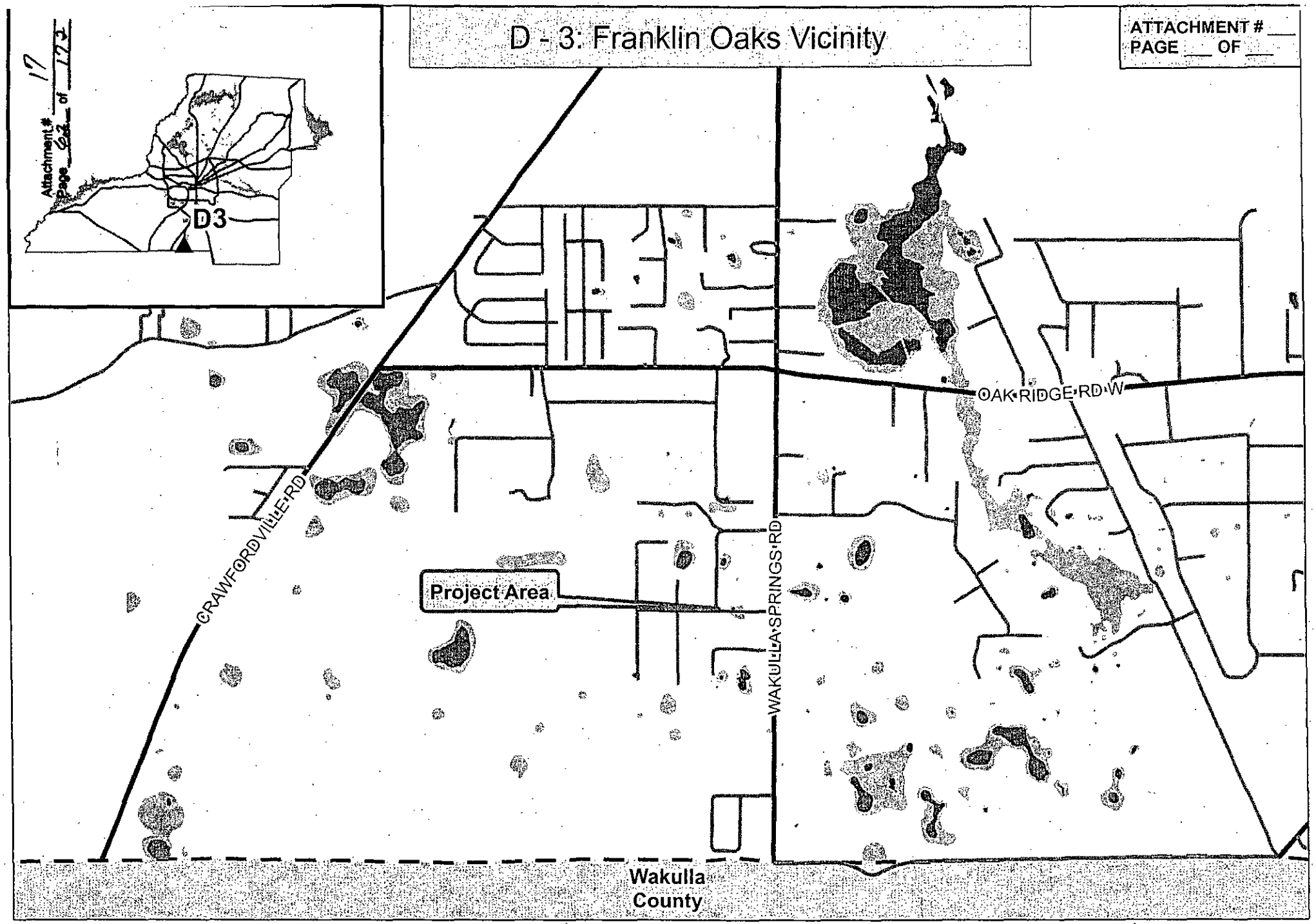

Tallahassee-Leon County GIS
www.tlcgis.org

0 1 Miles

N W E S

Roads
Major Roads
Water Bodies
Wetland

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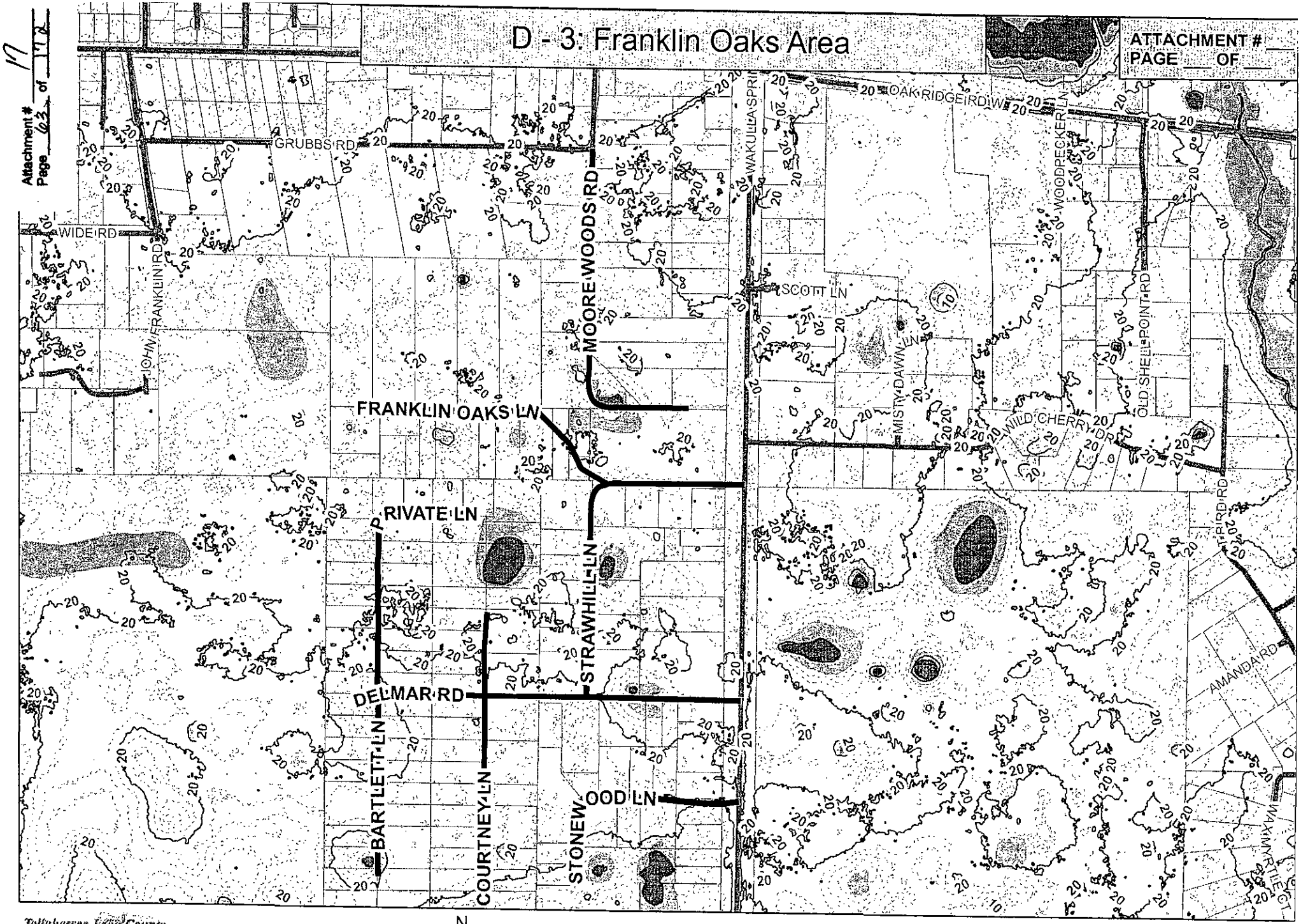
D - 3: Franklin Oaks Area



Tallahassee-Leon County GIS
www.tlcgis.org

0 500 1,000 Feet

N W E S

Waterbody
Wetlands
Parcels
Roads
Index Contours
Inter Contours

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D4 - Imaginary Road

Background Information

Drainage Basin:	Bird Sink
Prior Studies by NWFWMD and/or CDM that identified this issue:	No
Impacted parcels are served by road and/or drainage systems that are:	Private
Proposed improvements are located on property that is:	Private
Development of the impacted property occurred on or before:	1978

Imaginary Road is the westernmost dirt road in the Miccosukee Land Cooperative, extending south approximately 0.4 miles from Miccosukee Road.

Description of Problem

General Problem Type:	Property Access blocked by Flooding
Problem Source:	Conveyance

The creek overtops the low area of Imaginary Road following high-intensity rainfall events. This section of Imaginary Road becomes impassable preventing access for residents south of creek crossing.

Recommended Solution:

Estimated Cost of Solution	$130,000
Number of Parcels Benefiting from Proposed Improvements	13
Estimated Cost per Parcel Benefiting	$10,000
Implementation Vehicle for Proposed Improvements	CARDS

The road section at the crossing will be stabilized to prevent damage during high flows. The single cross-drain will be supplemented with additional culverts to restore a broader, more natural floodway for the creek.

Alternate Solutions:

No action will result in continued roadway access flooding and potential greater impacts in storm events more severe than those experienced to date.

Issues to be Resolved During Project Development:

The design and permitting process for this proposed project may identify additional work elements to ensure no adverse impact to the downstream properties. The access and drainage easements required for the construction and future maintenance were assumed to be donated by the property owners.

Attachments:

Vicinity Map
Project Map

D - 4: Imaginary Rd Vicinity

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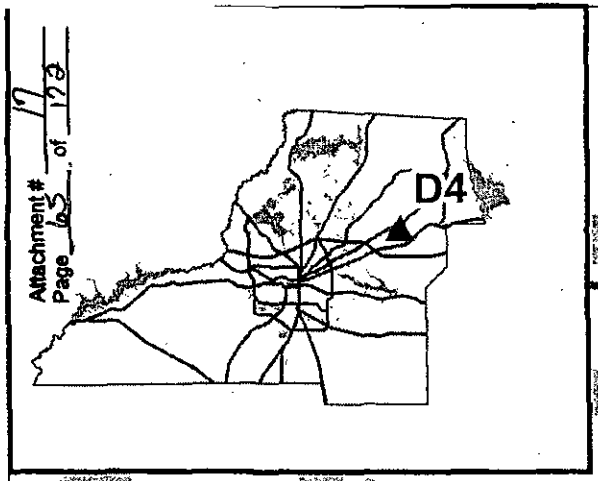

PROCTOR

CRUMP RD

BAUM RD

MICCOSUKEE RD

MCCRACKEN RD

Project Area

MAHAN DR

Tallahassee-Leon County GIS
www.tlcgis.org

0 1 Miles

N W E S

Roads
Major Roads
Water Bodies
Wetland

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D - 4: Imaginary Rd

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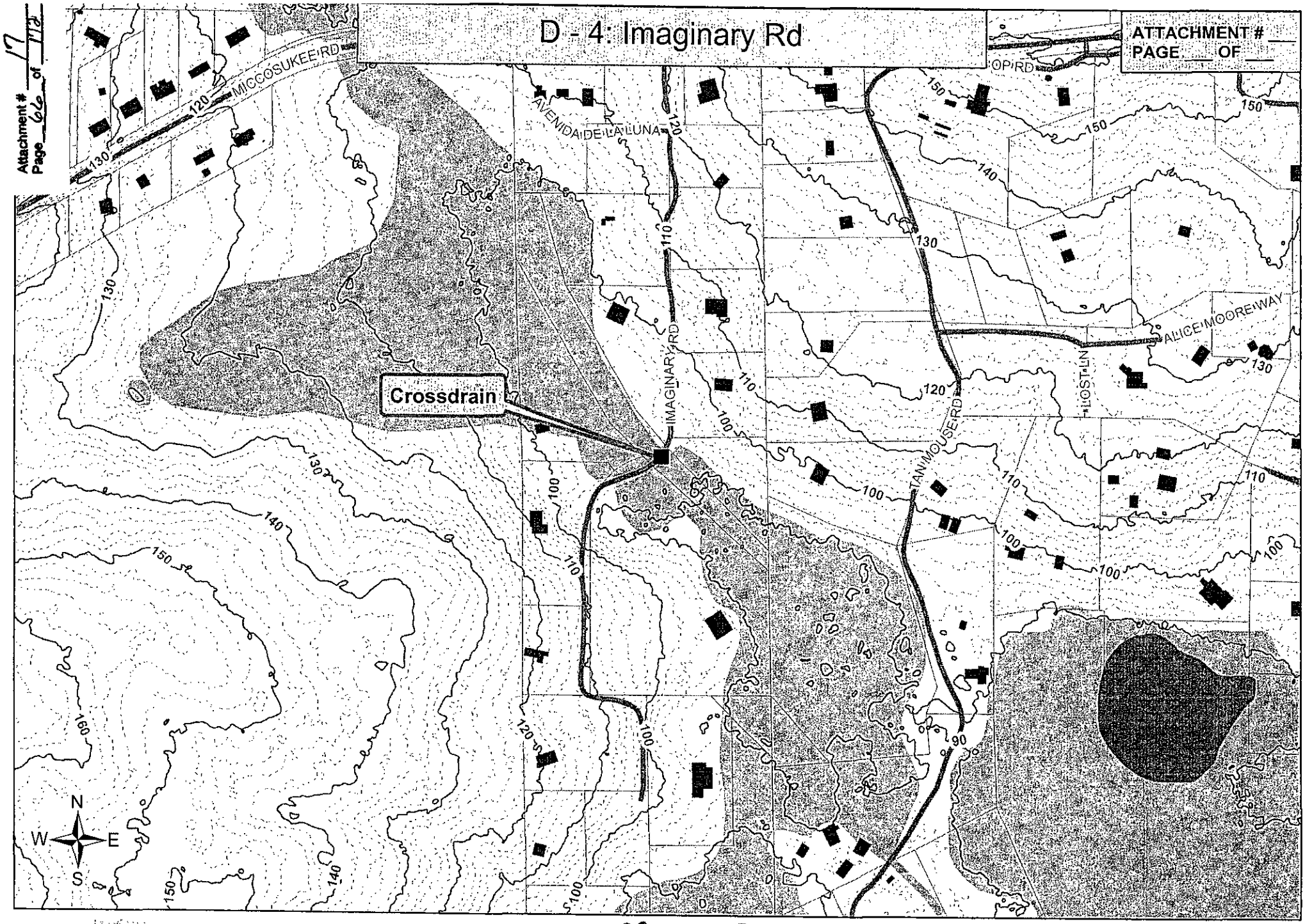

Tallahassee-Leon County GIS
www.tlcgis.org

0 500 1,000 Feet

Waterbody
Wetlands
Buildings
Parcels
Roads
Index Contours
Inter Contours

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D5 - Lanier Street Erosion

Background Information

Drainage Basin:	Ochlocknee
Prior Studies by NWFWMD and/or CDM that identified this issue:	No
Impacted parcels are served by road and/or drainage systems that are:	Public
Proposed improvements are located on property that is:	Private
Development of the impacted property occurred on or before:	1955

Lanier Street lies north of SR 20 at Bloxham Cutoff.

Description of Problem

General Problem Type:	Erosion
Problem Source:	Ochlockonee River Inflow

Approximately 18 acres discharge through private property from Lanier Street roadside ditches and cross-drain to Lake Talquin south of Holder Lane. The existing channel is noweroded with steep cut on both sides of the channel.

Recommended Solution:

Estimated Cost of Solution	$30,000
Number of Parcels Benefiting from Proposed Improvements	1
Estimated Cost per Parcel Benefiting	$30,000
Implementation Vehicle for Proposed Improvements	CARDS

The project will prevent further erosion by reshaping and concrete-lining the channel. The cost estimate is based on the assumption that a drainage easement will be voluntarily deeded to the County for construction and future maintenance and that most of the work will be done by County forces.

Alternate Solutions:

No action will result in continued erosion with discharge of the sediment to Lake Talquin. The continuing erosion will degrade the water quality at Lake Talquin and potentially undermine Lanier Street.

Issues to be Resolved During Project Development:

The channel is a creek and wetland area tributary to Lake Talquin. In order to stabilize the channel and enhance erosion resistance, some vegetation removal will be necessary and the impact to wetland will have to be mitigated. This proposed improvement does not include the pipe upgrade on Lanier Street at the beginning of the channel because no stormwater study or flooding record indicates any conveyance deficiency.

Attachments:

Vicinity Map
Project Map

D - 5: Lanier St Vicinity

ATTACHMENT # ___
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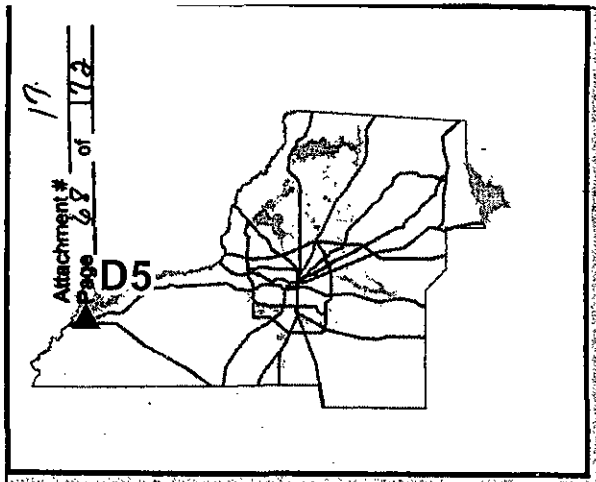

Lake Talquin

Gadsden County

Project Area

LANIER ST

FRED HATFIELD CT

BLOUNT CREEK RD

BLOUNTSTOWN HWY

BLOXHAM CUTOFF

SMITH CREEK RD

Liberty County

Tallahassee-Leon County GIS
www.tlcgis.org

0 1 Miles

N W E S

Roads
Major Roads
Water Bodies
Wetland

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D - 5: Lanier St

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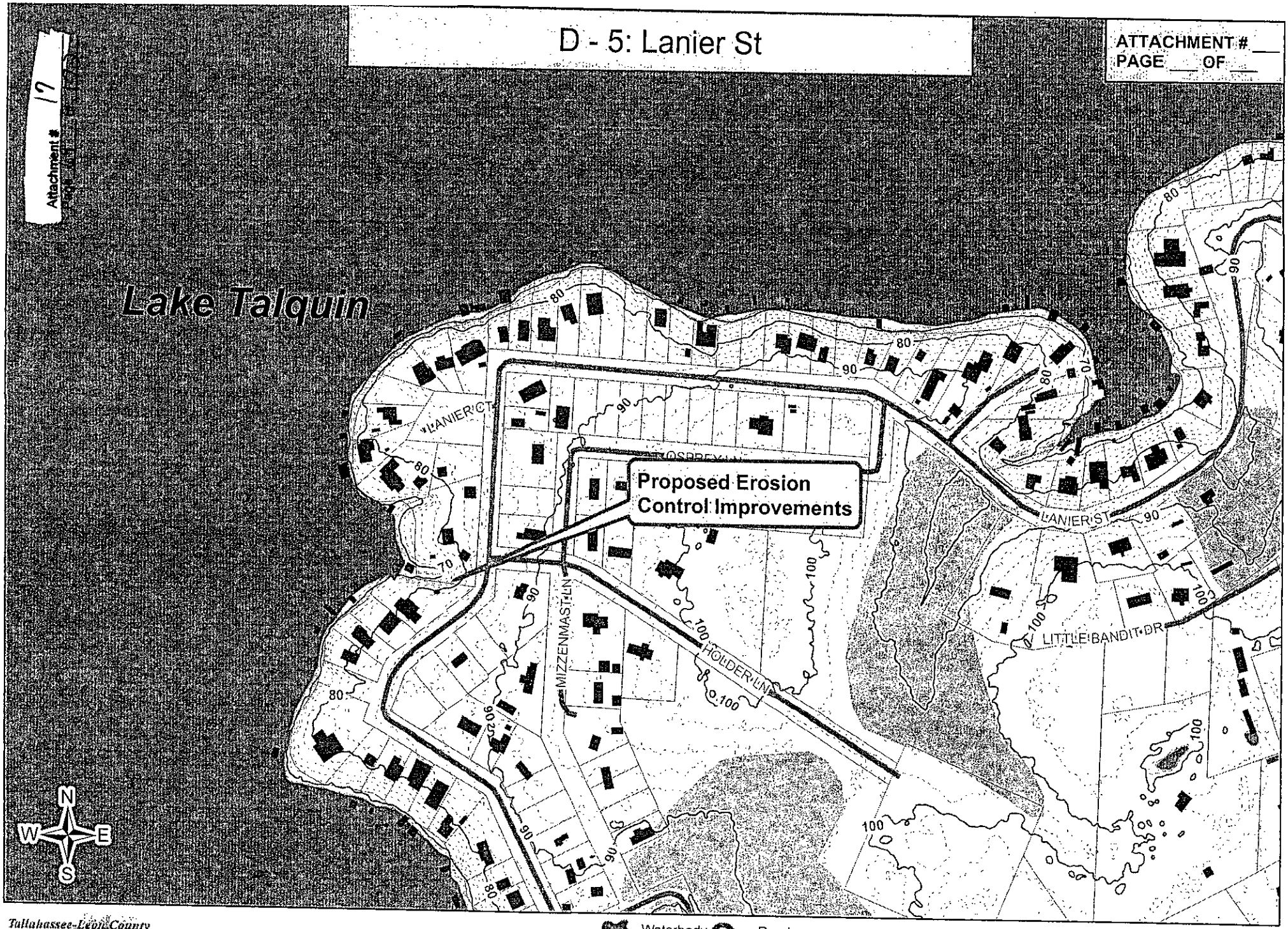

Tallahassee-Leon County GIS
www.tlcgis.org

0 500 1,000 Feet

Waterbody
Wetlands
Buildings
Parcels
Roads
Index Contours
Inter Contours

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D6 - Liberty Ridge/Oak Ridge/Wild Cherry/ T-Bird/Wax Myrtle/Misty Dawn/etc.

Background Information

Drainage Basin:	Lake Munson
Prior Studies by NWFWMD and/or CDM that identified this issue:	Yes
Impacted parcels are served by road and/or drainage systems that are:	Private
Proposed improvements are located on property that is:	Private
Development of the impacted property occurred on or before:	Unknown

The project area focuses on the private subdivisions east of Wakulla Springs Highway and generally south of Oak Ridge Road.

Description of Problem

General Problem Type:	Structural, Driveway and Roadway Access, and Property Flooding
Problem Source:	Munson Slough overflow

Residents currently experience structure flooding and limited access to their homes following high-volume storm events which overwhelm Ames Sink.

Recommended Solution:

Estimated Cost of Solution	$12,690,000
Number of Parcels Benefiting from Proposed Improvements	387
Estimated Cost per Parcel Benefiting	$32,790
Implementation Vehicle for Proposed Improvements	CARDS

The proposed CARDS Project will construct an 18-foot wide paved road for 53,290 feet with associated stormwater facilities. This will provide a paved road network to connect the impacted subdivisions with major roadways like Oak Ridge Road, Wakulla Spring Road and Sunflower Road. The 60 ft right-of-way is to be donated by the homeowners. (Project F12 addresses the purchase of properties subject to site and/or structural flooding which cannot be improved.)

Alternate Solutions:

No action will result in continued yard flooding and minor structural flooding and potential greater impacts in storm events more severe than those experienced to date.

Issues to be Resolved During Project Development:

The design and permitting process for this proposed project may identify additional work elements to ensure no adverse impact to the downstream properties.

Attachments:

Vicinity Map
Project Map

D - 6: Liberty Ridge / Ranchero Rd Area

ATTACHMENT # ___
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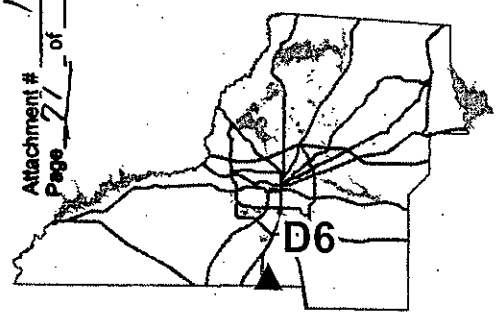

CRAWFORDVILLE RD
SEVEN MILE POND
WOODVILLE HWY
Project Area
EIGHT MILE POND
OAK RIDGE RD W
OAK RIDGE RD E
WAKULLA SPRINGS RD
PAGE RD
TAFF RD
ELGIN RD
CHURCH ST
SUNFLOWER RD
CRAWFORDVILLE RD
Wakulla County

Tallahassee-Leon County GIS
www.tlcgis.org

0 1 Miles

N W E S

Roads
Major Roads
Water Bodies
Wetland

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D - 6: Liberty Ridge / Ranchero Rd Area

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AVALON
RANCHERO
WOODPECKER
OLD SHELL POINT
MUSTANG
COTTONWOOD
STAN
FLICKER
MISTY DAWN
WILD CHERRY
T BIRD
BOATWRIGHT
WAX MYRTLE
SORA
WARBLER
ANGELA
CASEY
MARKIM
FREEDOM
LOVIC
CELIA
DUB
SPIRAL GARDEN
DARIEN
JESSICA
NOCATEE

Tallahassee-Leon County GIS
www.tlcgis.org

0 0.5 Miles

N W E S

Roads
Waterbody
Wetlands
Parcels

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D7 - Louvinia Court

Background Information

Drainage Basin:	St. Marks
Prior Studies by NWFWMD and/or CDM that identified this issue:	No
Impacted parcels are served by road and/or drainage systems that are:	Private
Proposed improvements are located on property that is:	Private
Development of the impacted property occurred on or before:	1970

Louvinia Court begins approximately 1.5 miles south of Old St. Augustine Road on Louvinia Road.

Description of Problem

General Problem Type:	Roadway access and property flooding
Problem Source:	Conveyance

Louvenia Court is currently a private dirt road serving the flooding impacted parcels. Residents currently experience roadway access flooding during high-intensity storm events due to limited conveyance downstream.

Recommended Solution:

Estimated Cost of Solution	$1,000,000
Number of Parcels Benefiting from Proposed Improvements	68
Estimated Cost per Parcel Benefiting	$14,706
Implementation Vehicle for Proposed Improvements	CARDS

The proposed CARDS Project will construct an 18-foot wide paved road for 4,160 feet with associated stormwater facilities to provide stable access to Louvinia Road. The 60 ft right-of-way is to be donated by the home owners.

Alternate Solutions:

No action will result in continued property flooding and roadway access flooding and potential greater impacts in storm events more severe than those experienced to date.

Issues to be Resolved During Project Development:

The design and permitting process for this proposed project may identify additional work elements to ensure no adverse impact to the downstream properties.

Attachments:

Vicinity Map
Project Map

D - 7: Louvinia Ct Vicinity

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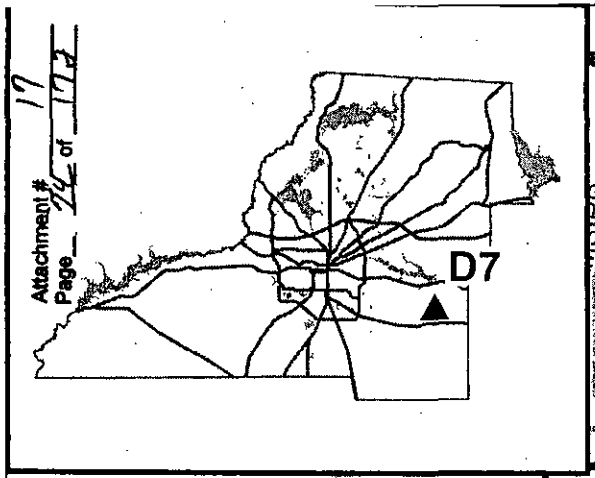

Tallahassee-Leon County GIS
www.tlcgis.org

0 1 Miles

N W E S

Roads
Major Roads
Water Bodies
Wetland

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D - 7: Louvinia Ct

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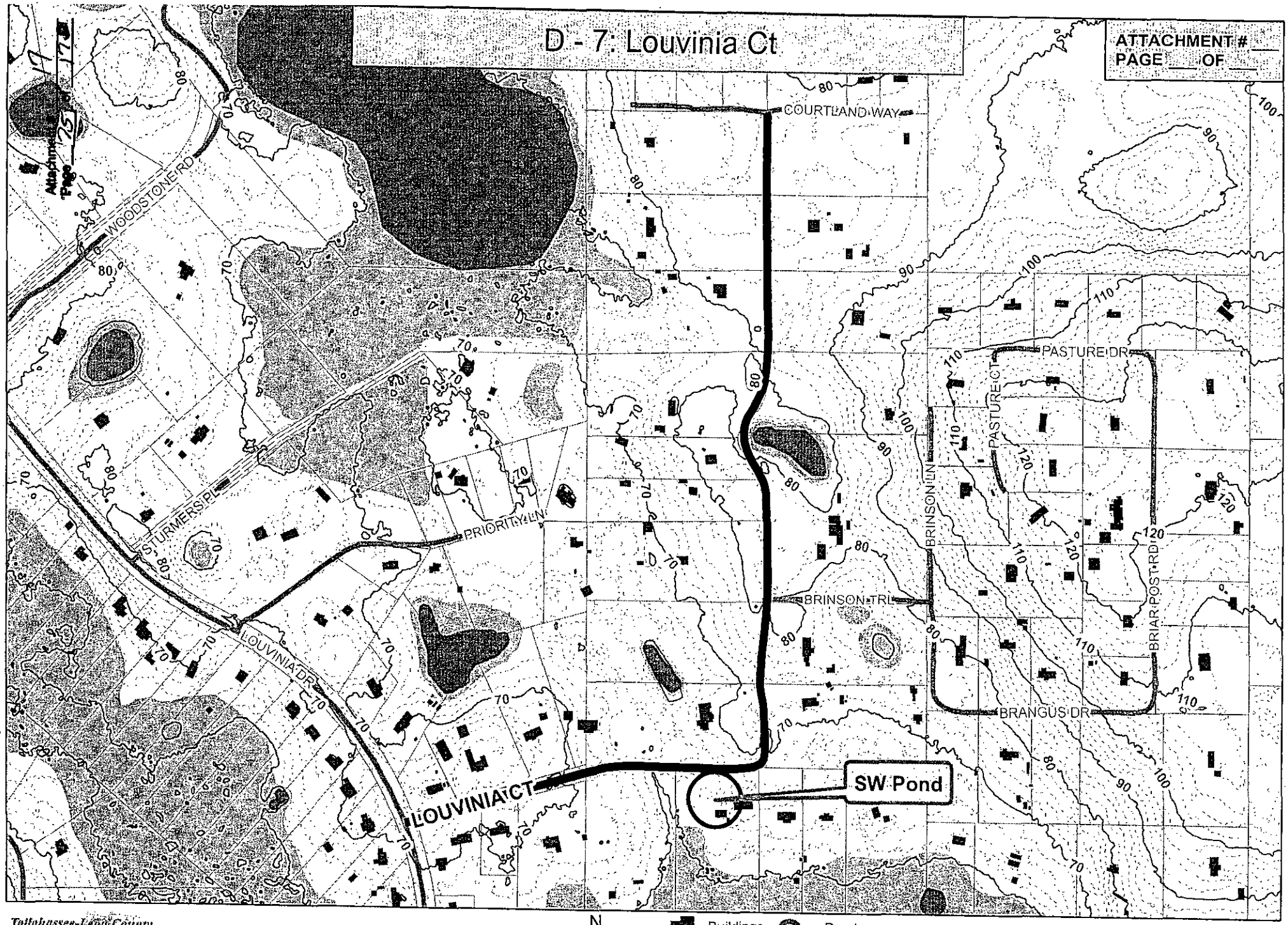

Tallahassee-Leon County GIS
www.tlcgis.org

0 500 1,000 Feet

N W E S

Buildings
Waterbody
Wetlands
Parcels
Roads
Index Contours
Inter Contours

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D8 - Selena Road

Background Information

Drainage Basin:	Woodville Recharge
Prior Studies by NWFWMD and/or CDM that identified this issue:	No
Impacted parcels are served by road and/or drainage systems that are:	Private
Proposed improvements are located on property that is:	Private
Development of the impacted property occurred on or before:	1969

Selena Road is a private dirt road east of Woodville Highway approximately 1.1 miles north of the Wakulla County line.

Description of Problem

General Problem Type:	Roadway access and property flooding
Problem Source:	Closed basin

Residents currently experience property and roadway access flooding during high-volume storm events due to stormwater from the 50-acre closed basin overtopping the existing dirt road.

Recommended Solution:

Estimated Cost of Solution	$540,000
Number of Parcels Benefiting from Proposed Improvements	147
Estimated Cost per Parcel Benefiting	$3,673
Implementation Vehicle for Proposed Improvements	CARDS

The proposed CARDS Project will construct an 18-foot wide paved road for 4,160 feet with associated stormwater facilities to create a paved connection to Woodville Highway. The 60-foot right-of-way is to be donated by the home owners.

Alternate Solutions:

No action will result in continued property flooding and roadway access flooding and potential greater impacts in storm events more severe than those experienced to date.

Issues to be Resolved During Project Development:

The design and permitting process for this proposed project may identify additional work elements to ensure no adverse impact to adjacent properties.

Attachments:

Vicinity Map
Project Map

D - 8: Selena Rd Vicinity

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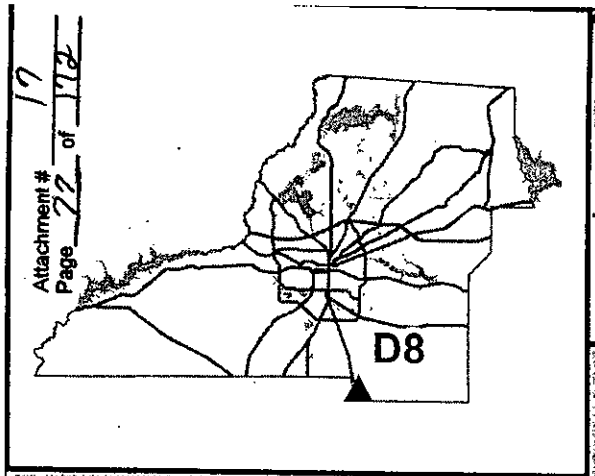

NATURAL BRIDGE RD

WOODVILLE HWY

Project Area

Wakulla County

Tallahassee-Leon County GIS
www.tlcgis.org

0 1 Miles

N W E S

Roads
Major Roads
Water Bodies
Wetland

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D - 8: Selena Rd

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WOODVILLE HWY
SELENA RD
TEBO TRL
OLD PINE ACRES TRL
PINE TREE TRL
EVERGREEN HILLS CT
EVERGREEN HILLS LN
SELENA CT
OLD WOODVILLE RD
BRIGHT STAR CIR
KELLI LOOP
SW Pond

Tallahassee-Leon County GIS
WWW.TLCGIS.ORG

0 500 1,000 Feet

N W E S

Buildings
Waterbody
Wetlands
Parcels
Roads
Index Contours
Inter Contours

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D9 - Sir Richard Road

Background Information

Drainage Basin:	Ochlocknee
Prior Studies by NWFWMD and/or CDM that identified this issue:	No
Impacted parcels are served by road and/or drainage systems that are:	Private
Proposed improvements are located on property that is:	Private
Development of the impacted property occurred on or before:	Prior to 1974

Sir Richard Road is a private dirt road south of SR 20 near the Ft. Braden School.

Description of Problem

General Problem Type:	Property isolated due to access road wash out
Problem Source:	Conveyance

Polk Creek flows under Sir Richard Road through a single cross-drain. High-intensity rainfall events cause the creek to flood, washing out the crossing and isolating residents south of the creek crossing.

Recommended Solution:

Estimated Cost of Solution	$200,000
Number of Parcels Benefiting from Proposed Improvements	44
Estimated Cost per Parcel Benefiting	$4,545
Implementation Vehicle for Proposed Improvements	CARDS

The proposed CARDS project will replace the existing crossdrain at Polk Creek with double 5'x4' crossdrains to restore a broader, more natural floodway for the creek. The side slopes and roadbed of Sir Richard Road will be stabilized to prevent damage during high flows.

Alternate Solutions:

No action will result in continued roadway access flooding and potential greater impacts in storm events more severe than those experienced to date.

Issues to be Resolved During Project Development:

The design and permitting process for this proposed project may identify additional work elements to ensure no adverse impact to adjacent properties, as well as any mitigation needed for construction in the watercourse and wetlands. Access and drainage easements, required for the crossdrain construction and maintenance, were considered as donations.

Attachments:

Vicinity Map
Project Map

D - 9: Sir Richard Rd Vicinity

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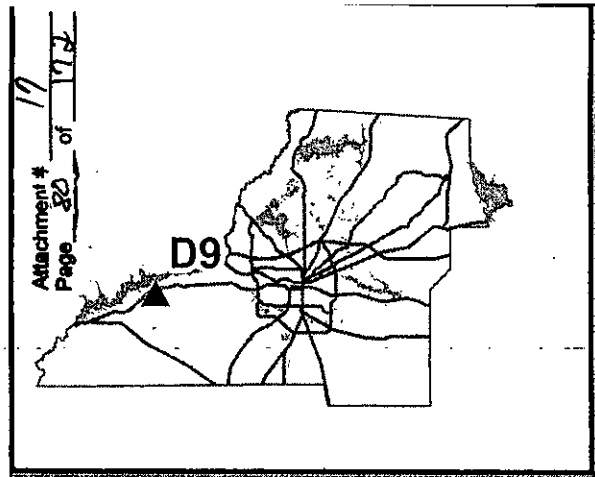

LAKE TALQUIN

BLOUNTSTOWN HWY

Project Area

Tallahassee-Leon County GIS

0 1 Miles

N W E S

Roads
Major Roads
Water Bodies
Wetland

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D - 9: Sir Richard Rd

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New Culverts

SIR RICHARD RD
LITTLE
FRIAR TUCK RD
MERRY ROBIN RD

130
140
120
110
100

N
W
E
S

Tallahassee-Leon County GIS
www.tlcgis.org

0 500 1,000 Feet

Waterbody
Wetlands
Buildings
Parcels
Roads
Index Contours
Inter Contours

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D10 - Surrey Farms Subdivision

Background Information

Drainage Basin:	Moccasin Gap
Prior Studies by NWFWMD and/or CDM that identified this issue:	None
Impacted parcels are served by road and/or drainage systems that are:	Private
Proposed improvements are located on property that is:	Private and Public
Development of the impacted property occurred on or before:	1999

Surrey Farms Lane is located east of Old Centerville Road and north of Moccasin Gap Road.

Description of Problem

General Problem Type:	Property Isolated due to road flooding
Problem Source:	Closed Basin

Approximately 456 acres discharge to the low area at the intersection of Old Centerville Road and Surrey Farms Lane during high-volume storm events. The localize closed basin overtops both roads and prevents access for residents.

Recommended Solution:

Estimated Cost of Solution	$180,000
Number of Parcels Benefiting from Proposed Improvements	10
Estimated Cost per Parcel Benefiting	$18,000
Implementation Vehicle for Proposed Improvements	CARDS

The proposed CARDS project consists of raising and paving approximately 200 feet of Surrey Farms Road and 800 feet of Old Centerville Road. The work also includes the construction of a culvert under Surrey Farms Road.

Alternate Solutions:

No action will result in continued access issues experienced to date.

Issues to be Resolved During Project Development:

Due to the location of the improvements, flooplain and wetland issues may need to be addressed that are not included in the current cost estimate. Additional property may need to be acquired to raise Old Centerville Road.

Attachments:

Vicinity Map
Project Map

D - 10: Surrey Farms Vicinity

ATTACHMENT # ___
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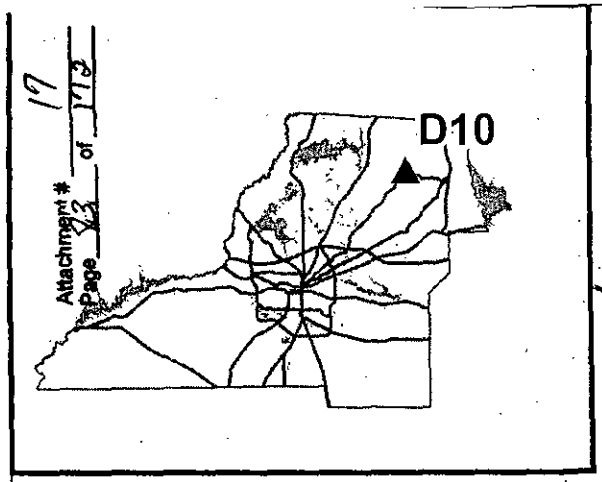

Project Area

OLD CENTERVILLE RD

STRAW POND

MOCCASIN GAP RD

SANDERS HAMMOCK POND

HUGGLE POND

CENTERVILLE RD

Tallahassee-Leon County GIS

0 1 Miles

N W E S

Roads
Major Roads
Water Bodies
Wetland

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D - 10: Surrey Farms

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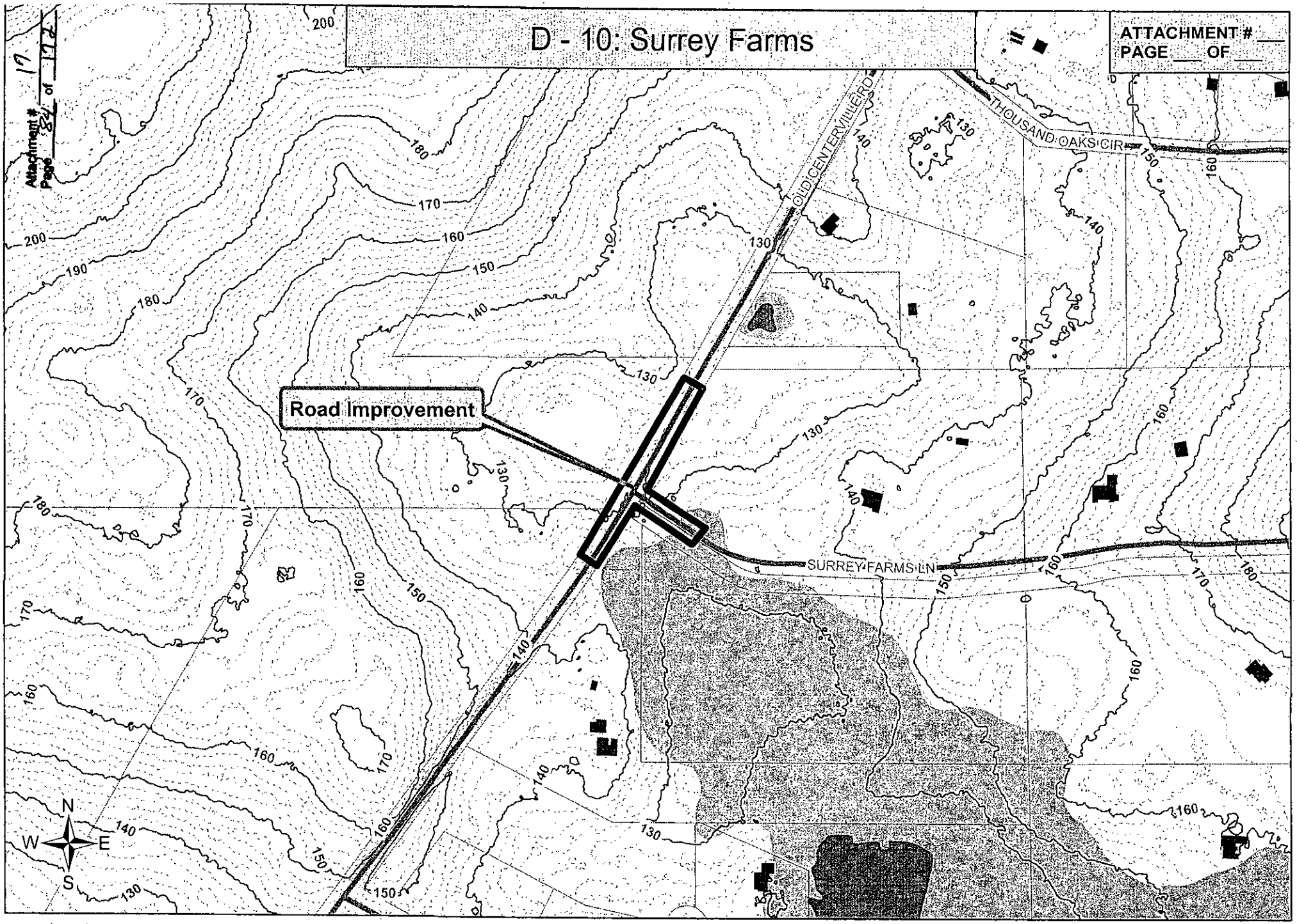

Tallahassee-Leon County GIS
WWW.TLCGIS.ORG

0 500 1,000 Feet

Waterbody
Wetlands
Buildings
Parcels
Roads
Index Contours
Inter Contours

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D11 – Timber Lake Subdivision

Background Information

Drainage Basin:	Lafayette
Prior Studies by NWFWMD and/or CDM that identified this issue:	No
Impacted parcels are served by road and/or drainage systems that are:	Private
Proposed improvements are located on property that is:	Private
Development of the impacted property occurred on or before:	1986

This is a residential subdivision off of Apalachee Parkway in the Mom and Dad's closed basin. Most of its development occurred in the mid to late 1980's. In the mid-1990's the developer added an additional 40 homes at a lower minimum building elevation. The lake area at the entrance to the subdivision is an amenity for a park-like appearance, and is not a stormwater treatment facility. The lake does not percolate sufficiently to account for routine rainfalls and groundwater movement, so it has within it a drainage system that discharges excess water from the lake into the aquifer below it. This discharge system was originally installed prior to regulations being enacted, and current regulations prohibit such systems. FDEP has for years been calling for the removal of the drain. Removal of the drain, without other means of maintaining lake levels, would result in significant expansion of the lake, possibly onto roads and residential lots.

Description of Problem

General Problem Type:	Structural flooding. Property isolated due to flooded entrance road to subdivision.
Problem Source:	Closed Basin

The stormwater impacts to the subdivision as a result of TS Fay were highlighted during and after that storm as the most graphic representation of the storm's effects. The road flooding that occurred as a result of TS Fay was typical of prior events in 1994 and 2004. The home flooding was typical of what happened in 1994. This is a recurring problem of significant magnitude. Emergency response to the TS Fay situation was to create an emergency access road to the rear of the subdivision from Quazar Road.

The City of Tallahassee indirectly eliminated the flooding problem when they pumped down their sewer lift station located by the lake. The City has, since TS Fay, been moving rapidly to relocate the sewer pump station away from this low area. This action by the City is necessary to protect the public health since the inundation of the pump station results in the direct discharge of human waste into waters that humans can come into contact with, either by wading, home flooding or residue left after the waters recede. The City has offered to donate to the County the pump station structure which could be retrofitted into a permanent stormwater pumping station.

The homeowner's have brought to the forefront of discussion the facts associated with the second phase of the subdivision development. The original development occurred in the mid to late 1980's, governed by a minimum building elevation. In the early 1990's, the minimum building elevation was lowered by the County, allowing an additional 40 homes to be built. It is these homes that are subject to flooding in the past storm events.

Recent regulatory revisions have imposed closed basin standards for stormwater for new development in this area. The more recent development along Quazar Road was developed on these standards that require the stormwater system to retain 100% of the 100 year storm event. This significantly reduced the amount of water that Timber Lake received in TS Fay. Much of the basin is currently undeveloped land owned by St. Joe and used as pasture land. The future development of these undeveloped properties, under closed basin standards, will further reduce the amounts of water that Timber Lake would receive in storm events. Staff does not see this as a solution to the problem, but is an important factor to be considered in developing a solution.

D11 – Timber Lake Subdivision

Recommended Solution:

Estimated Cost of Solution	$700,000
Number of Parcels Benefiting from Proposed Improvements	240
Estimated Cost per Parcel Benefiting	$2,917
Implementation Vehicle for Proposed Improvements	CARDS

The recommended solution is to establish a permanent stormwater pumping station at the location formerly occupied by a City of Tallahassee sewer pump station. The pumping station would pump stormwater via pipeline into an adjoining basin in a manner that would have minimal negative impacts to the receiving basin.

Alternate Solutions:

If it is determined that a direct interbasin transfer cannot be accomplished without causing significant negative impacts to the receiving basin, the project could be modified to include a receiving stormwater pond that would be designed to reduce any impacts to the receiving basin to minimal levels. It is currently estimated that if the receiving stormwater pond is added, the project cost would increase to $5,860,000, or $24,417 per benefiting parcel.

If the interbasin transfer cannot be accomplished in any form, the remaining option would be to acquire rights of way for the emergency access road so that it can be quickly re-established if these conditions reoccur. It is to be noted, however, that this option does not address the home flooding and does not provide a means for removing the lake discharge into the aquifer. Issues to be addressed, in addition to ROW acquisition, include the removal of a conservation easement over a portion of the route, securing permission to use a private road for these purposes, and development review concerns with using a platted residential lot as a ROW. Most of these issues are mitigated, however, by the fact that the road would only be in place during emergency situations. The cost of this option would range from $10 to $15 million.

Staff has also evaluated the possibility of expanding the existing lake to accommodate severe storm volumes. The existing topography, however, is too severe for this option to have any feasibility.

Issues to be Resolved During Project Development:

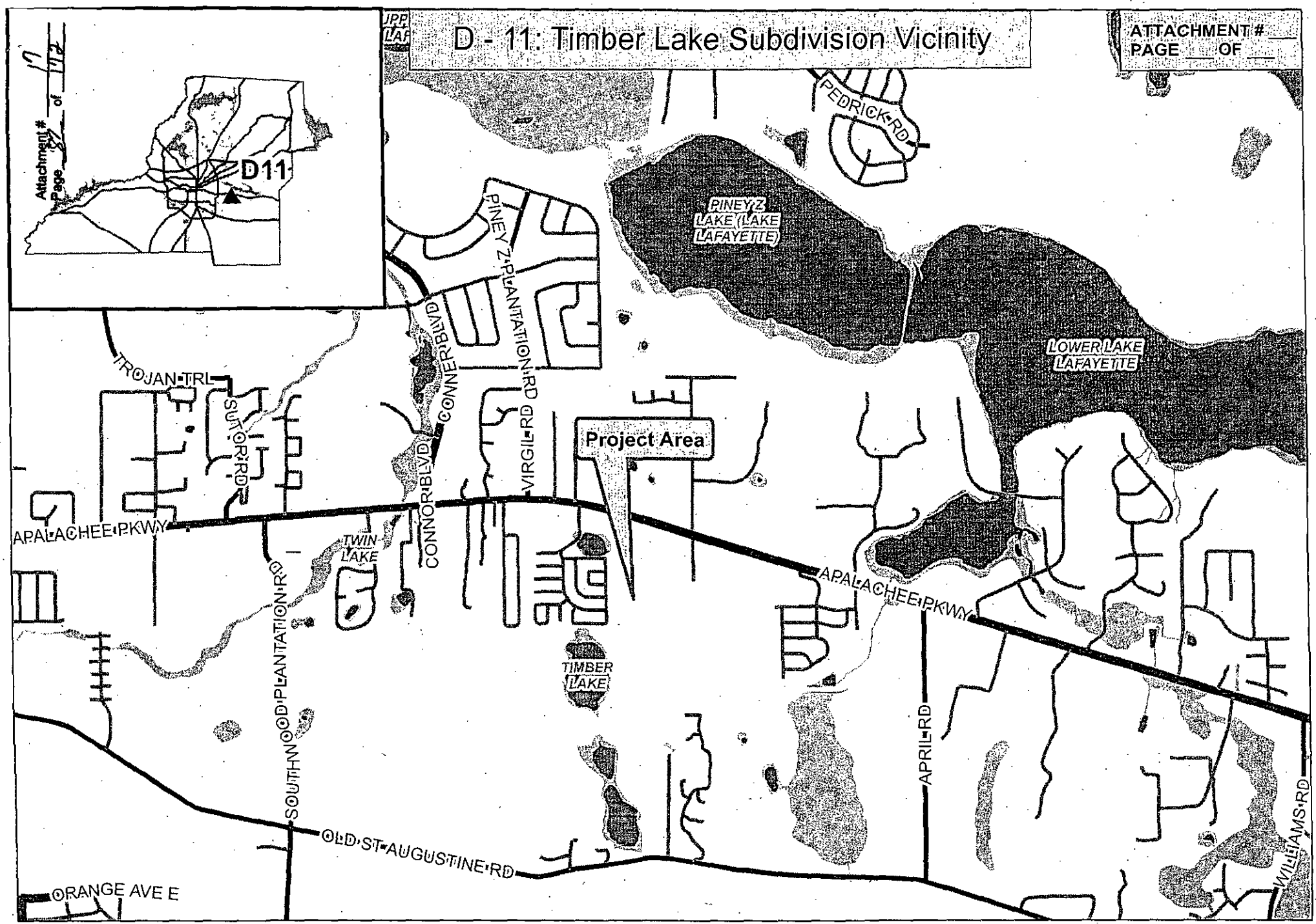
The interbasin transfer issue is the largest concern facing this project. Studies will have to be performed and gauged against possible designs to ensure that if there are any negative impacts to the receiving basin, that they are indeed minimal.

Attachments:

Vicinity Map
Project Map

D - 11: Timber Lake Subdivision Vicinity

ATTACHMENT # ___
PAGE ___ OF ___



Tallahassee-Leon County GIS
www.tlcgis.org

0 1 Miles

N W E S

Roads
Major Roads
Water Bodies
Wetland

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D - 11: Timber Lake Subdivision

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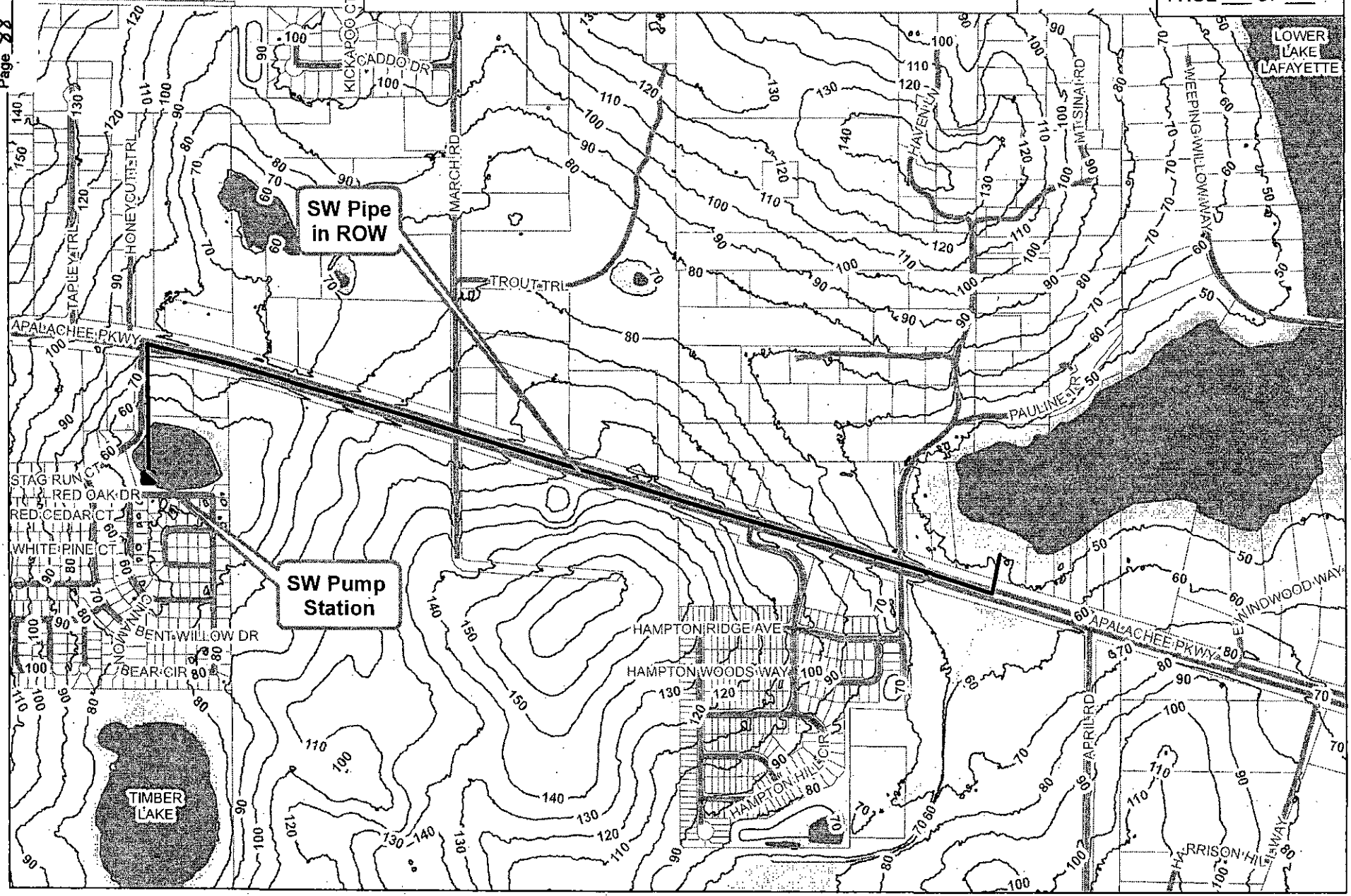

Tallahassee-Leon County GIS
www.tlcgis.org

0 500 1,000 Feet

N W E S

Waterbody
Wetlands
Parcels
Roads
Index Contours

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D12 - Tung Grove Road Neighborhood

Background Information

Drainage Basin:	Lake Lafayette
Prior Studies by NWFWMD and/or CDM that identified this issue:	Yes
Impacted parcels are served by road and/or drainage systems that are:	Private
Proposed improvements are located on property that is:	Private
Development of the impacted property occurred on or before:	1978

Tung Grove Road is a private dirt road east of Chaires Crossroad approximately 850 feet south of I-10.

Description of Problem

General Problem Type:	Roadway access and property flooding
Problem Source:	Conveyance Deficiency

Residents currently experience property and roadway access flooding during high-intensity storm events due to inadequate conveyance capacity in the existing roadside drainage system.

Recommended Solution:

Estimated Cost of Solution	$1,500,000
Number of Parcels Benefiting from Proposed Improvements	55
Estimated Cost per Parcel Benefiting	$30,000
Implementation Vehicle for Proposed Improvements	CARDS

The proposed CARDS Project will construct an 18-foot wide paved road for 6,250 ft with associated stormwater facilities to provide stable access to Chaires Crossroad. The 60 foot right-of-way is to be donated by home owners. Side streets are not included in the scope of work.

Alternate Solutions:

No action will result in continued property flooding and roadway access flooding and potential greater impacts in storm events more severe than those experienced to date.

Issues to be Resolved During Project Development:

A stormwater study for this proposed work is necessary to ensure no adverse impact to adjacent properties. The cost associated with additional work resulting from a detailed stormwater study is not included in the current cost estimate.

Attachments:

Vicinity Map
Project Map

D - 12: Tung Grove Vicinity

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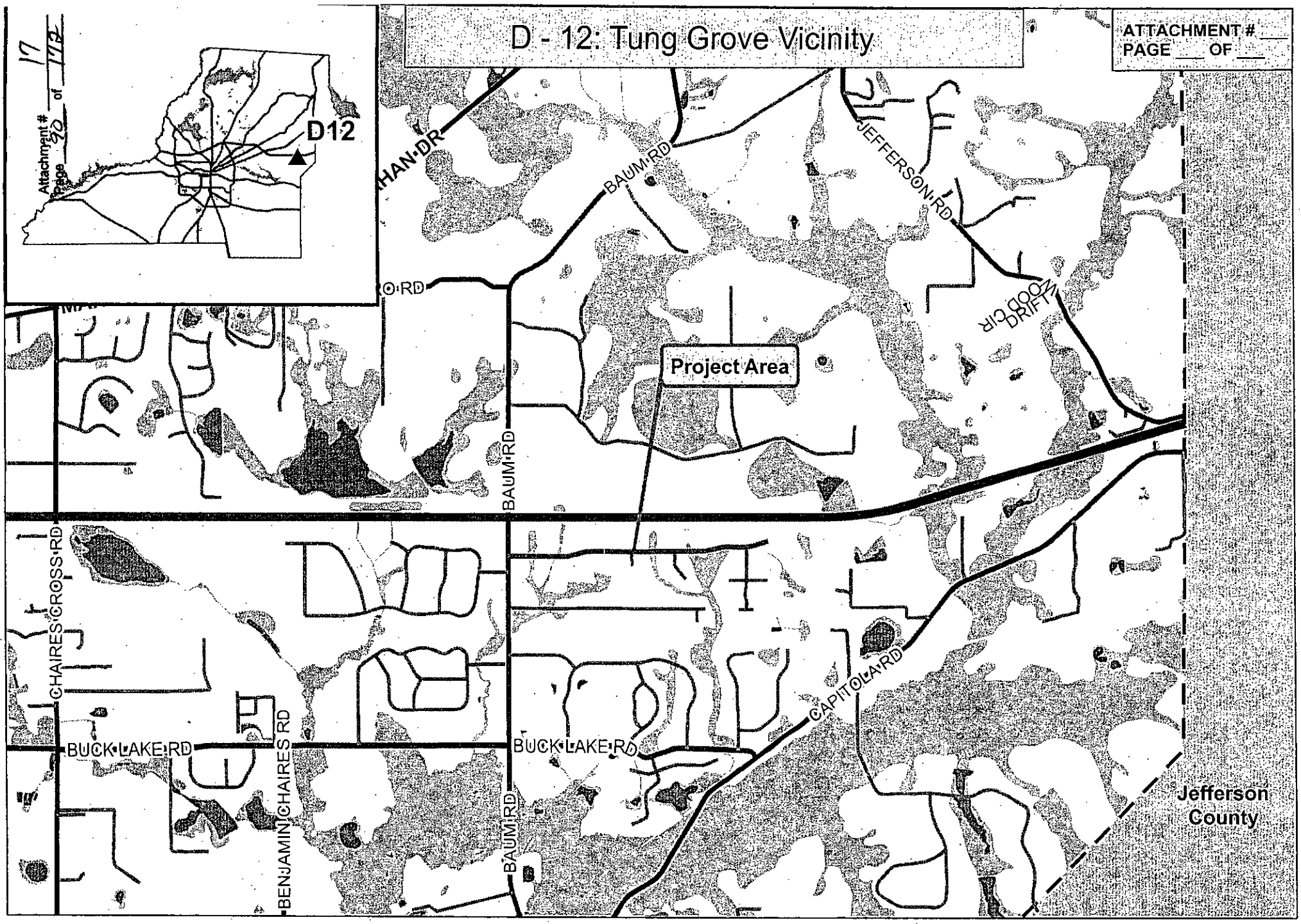

Tallahassee-Leon County GIS
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0 1 Miles

N W E S

Roads
Major Roads
Water Bodies
Wetland

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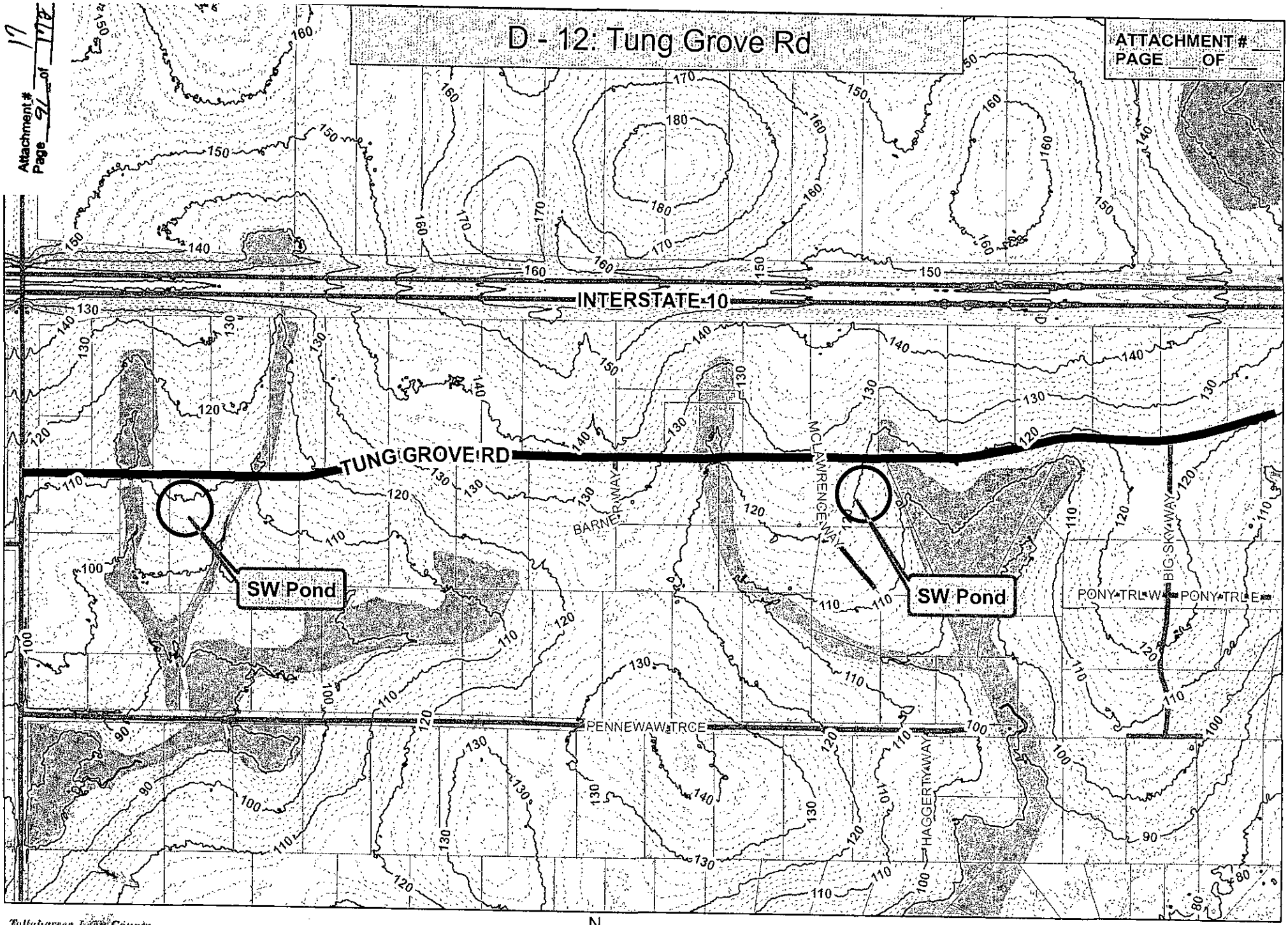
D - 12: Tung Grove Rd



Tallahassee-Leon County GIS
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0 500 1,000 Feet

N W E S

Waterbody
Wetlands
Parcels
Roads
Index Contours
Inter Contours

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D13 - Waters Meet Dr. – Haverhill Rd.

Background Information

Drainage Basin:	Lake Iamonia
Prior Studies by NWFWMD and/or CDM that identified this issue:	Yes
Impacted parcels are served by road and/or drainage systems that are:	Private
Proposed improvements are located on property that is:	Private
Development of the impacted property occurred on or before:	1973

The project area lies in Unit 4 of Killearn Lakes, northeast of Deerlake Middle School.

Description of Problem

General Problem Type:	Structural and Access to Property
Problem Source:	Closed Basin

High-volume storm events in the 47-acre closed basin cause prolonged flooding beneath two structures and inundating the septic tanks.

Recommended Solution:

Estimated Cost of Solution	$290,000
Number of Parcels Benefiting from Proposed Improvements	2
Estimated Cost per Parcel Benefiting	$145,000.00
Implementation Vehicle for Proposed Improvements	CARDS

The proposed CARDS project requires the construction of approximately 1,450 linear feet of 24" concrete pipe to discharge floodwaters to Lake Diane, within easements to be obtained from adjacent private property. Approximately 400' of pipe construction will occur in current Leon County rights-of-way or drainage easements.

Alternate Solutions:

No action will result in continued yard flooding, under structural flooding and access to property in storm events more severe than those experienced to date. Acquisition of the impacted properties would result in significantly greater costs than the recommended solution.

Issues to be Resolved During Project Development:

Underground utility conflicts are always a potential within the project area and may result in delays to project implementation. Easement acquisition for proposed improvements may require eminent domain procedures to implement improvements. Although the area is not identified as a regulated closed basin, permitting may require approval of an interbasin transfer.

Attachments:

Vicinity Map
Project Map

D - 13: Waters Meet Rd Vicinity

ATTACHMENT # ___
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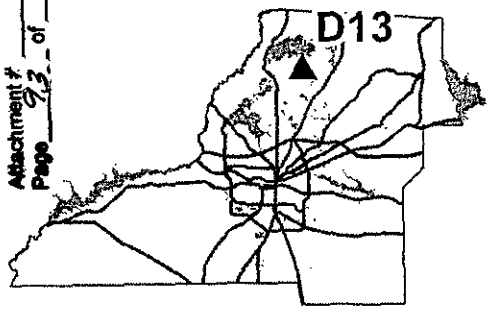

LAKE IAMONIA
MITCHELL ARM OF LAKE IAMONIA
KINHEGA LODGE DR
DEERLAKE W
DEERLAKE
DEERLAKE W
Project Area
BULLHEADLEY RD
UPPER LAKE DIANNE
LOWER LAKE DIANNE
DEERLAKE E
PETTY GULF LAKE
PINE HILL LAKE
BANNERMAN RD

Tallahassee-Leon County GIS
www.tlcgis.org

0 1 Miles

N W E S

Roads
Major Roads
Water Bodies
Wetland

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D - 13: Waters Meet Rd

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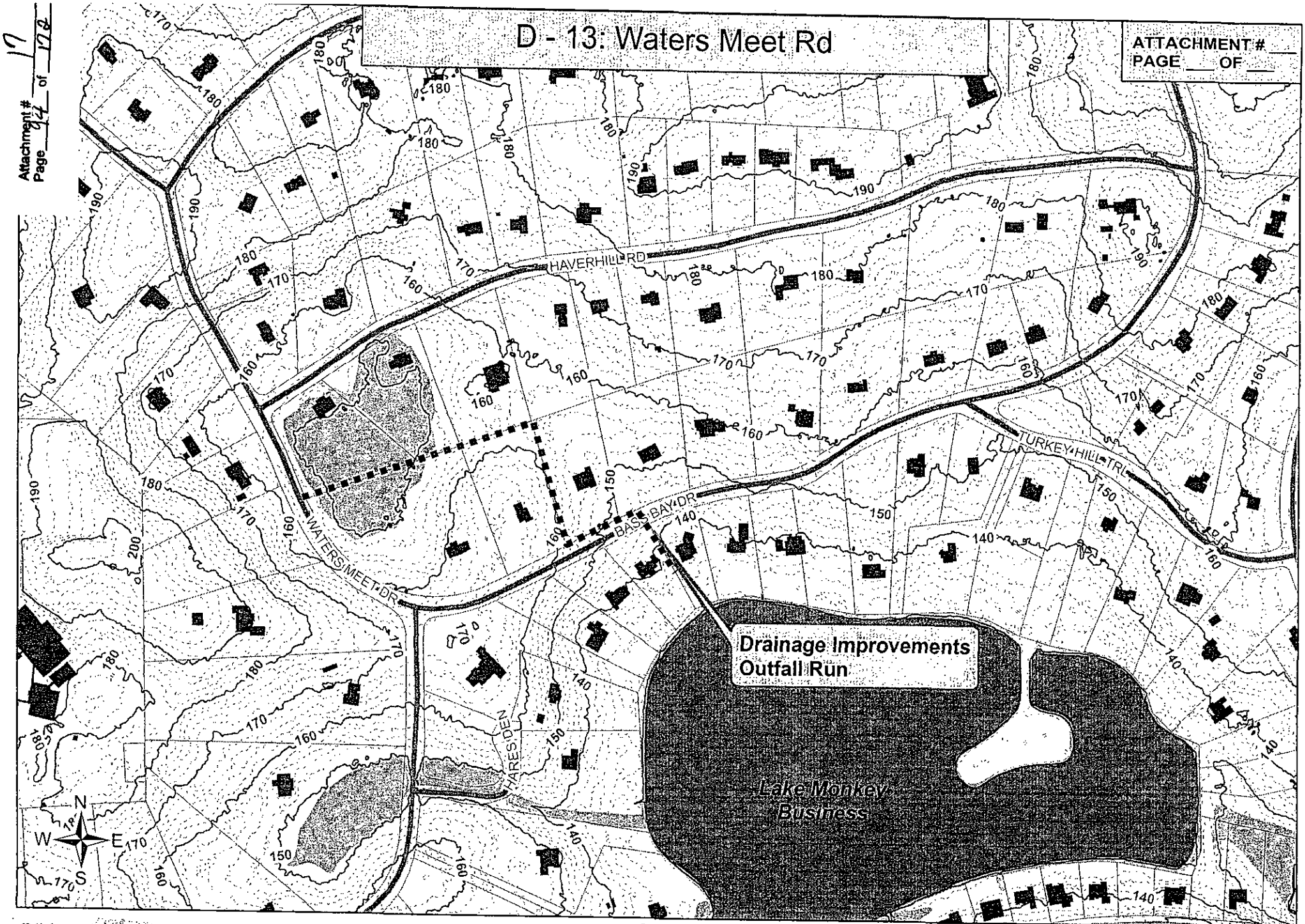

Tallahassee-Leon County GIS
www.tlcgis.org

0 500 1,000 Feet

Waterbody
Wetlands
Buildings
Parcels
Roads
Index Contours
Inter Contours

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F1 - 9721 Waters Meet Drive

Background Information

Drainage Basin:	Lake Iamonia
Prior Studies by NWFWMD and/or CDM that identified this issue:	None
Impacted parcels are served by road and/or drainage systems that are:	Public
Proposed improvements are located on property that is:	Private
Development of the impacted property occurred on or before:	Prior to 1973

The parcel is affected by the Killearn Lakes Chain of Lakes, owned or maintained by the Golden Eagle and Killearn Lakes Homeowners Associations. The home was constructed in compliance with the County code.

Niece

Description of Problem

General Problem Type:	Structural Flooding
Problem Source:	Conveyance

Residential property currently experiences structure flooding during major storm events due to inadequate conveyance from Lake Blue Heron through Lake Monkey Business to Lake Iamonia.

Recommended Solution:

Estimated Cost of Solution	$820,000
Number of Parcels Benefiting from Proposed Improvements	1
Estimated Cost per Parcel Benefiting	$820,000
Implementation Vehicle for Proposed Improvements	Flooded Property Acquisition Program

The proposed action would purchase a residential property which experiences structural flooding.

Alternate Solutions:

Taking no action will result in continued structural flooding and potential greater impacts in storm events more severe than those experienced to date.

Issues to be Resolved During Project Development:

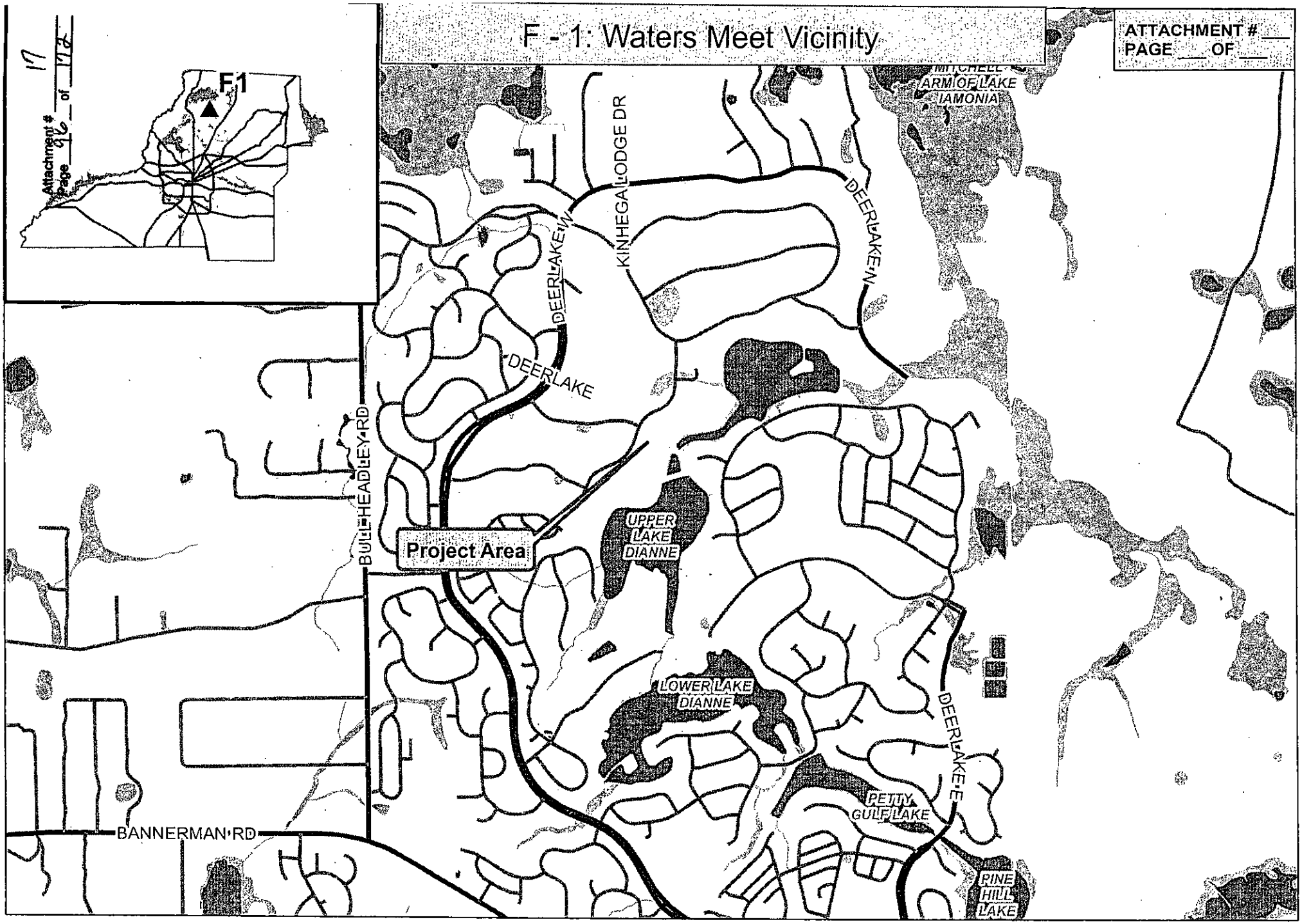
Board direction is required to prioritize acquisition of newly identified sites.

Attachments:

Vicinity Map
Project Map

F - 1: Waters Meet Vicinity

ATTACHMENT # ___
PAGE ___ OF ___



Tallahassee-Leon County GIS

0 1 Miles

N W E S

Roads
Major Roads
Water Bodies
Wetland

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F - 1: 9721 Waters Meet

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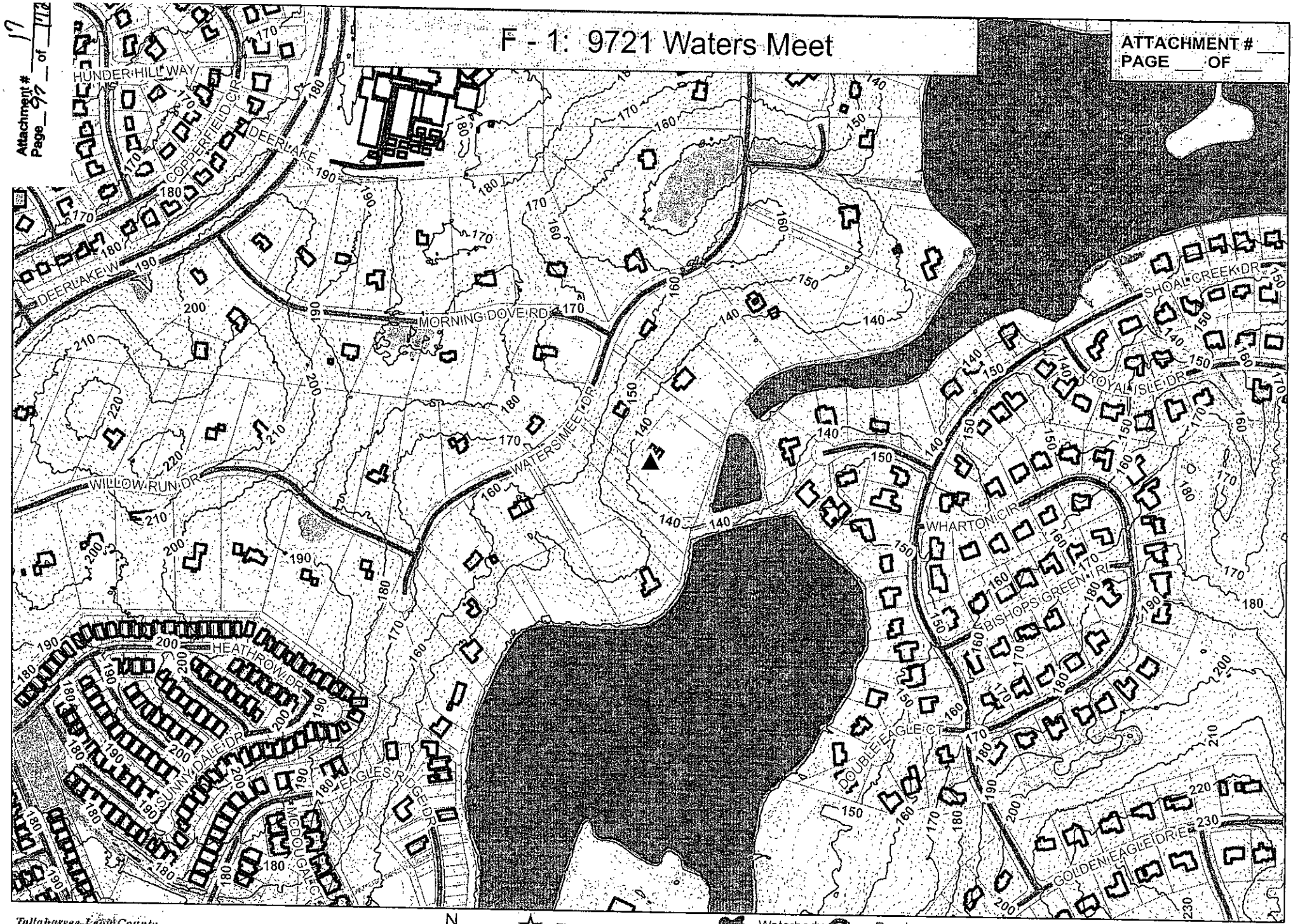

Tallahassee-Leon County GIS
www.tlcgis.org

0 500 1,000 Feet

N W E S

Flood Projects FPAP
Flood Projects non FPAP
FPAP Adopted list
Waterbody
Wetlands
Buildings
Parcels
Roads
Index Contours
Inter Contours

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F2 – Almanac Road Area

Background Information

Drainage Basin:	Bird Sink
Prior Studies by NWFWMD and/or CDM that identified this issue:	None
Impacted parcels are served by road and/or drainage systems that are:	Private
Proposed improvements are located on property that is:	Private
Development of the impacted property occurred on or before:	1991

Almanac Road is located at the bottom of a 46-acre closed basin.

Description of Problem

General Problem Type:	Structural and Yard Flooding
Problem Source:	Closed Basin

Two properties located at the bottom of the closed basin experience substantial flooding, but only one site is developed. The property owner previously declined the County's 2005 offer under the Flooded Property Acquisition Program stating that the offer would not fund relocation of the landscape business on site.

Recommended Solution:

Estimated Cost of Solution	N/A
Number of Parcels Benefiting from Proposed Improvements	N/A
Estimated Cost per Parcel Benefiting	N/A
Implementation Vehicle for Proposed Improvements	Flooded Property Acquisition Program

The proposed action would purchase one property which experiences structural flooding. This property is included in the original FPAP project list. It is presented here due to the re-occurrence of flooding damages to the structure.

Alternate Solutions:

Taking no action will result in continued major structural flooding.

Issues to be Resolved During Project Development:

Article 5, Section E of the Flooded Property Acquisition Program policy states:
"Upon an Owner's rejection of the Written Offer, written confirmation from the County shall be provided to the Owner, and the Owner's property shall thereafter be removed from any further consideration by the County for Purchase as a Flooded Property."

Ten property owners declined purchase offers, including this site. The Board policy would require revision if the site is to be reconsidered for assistance.

Attachments:

Vicinity Map
Project Map

F - 2: Almanac Road Vicinity

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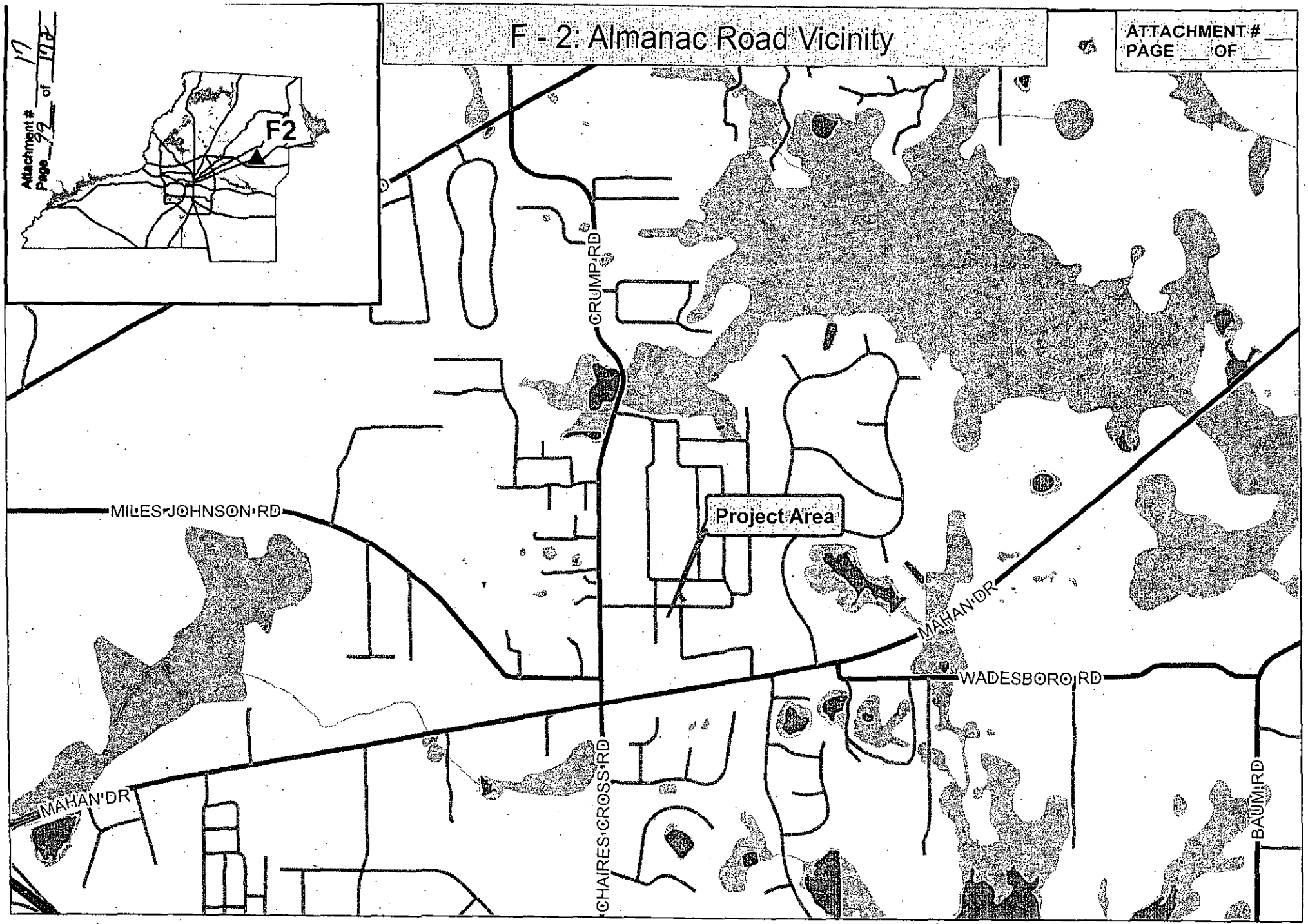

Tallahassee-Leon County GIS
www.TLCGIS.org

0 1 Miles

N W E S

Roads
Major Roads
Water Bodies
Wetland

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F - 2: Almanac Road

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STINO CT
STINO LN
NAZARETH ALICE DR
HARRIS PALMER LN
WALLEE LN
ALMANAC RD
PLOWSHARE RD
FRONTIER RD
HOMESTEAD RD
HAWKS LANDING DR
ARCADIA AVE
CONESTOGA AVE
CRUMP RD
PIONEER RD
LONGSPUR LN
POWDERHORN AVE
MILES JOHNSON RD
MAHAN DR
ARCHANGEL WAY
GUADALUPANA CT

Tallahassee-Leon County GIS
www.TLCGIS.org

0 500 Feet

N W E S

Flood Projects FPAP
Flood Projects non FPAP
FPAP Adopted list
Waterbody
Wetlands
Parcels
Roads
Index Contours
Inter Contours

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F3 – Benjamin Chaires/Buck Lake/Chaires/Capitola Area

Background Information

Drainage Basin:	St. Marks
Prior Studies by NWFWMD and/or CDM that identified this issue:	CDM
Impacted parcels are served by road and/or drainage systems that are:	Public
Proposed improvements are located on property that is:	Private
Development of the impacted property occurred on or before:	Prior to 1937

The project area is the Capitola community westward to Benjamin Chaires Road and Chaires Crossroad.

Description of Problem

General Problem Type:	Structural Flooding and Isolation
Problem Source:	St. Marks River Floodplain

Lloyd Creek, Black Creek and Still Creek change direction to flow west to become part of the St. Marks River during high volume storm events or following extended rainfall periods such as the summer of 1994.

Recommended Solution:

Estimated Cost of Solution	$5,210,000
Number of Parcels Benefiting from Proposed Improvements	19
Estimated Cost per Parcel Benefiting	$274,211
Implementation Vehicle for Proposed Improvements	Flooded Property Acquisition Program

The proposed solution involves purchase of the improved property which experiences structural flooding.

Alternate Solutions:

Taking no action will result in continued major structural flooding. Raising the roadway network will assist adjacent property but will not prevent the structural flooding of the target parcels.

Issues to be Resolved During Project Development:

The priority to purchase the 19 affected parcels must be determined.

Attachments:

Vicinity Map
Project Map

F - 3: Benjamin Chaires/Buck Lake Vicinity

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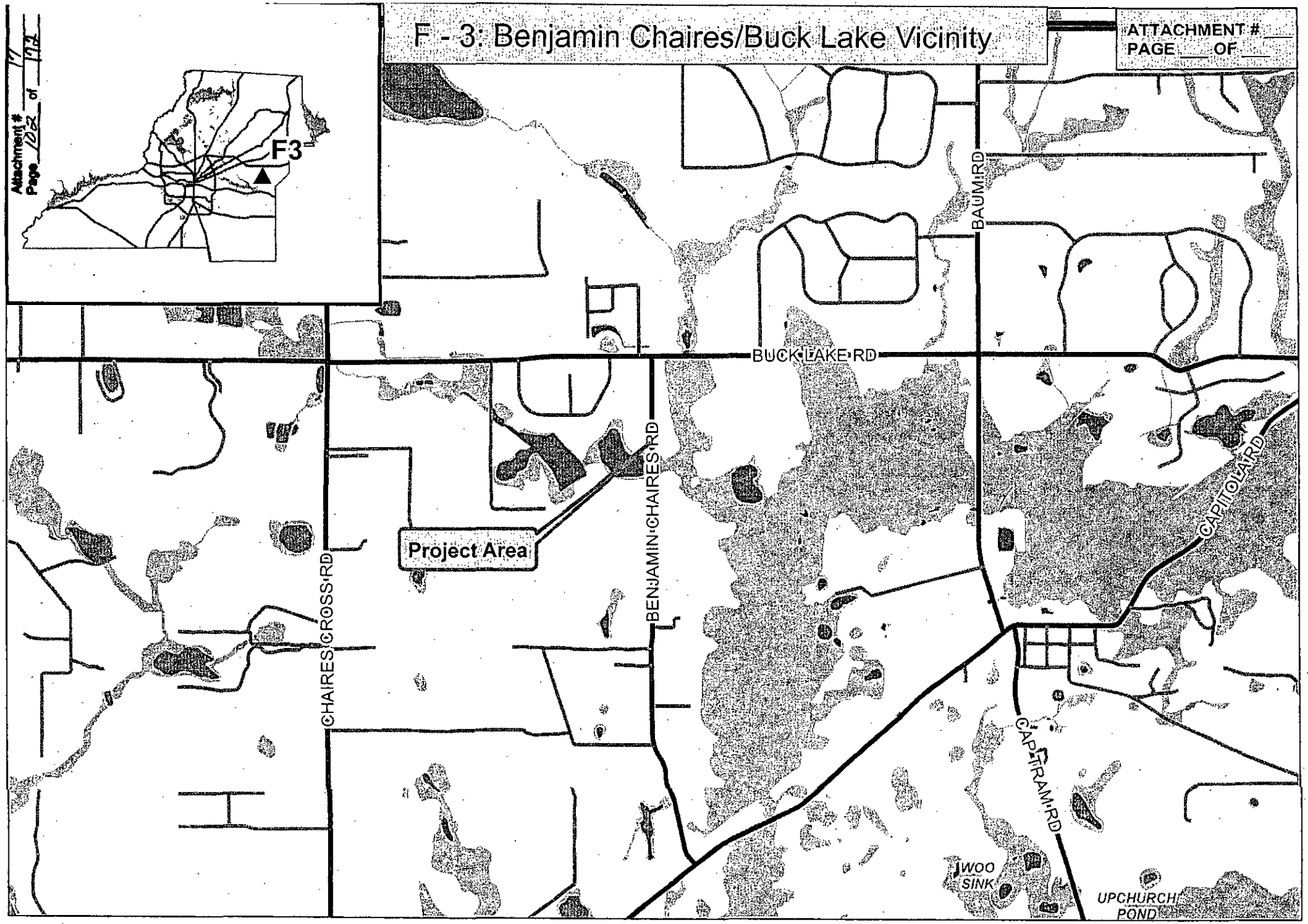

Tallahassee-Leon County GIS
www.tlcgis.org

0 1 Miles

N W E S

Roads
Major Roads
Water Bodies
Wetland

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F - 3: Benjamin Chaires/Buck Lake Area

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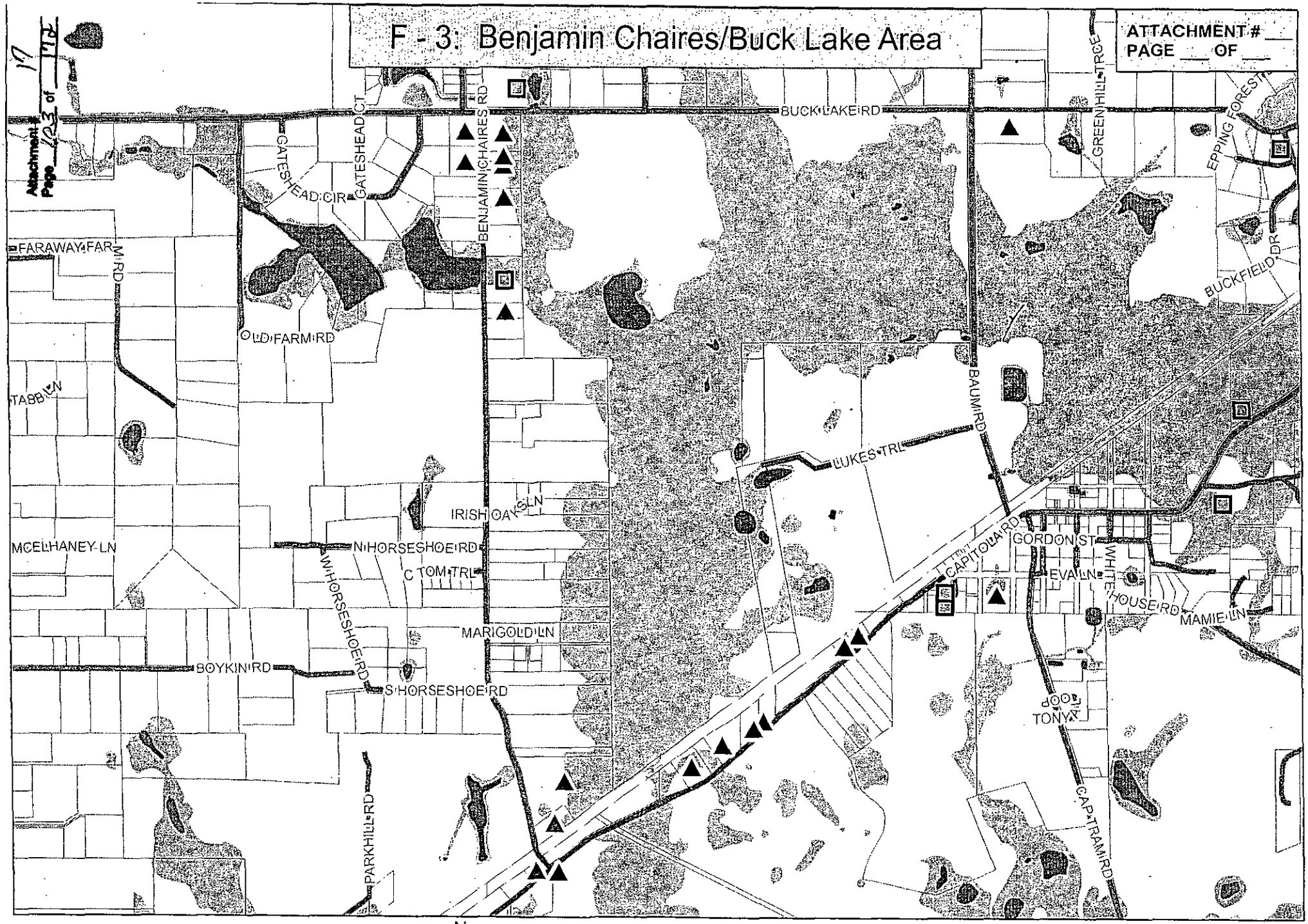

Tallahassee-Leon County GIS
www.tlcgis.org

0 500 1,000 Feet

N W E S

Flood Projects FPAP
Flood Projects non FPAP
FPAP Adopted list
Waterbody
Wetlands
Parcels
Roads

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F4 – Celia Court and Lainey Lane

Background Information

Drainage Basin:	Munson
Prior Studies by NWFWMD and/or CDM that identified this issue:	CDM
Impacted parcels are served by road and/or drainage systems that are:	Private
Proposed improvements are located on property that is:	Private
Development of the impacted property occurred on or before:	1986

The project focuses on the private mobile home subdivisions south of Sunflower Road.

Description of Problem

General Problem Type:	Structural Flooding and Isolation
Problem Source:	Munson Slough Overflow

In extreme rainfall conditions, Munson Slough overflows the sinkholes which normally receive the runoff, spilling over the dirt roads as it rises. Very rarely, the flow extends southeast to the McBride Slough in Wakulla County.

Recommended Solution:

Estimated Cost of Solution	$1,950,000
Number of Parcels Benefiting from Proposed Improvements	9
Estimated Cost per Parcel Benefiting	$217,142
Implementation Vehicle for Proposed Improvements	Flooded Property Acquisition Program

The proposed solution involves purchase of 9 improved parcels. Four sites were included in the original Flooded Property Acquisition Program.

Alternate Solutions:

Taking no action will result in continued structural and isolation flooding. Raising the roadway network will assist adjacent property but will not prevent the structural flooding of the target parcels.

Issues to be Resolved During Project Development:

The priority to purchase the 9 affected parcels must be determined.

Attachments:

Vicinity Map
Project Map

F - 4: Celia Court/Lainey Lane Vicinity

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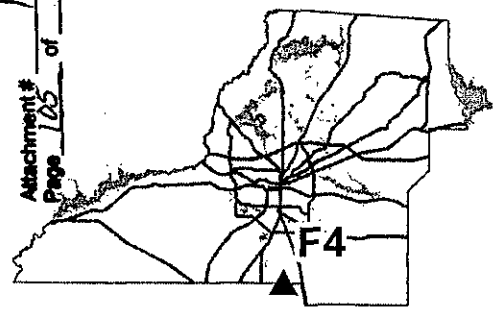

OAK RIDGE RD W
OAK RIDGE RD E
PAGE RD
NATURAL BRIDGE RD
CHURCH ST
ELGIN RD
SUNFLOWER RD
WOODVILLE HWY
Project Area
Wakulla County

Tallahassee-Leon County GIS
www.tlcgis.org

0 1 Miles

N W E S

Roads
Major Roads
Water Bodies
Wetland

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F - 4: Celia Court/Lainey Lane

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SONORA LN
CELIA RD
SUNFLOWER RD
SIPSEY WAY
LAINEY LN
CELIA CT
SUNFLOWER LN
SWEET JASMINE LN
SUNNY BROOK LN

Wakulla County

Tallahassee-Leon County GIS
www.tlcgis.org

0 500 1,000 Feet

N W E S

Flood Projects FPAP
Flood Projects non FPAP
FPAP Adopted list
Waterbody
Wetlands
Buildings
Parcels
Roads
Index Contours
Inter Contours

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F5 – Circle J Drive

Background Information

Drainage Basin:	Lafayette
Prior Studies by NWFWMD and/or CDM that identified this issue:	None
Impacted parcels are served by road and/or drainage systems that are:	Public
Proposed improvements are located on property that is:	Private
Development of the impacted property occurred on or before:	Prior to 1970

Approximately 43 acres of the Circle J Closed Basin discharges stormwater to the low area on 6762 Circle J Drive. The area retains water to a depth of approximately 6 feet before discharging across Circle J Drive.

Description of Problem

General Problem Type:	Structural Flooding
Problem Source:	Conveyance and Closed Basin

The residential structure is lower than the road surface and experiences flooding during high volume storm events.

Recommended Solution:

Estimated Cost of Solution	NA
Number of Parcels Benefiting from Proposed Improvements	NA
Estimated Cost per Parcel Benefiting	NA
Implementation Vehicle for Proposed Improvements	Flooded Property Acquisition Program

The proposed action would purchase one property which experiences structural flooding. This property is included in the original FPAP project list. It is presented here due to the re-occurrence of flooding damages to the structure.

Alternate Solutions:

Taking no action will result in continued structural flooding and potential greater impacts in storm events more severe than those experienced to date. There is no feasible means to prevent the runoff from collecting at 6762 Circle J Drive.

Issues to be Resolved During Project Development:

None.

Attachments:

Vicinity Map
Project Map

F - 5: Circle J Drive Vicinity

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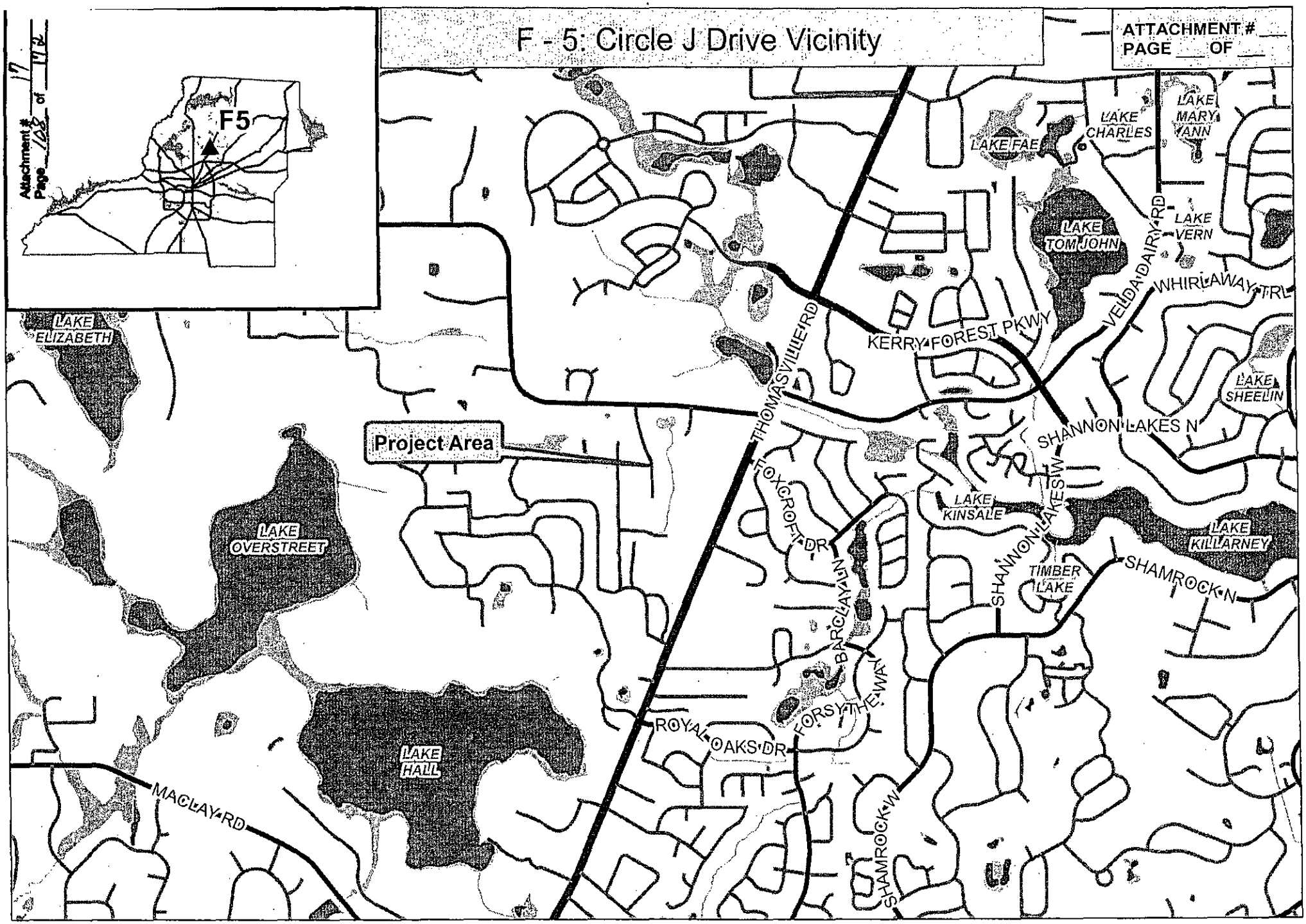

Tallahassee-Leon County GIS
www.tlcgis.org

0 1 Miles

N W E S

Roads
Major Roads
Water Bodies
Wetland

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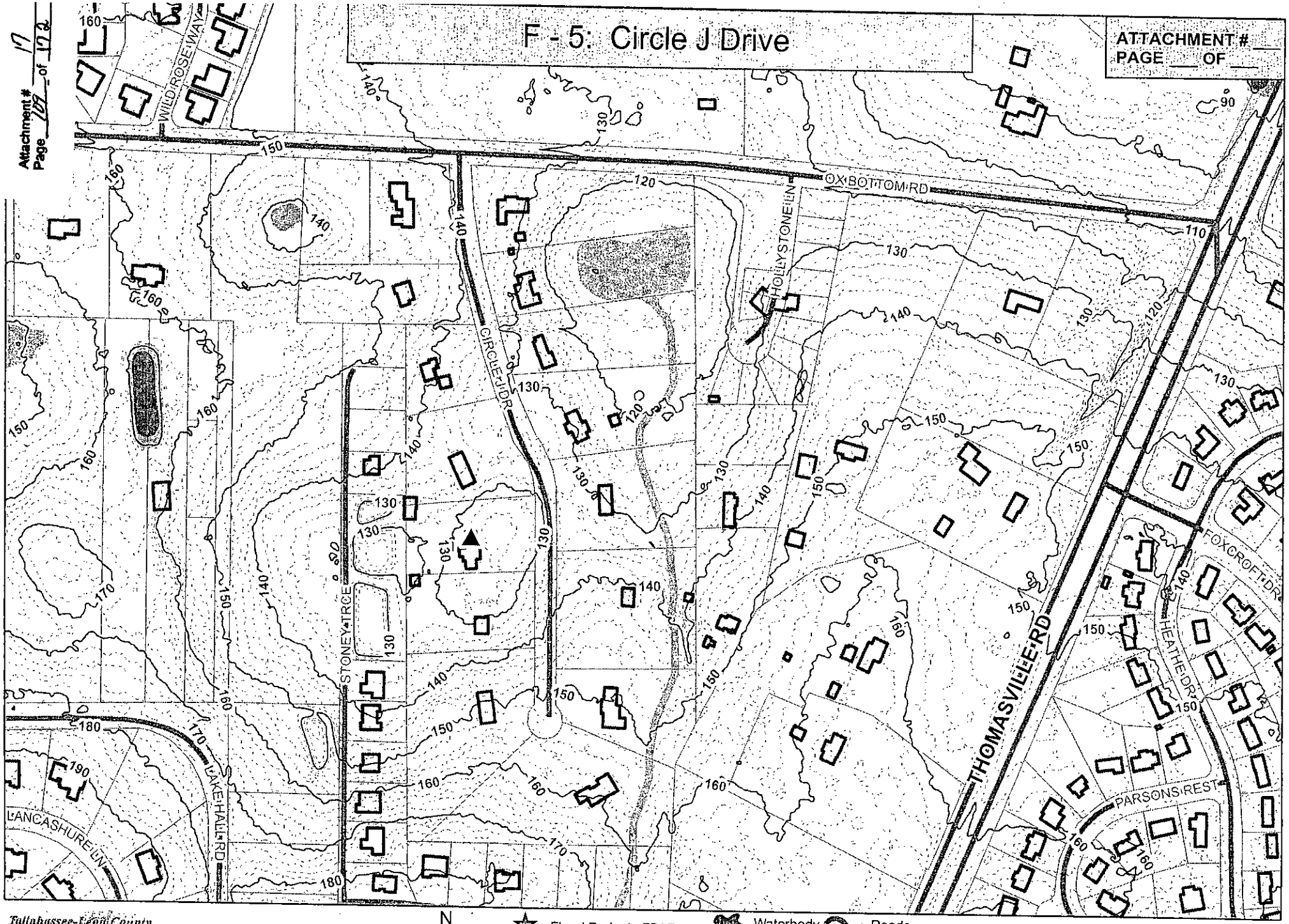
F - 5: Circle J Drive



Tallahassee-Leon County GIS
www.tlcgis.org

0 500 Feet

N W E S

Flood Projects FPAP
Flood Projects non FPAP
FPAP Adopted list
Waterbody
Wetlands
Buildings
Parcels
Roads
Index Contours
Inter Contours

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F6 - Coffee Lane

Background Information

Drainage Basin:	Fred George
Prior Studies by NWFWMD and/or CDM that identified this issue:	None
Impacted parcels are served by road and/or drainage systems that are:	Public
Proposed improvements are located on property that is:	Private
Development of the impacted property occurred on or before:	Prior to 1980

FDOT owns and operates a stormwater pond at the lowest point in the 70-acre Madam Mary Closed Basin, adjacent to Coffee Lane. The stormwater management system includes a pump station to discharge the runoff approximately 1,800 feet northeast, near Reservation Trail.

Description of Problem

General Problem Type:	Structural Flooding
Problem Source:	Closed Basin

Residential and commercial property currently experience structure and driveway access flooding during intense storm events when runoff collects in the FDOT pond more quickly than the pump station can discharge.

Recommended Solution:

Estimated Cost of Solution	$1,262,733
Number of Parcels Benefiting from Proposed Improvements	4
Estimated Cost per Parcel Benefiting	$315,683
Implementation Vehicle for Proposed Improvements	Flooded Property Acquisition Program

The proposed action would purchase properties which experience structural flooding.

Alternate Solutions:

Taking no action will result in continued structural flooding and potential greater impacts in storm events more severe than those experienced to date. The FDOT pond and pump station utilize the entire site preventing expansion of the facility.

Issues to be Resolved During Project Development:

Purchase of flooded structures will not protect access for the remaining structures along Coffee Lane. The adjacent FDOT stormwater pumping station may create liability concerns regarding historic flood damage.

Attachments:

Vicinity Map
Project Map

F - 6: Coffee Lane Vicinity

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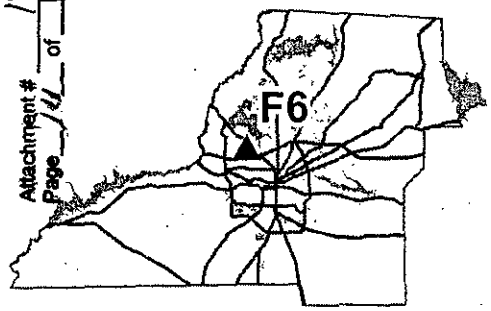

LAKE JANE
LAKE JACKSON
CROWDER RD
LAKESHORE DR N
N MONROE ST
Project Area
WOOD HILL DR
CONNECTOR DR
FRED GEORGE RD
TALPECO RD
DORIS DR
FULLER RD
LIVINGSTON RD
LAKESHORE DR W
LAKE ELIZABETH
OLD BAINBRIDGE RD
HUNTINGTON WOODS BLVD
INTERSTATE 10
NWFWMD ARTIFICIAL MARSH
GEARHART RD
MISSION RD
INTERSTATE 10
PORTLAND AVE
PULLEN RD
STONE RD

Tallahassee-Leon County GIS
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0 1 Miles

N W E S

Roads
Major Roads
Water Bodies
Wetland

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F - 6: Coffee Lane

WOODSTOCK LN
ASHBY HILL RD
CASA LINDA CT
OLD BAINBRIDGE RD
COFFEE LN
SWATTS RD
BELLAC RD
OLD BAINBRIDGE PL
N MONROE ST
WIGGINGTON LN
STRICKLANDS LN
SPAULDING RD
MINUET LN
HOPKINS DR
SHERRY LN
CANGROVE RD
TALPECO RD
MISE LN

Tallahassee-Leon County GIS
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0 500 Feet

N W E S

Flood Projects FPAP
Flood Projects non FPAP
FPAP Adopted list
Waterbody
Wetlands
Buildings
Parcels
Roads
Index Contours
Inter Contours

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F7 – Crooked Road

Background Information

Drainage Basin:	Ochlockonee
Prior Studies by NWFWMD and/or CDM that identified this issue:	None
Impacted parcels are served by road and/or drainage systems that are:	Public
Proposed improvements are located on property that is:	Private
Development of the impacted property occurred on or before:	1958

Crooked Road extends 0.9 mile along the east bank of the Ochlockonee River, immediately downstream of the Bloxham dam. Approximately 1,700 square miles (nearly 1.1 million acres) contribute flow to this point in the river.

Description of Problem

General Problem Type:	Structural Flooding
Problem Source:	Ochlockonee River overbank flow.

The residential structures flood following high-volume storm events upstream. The City of Tallahassee operates the Bloxham dam for hydroelectric power generation as well as Lake Talquin level regulation. The operators notify downstream residents prior to a large release to assist advance evacuation.

Recommended Solution:

Estimated Cost of Solution	$10,420,000
Number of Parcels Benefiting from Proposed Improvements	39
Estimated Cost per Parcel Benefiting	$267,195
Implementation Vehicle for Proposed Improvements	Flooded Property Acquisition Program

The proposed action would purchase developed property which experiences structural flooding. One site was included in the original Flooded Property Acquisition Program.

Alternate Solutions:

Taking no action will result in continued structural flooding.

Issues to be Resolved During Project Development:

The priority to purchase the 39 affected parcels must be determined.

Attachments:

Vicinity Map
Project Map

F - 7: Crooked Rd Vicinity

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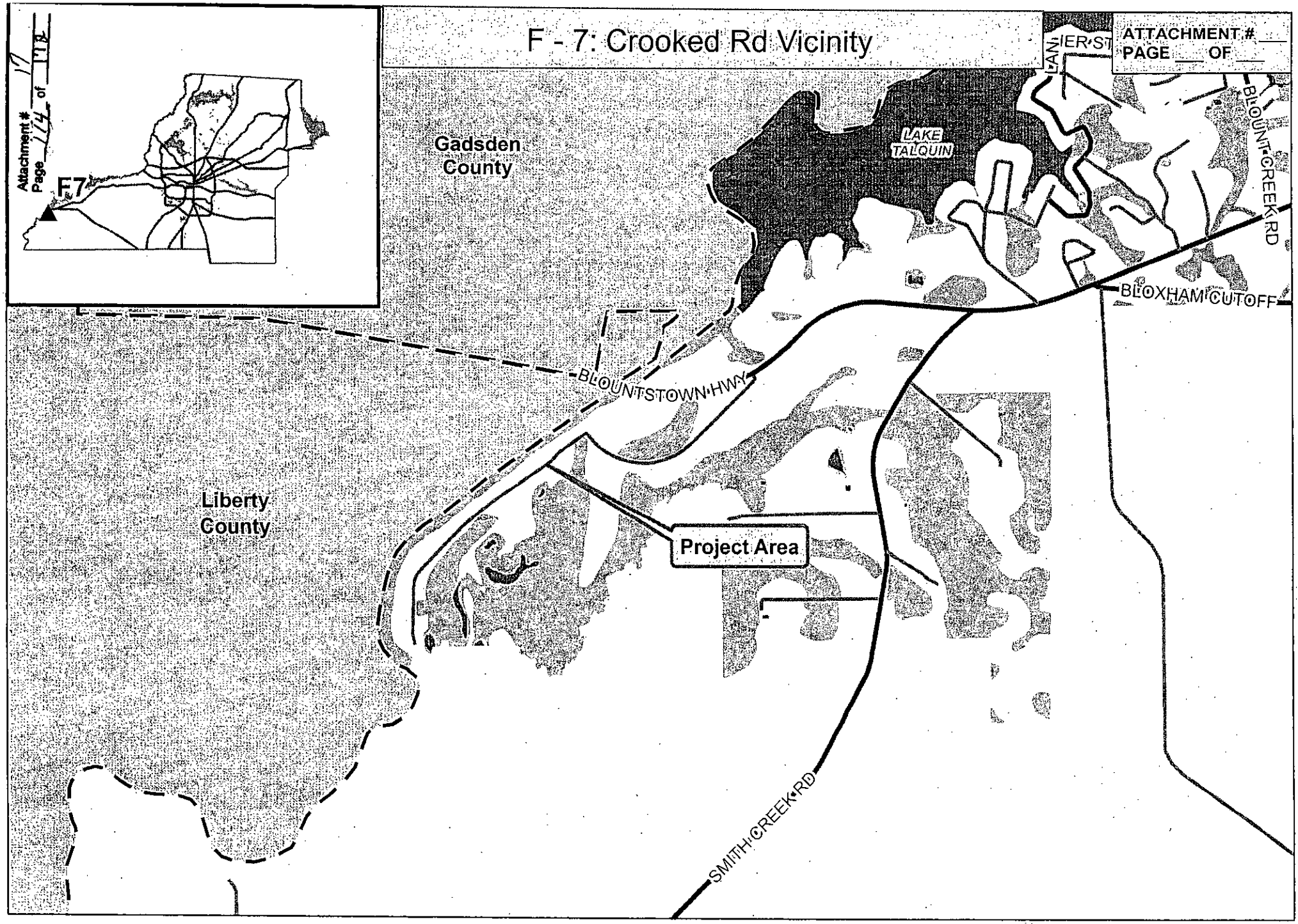

Tallahassee-Leon County GIS
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0 1 Miles

N W E S

Roads
Major Roads
Water Bodies
Wetland

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F - 7: Crooked Rd

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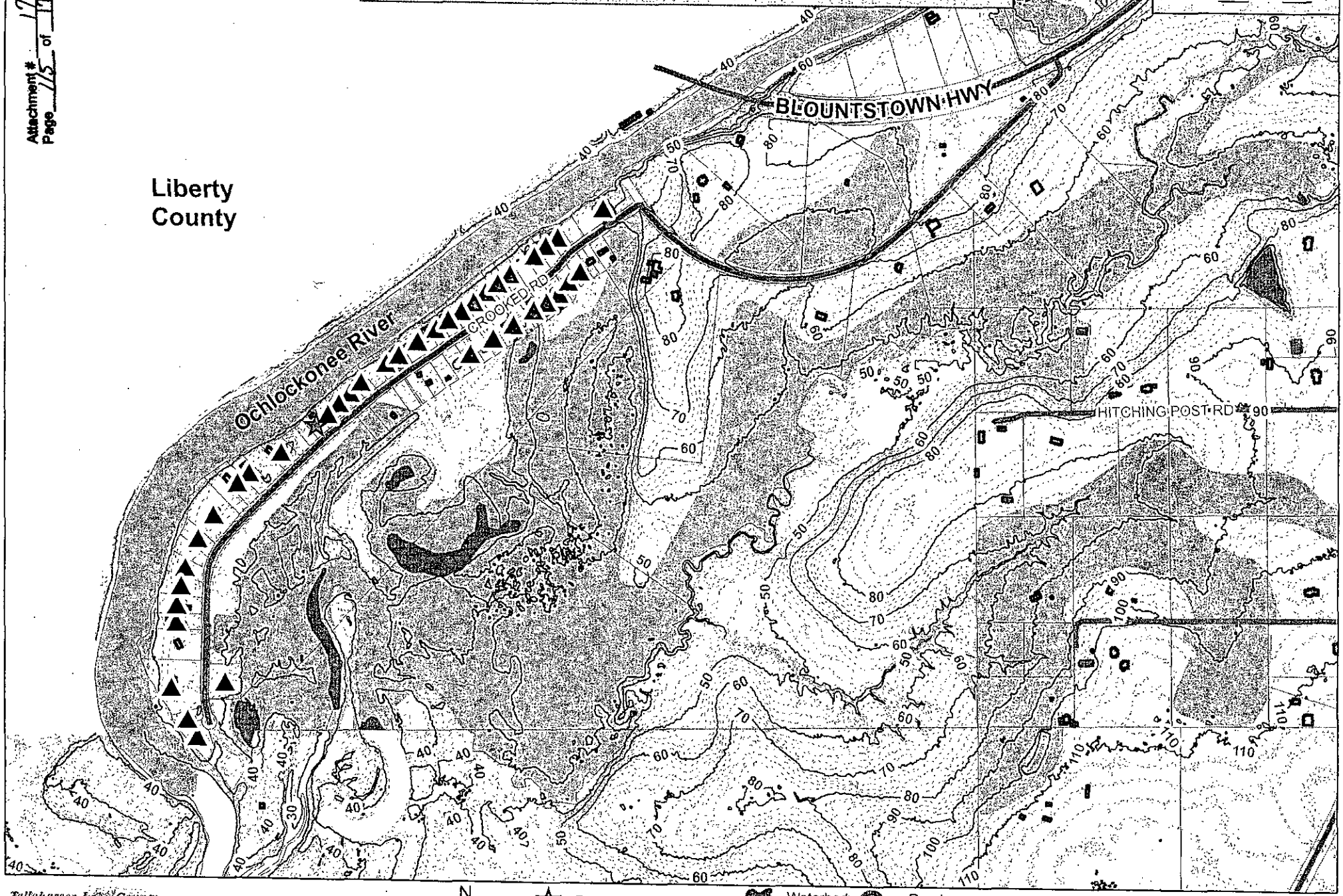

Tallahassee-Leon County GIS
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0 500 1,000 Feet

N W E S

Flood Projects FPAP
Flood Projects non FPAP
FPAP Adopted list
Waterbody
Wetlands
Buildings
Parcels
Roads
Index Contours
Inter Contours

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F8 – Fairbanks Ferry Road/John Henry

Background Information

Drainage Basin:	Ochlockonee
Prior Studies by NWFWMD and/or CDM that identified this issue:	None
Impacted parcels are served by road and/or drainage systems that are:	Public
Proposed improvements are located on property that is:	Private
Development of the impacted property occurred on or before:	Prior to 1963

At Fairbanks Ferry Road, the Ochlockonee River receives flow from over 1,000 square miles (640,000 acres).

Description of Problem

General Problem Type:	Structural Flooding
Problem Source:	Ochlockonee River overflow

Residential properties experience structure flooding following high-volume storm events upstream.

Recommended Solution:

Estimated Cost of Solution	$380,000
Number of Parcels Benefiting from Proposed Improvements	6
Estimated Cost per Parcel Benefiting	$63,333
Implementation Vehicle for Proposed Improvements	Flooded Property Acquisition Program

The proposed action would purchase properties which experience structural flooding.

Alternate Solutions:

Taking no action will result in continued structural flooding. The floodwaters adjacent to the structures range from 3 to 11 feet deep, eliminating site improvement as an alternative solution.

Issues to be Resolved During Project Development:

The priority to purchase the 6 affected parcels must be determined.

Attachments:

Vicinity Map
Project Map

F - 8: Fairbanks Ferry Rd Vicinity

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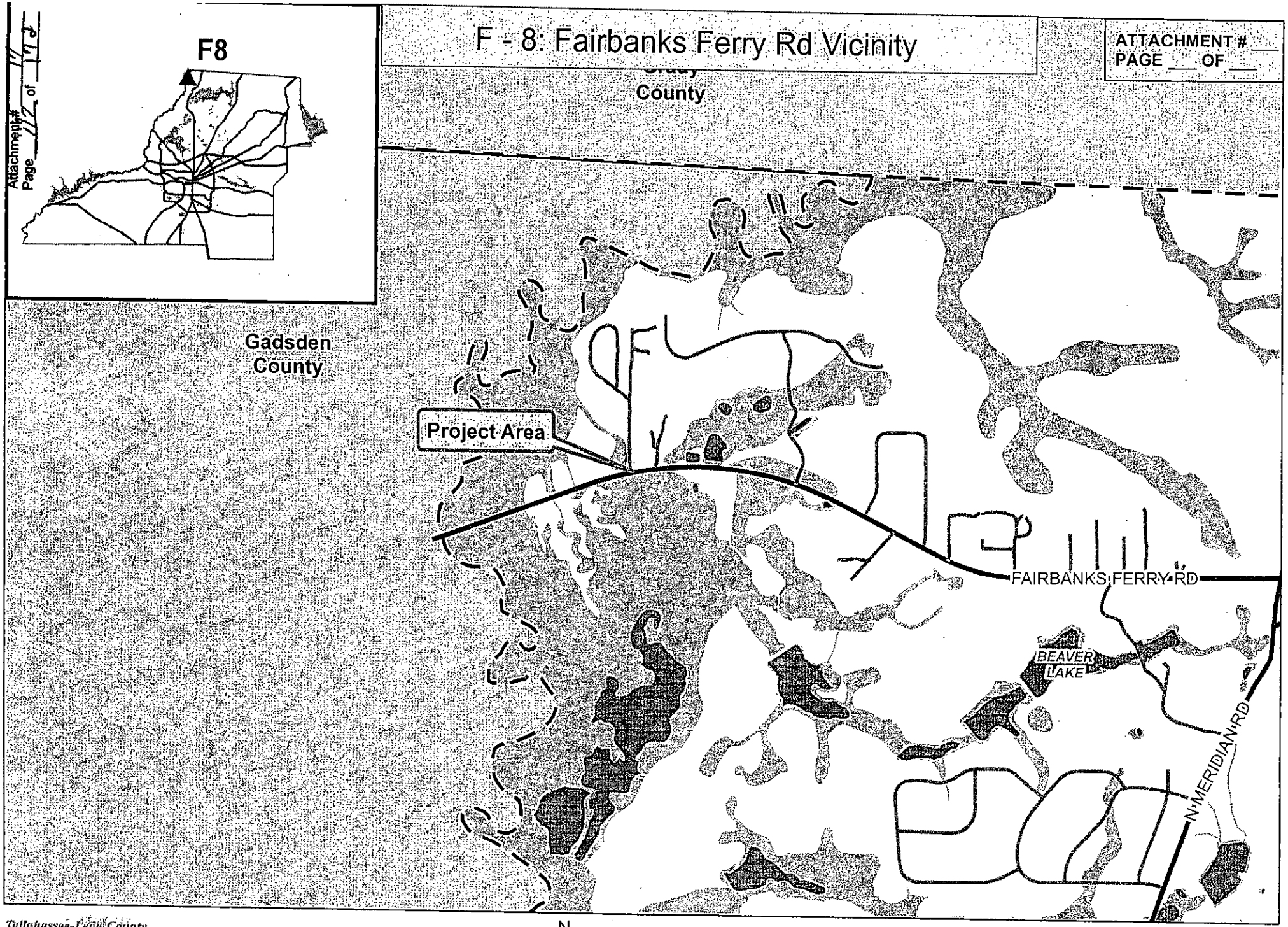

Tallahassee-Leon County GIS
WWW.TLCGIS.ORG

0 1 Miles

N W E S

Roads
Major Roads
Water Bodies
Wetland

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F - 8: Fairbanks Ferry Rd

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Gadsden County

Tallahassee-Leon County GIS
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0 500 1,000 Feet

N W E S

Flood Projects FPAP
Flood Projects non FPAP
FPAP Adopted list

Waterbody
Wetlands
Buildings
Parcels
Roads
Index Contours
Inter Contours

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F9 – Franklin Oaks/Moore Woods/Private/Strawhill/Wakulla Springs/Bartlett/Stonewood (Acquisition)

Background Information

Drainage Basin:	Munson
Prior Studies by NWFWMD and/or CDM that identified this issue:	CDM
Impacted parcels are served by road and/or drainage systems that are:	Private
Proposed improvements are located on property that is:	Private
Development of the impacted property occurred on or before:	1981

The project area lies west of Wakulla Springs Road, incorporating several shallow depressional areas normally separated from Munson Slough. The Slough normally discharges to Ames Sink almost one mile east of Wakulla Springs Road.

Description of Problem

General Problem Type:	Structural Flooding
Problem Source:	Munson Slough overflow

Extremely high-volume storm events overwhelm the sinkholes east of Wakulla Springs Road, causing Munson Slough to rise high enough to overflow to the west. The shallow depressions result in structural flooding in the low areas and isolation flooding along the ridges. The depressions also require pumping after the Slough recedes to accelerate the recovery.

Recommended Solution:

Estimated Cost of Solution	$7,370,000
Number of Parcels Benefiting from Proposed Improvements	55
Estimated Cost per Parcel Benefiting	$134,000
Implementation Vehicle for Proposed Improvements	Flooded Property Acquisition Program

The proposed action would purchase 55 developed sites which experience structural flooding. Four sites were included in the original Flooded Property Acquisition Program. Project D3 (Roadway Improvement) resolves isolation of structures which do not experience actual structural flooding.

Alternate Solutions:

Taking no action will result in continued structural flooding.

Issues to be Resolved During Project Development:

The priority to purchase the 55 affected parcels must be determined. One identified site owner petitioned successfully to change the FEMA floodplain extents on his property to exclude the buildings.

Attachments:

Vicinity Map
Project Map

F - 9: Franklin Oaks Vicinity

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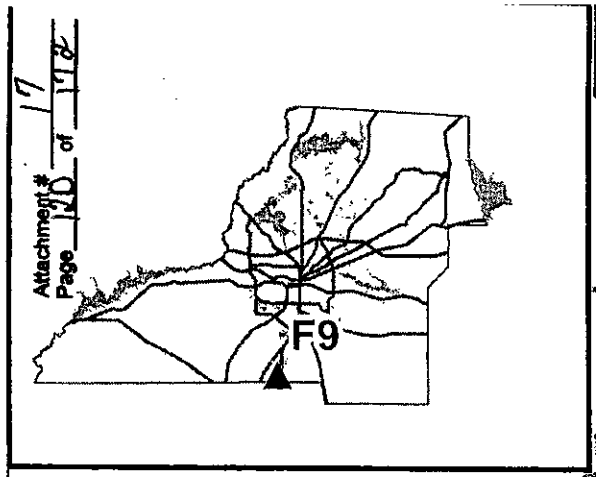

OAK RIDGE RD W

EIGHT MILE POND

CRAWFORDVILLE RD

Project Area

WAKULLA SPRINGS RD

Wakulla County

Tallahassee-Leon County GIS

0 1 Miles

N W E S

Roads
Major Roads
Water Bodies
Wetland

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F - 9: Franklin Oaks Project Area

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SANDALWOOD DR S
OAK RIDGE RD W
TRAILING OAKS LN
SANDHILL RD
PINE
BLACK
SAND R
BRADHA
PATRICIAN
GRUBBS RD
WIDE RD
JOHN FRANKLIN RD
MOOREWOODS RD
WAKULLA SPRINGS RD
SCOTT LN
MISTY DAWN LN
WOODPECKER LN
OLD SHELL POINT RD
WILD CHERRY DR
STRAWHILL LN
DELMAR RD
BARTLETT LN
COURTNEY LN
STONEWOOD LN

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0 500 1,000 Feet

N W E S

Flood Projects FPAP
Flood Projects non FPAP
FPAP Adopted list
Waterbody
Wetlands
Parcels
Roads

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F10 – Hanging Vine Way

Background Information

Drainage Basin:	Lafayette
Prior Studies by NWFWMD and/or CDM that identified this issue:	None
Impacted parcels are served by road and/or drainage systems that are:	Private
Proposed improvements are located on property that is:	Private
Development of the impacted property occurred on or before:	1975

Approximately 73 acres discharge runoff to a closed basin between Chevy Way and Hanging Vine Way. One lot has already been purchased under the Flooded Property Acquisition Program.

Description of Problem

General Problem Type:	Structural Flooding
Problem Source:	Closed basin

Two structures are located at elevations similar to the site previously purchased.

Recommended Solution:

Estimated Cost of Solution	$590,000
Number of Parcels Benefiting from Proposed Improvements	2
Estimated Cost per Parcel Benefiting	$295,000
Implementation Vehicle for Proposed Improvements	Flooded Property Acquisition Program

The proposed action would purchase 2 developed sites which experience structural flooding.

Alternate Solutions:

Taking no action will result in continued structural flooding.

Issues to be Resolved During Project Development:

The priority to purchase the affected parcels must be determined. Purchase costs were estimated using the Property Appraiser's records. Since the market value of one site is identified at less than adjacent land value, the final project cost may increase.

Attachments:

Vicinity Map
Project Map

F - 10: Hanging Vine Way Vicinity

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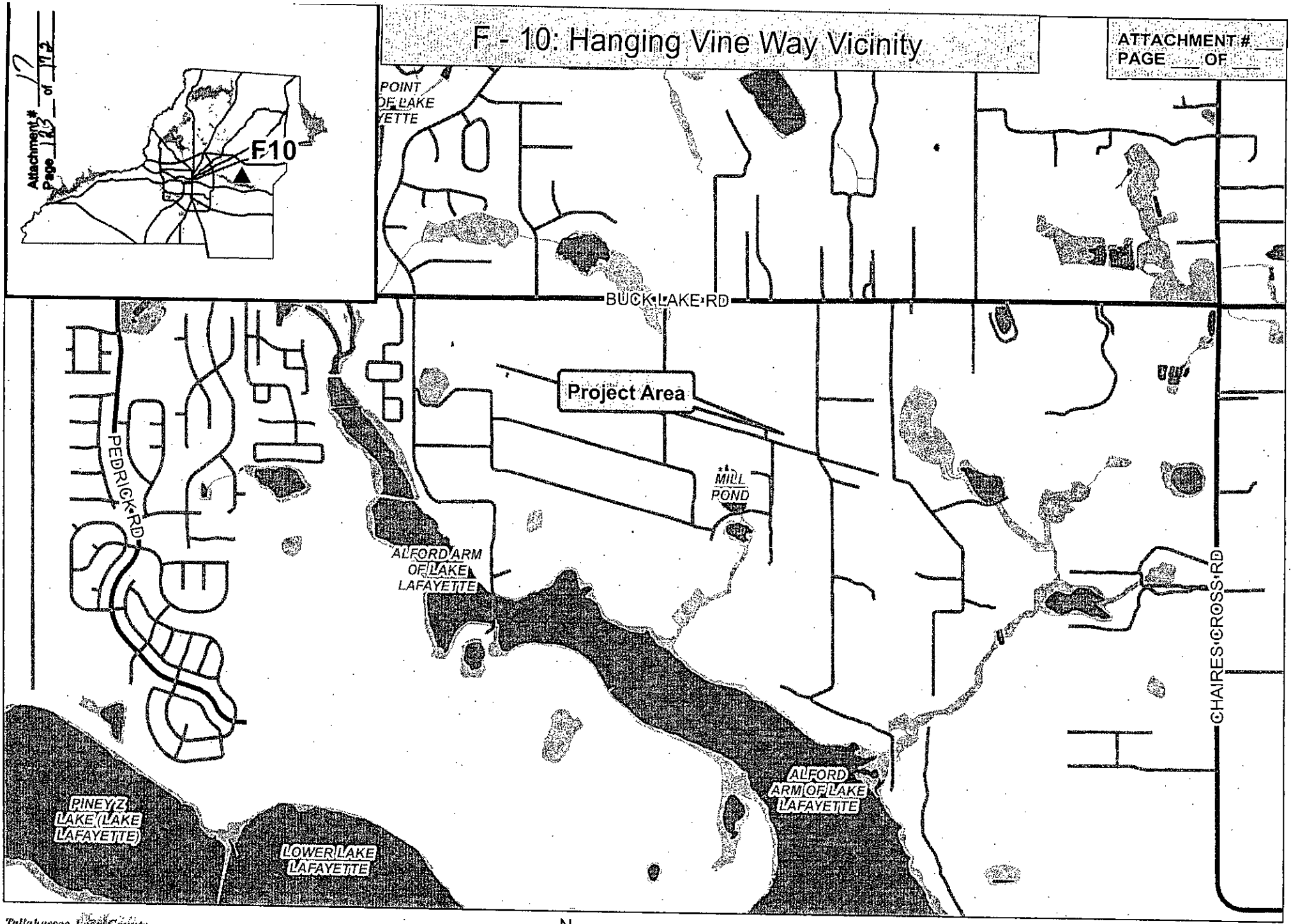

Tallahassee-Leon County GIS
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0 1 Miles

N W E S

Roads
Major Roads
Water Bodies
Wetland

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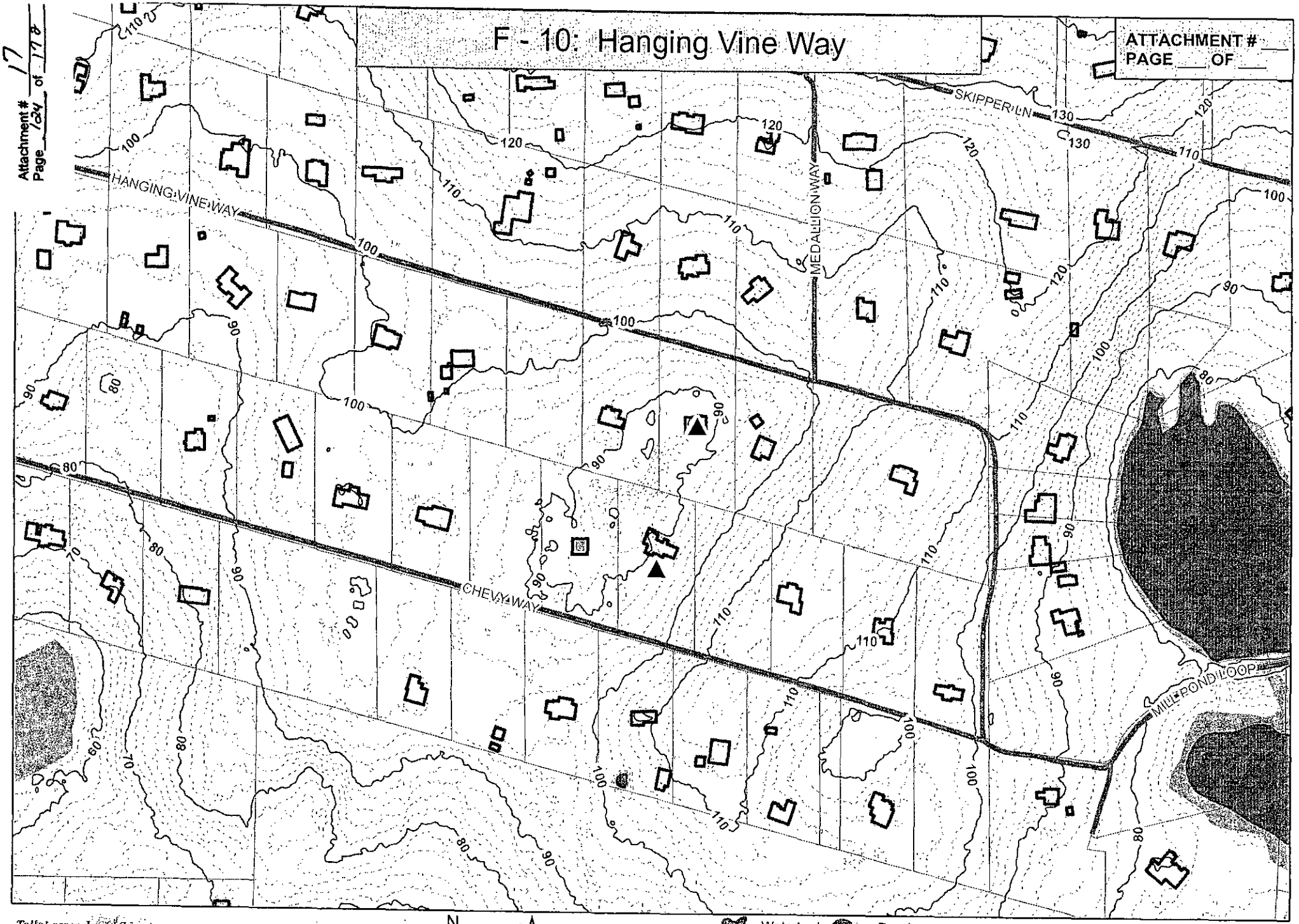
F - 10: Hanging Vine Way



Tallahassee-Leon County GIS
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0 500 Feet

N W E S

Flood Projects FPAP
Flood Projects non FPAP
FPAP Adopted list
Waterbody
Wetlands
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Inter Contours

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F11 – Houston Road

Background Information

Drainage Basin:	Ochlockonee
Prior Studies by NWFWMD and/or CDM that identified this issue:	None
Impacted parcels are served by road and/or drainage systems that are:	Public
Proposed improvements are located on property that is:	Private
Development of the impacted property occurred on or before:	1965

Houston Road extends almost 0.3 miles on the east bank of the Ochlockonee River immediately south of US 90 West. The contributing area for the Ochlockonee River upstream is over 1,140 square miles (approximately 730,000 acres).

Description of Problem

General Problem Type:	Structural Flooding
Problem Source:	Ochlockonee River overflow

Seven properties located in low areas between the river and the road experience flooding.

Recommended Solution:

Estimated Cost of Solution	$2,000,000
Number of Parcels Benefiting from Proposed Improvements	7
Estimated Cost per Parcel Benefiting	$285,714
Implementation Vehicle for Proposed Improvements	Flooded Property Acquisition Program

The proposed action would purchase 7 developed sites which experience structural flooding.

Alternate Solutions:

Taking no action will result in continued structural flooding.

Issues to be Resolved During Project Development:

The priority to purchase the affected parcels must be determined.

Attachments:

Vicinity Map
Project Map

F - 11: Houston Rd Vicinity

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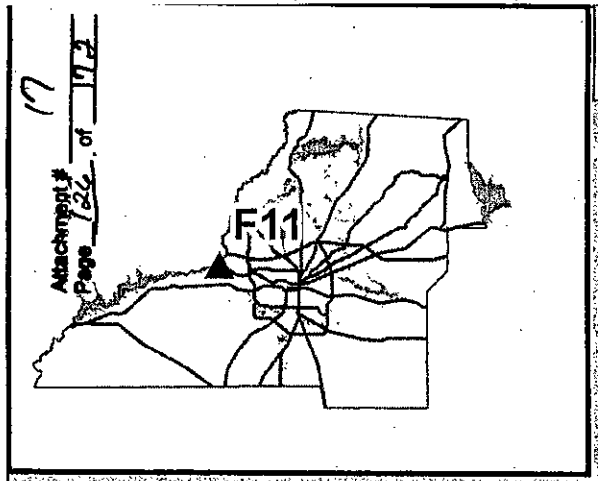

Gadsden County

Project Area

INTERSTATE 10

W TENNESSEE ST

GEDDIE RD

BARINEAU RD

LAKE TALQUIN

Tallahassee-Leon County GIS
WWW.TLCGIS.ORG

0 1 Miles

N W E S

Roads
Major Roads
Water Bodies
Wetland

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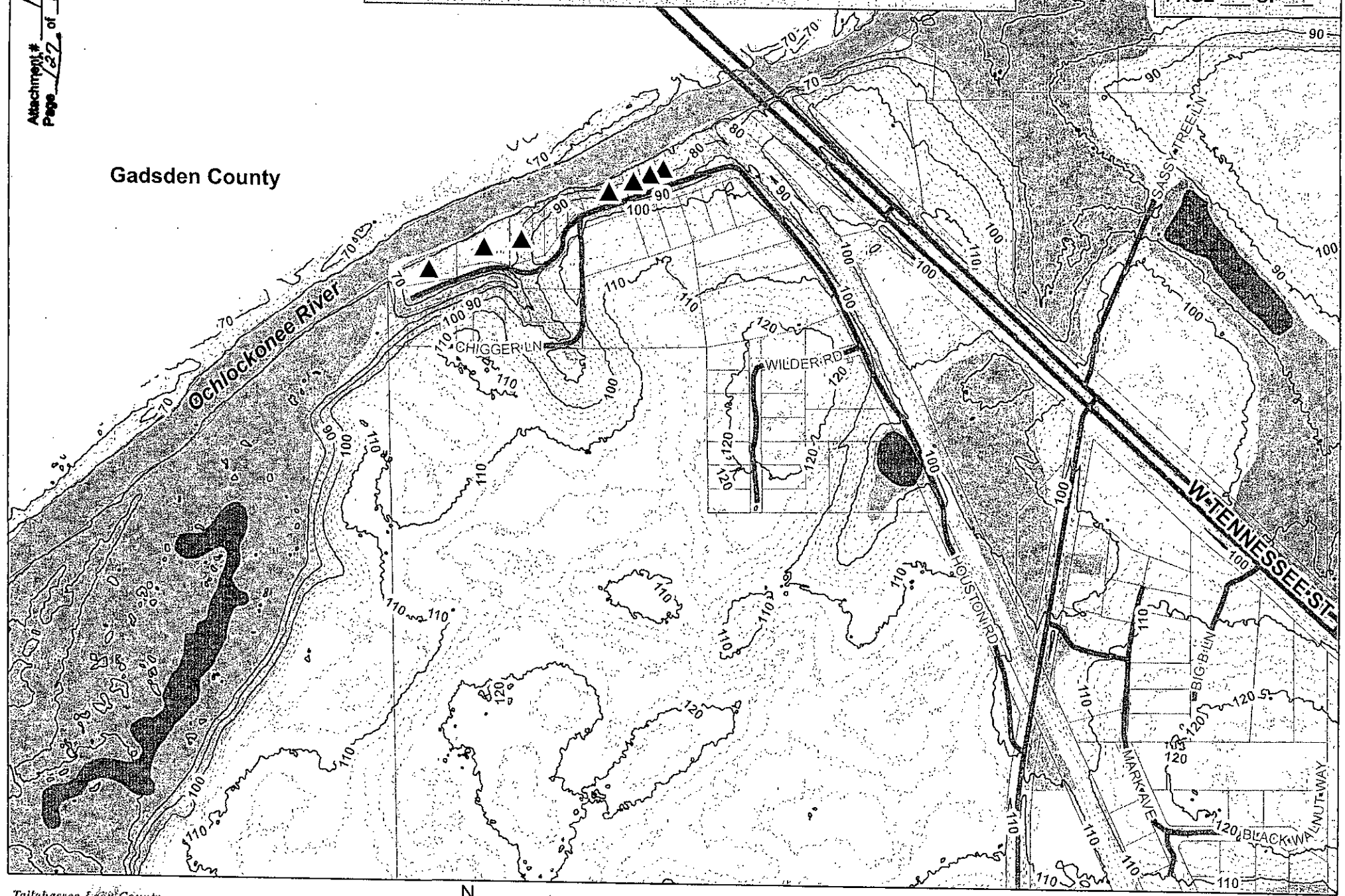
F - 11: Houston Rd



Tallahassee-Leon County GIS
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0 500 1,000 Feet

N W E S

Flood Projects FPAP
Flood Projects non FPAP
FPAP Adopted list
Waterbody
Wetlands
Parcels
Roads
Index Contours
Inter Contours

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F12 – Liberty Ridge/Oak Ridge/Wild Cherry/Thunderbird/Wax Myrtle/Misty Dawn (Acquisition)

Background Information

Drainage Basin:	Munson
Prior Studies by NWFWMD and/or CDM that identified this issue:	CDM
Impacted parcels are served by road and/or drainage systems that are:	Private
Proposed improvements are located on property that is:	Private
Development of the impacted property occurred on or before:	1983

The project area lies east of Wakulla Springs Road and south from Oak Ridge Road, incorporating several shallow depressional areas normally separated from Munson Slough. The Slough discharges to Ames Sink which is approximately ½ mile south of Oak Ridge Road and west of Ranchero Road. Eighteen properties have already been purchased by Leon County: 12 properties under the 1996 CDBG acquisition project, 5 as part of the Southside Acquisition capital project, and 1 under the Flooded Property Acquisition Program.

Description of Problem

General Problem Type:	Structural Flooding
Problem Source:	Munson Slough overflow

Extremely high-volume storm events overwhelm Ames Sink and the sinkholes east of Ranchero Road, causing Munson Slough to rise high enough to overflow west to Wakulla Springs Road and southeast toward Sunflower and Celia Roads. Rarely the flow will spread into Wakulla County and overtop Bob Roberts Road. The shallow depressions result in structural flooding in the low areas and isolation flooding along the ridges. The depressions also require pumping after the Slough recedes to accelerate the recovery.

Recommended Solution:

Estimated Cost of Solution	$7,470,000
Number of Parcels Benefiting from Proposed Improvements	49
Estimated Cost per Parcel Benefiting	$152,449
Implementation Vehicle for Proposed Improvements	Flooded Property Acquisition Program

The proposed action would purchase 49 developed sites which experience structural flooding. Fourteen sites remain from the Flooded Property Acquisition Program. Project D7 (Roadway Improvement) resolves isolation of structures which do not experience actual structural flooding.

Alternate Solutions:

Taking no action will result in continued structural flooding.

Issues to be Resolved During Project Development:

The priority to purchase the 49 affected parcels must be determined. Three owners previously withdrew or declined offers under the Flooded Property Acquisition Program.

Attachments:

Vicinity Map
Project Map

F - 12: Liberty Ridge Vicinity

ATTACHMENT # ___
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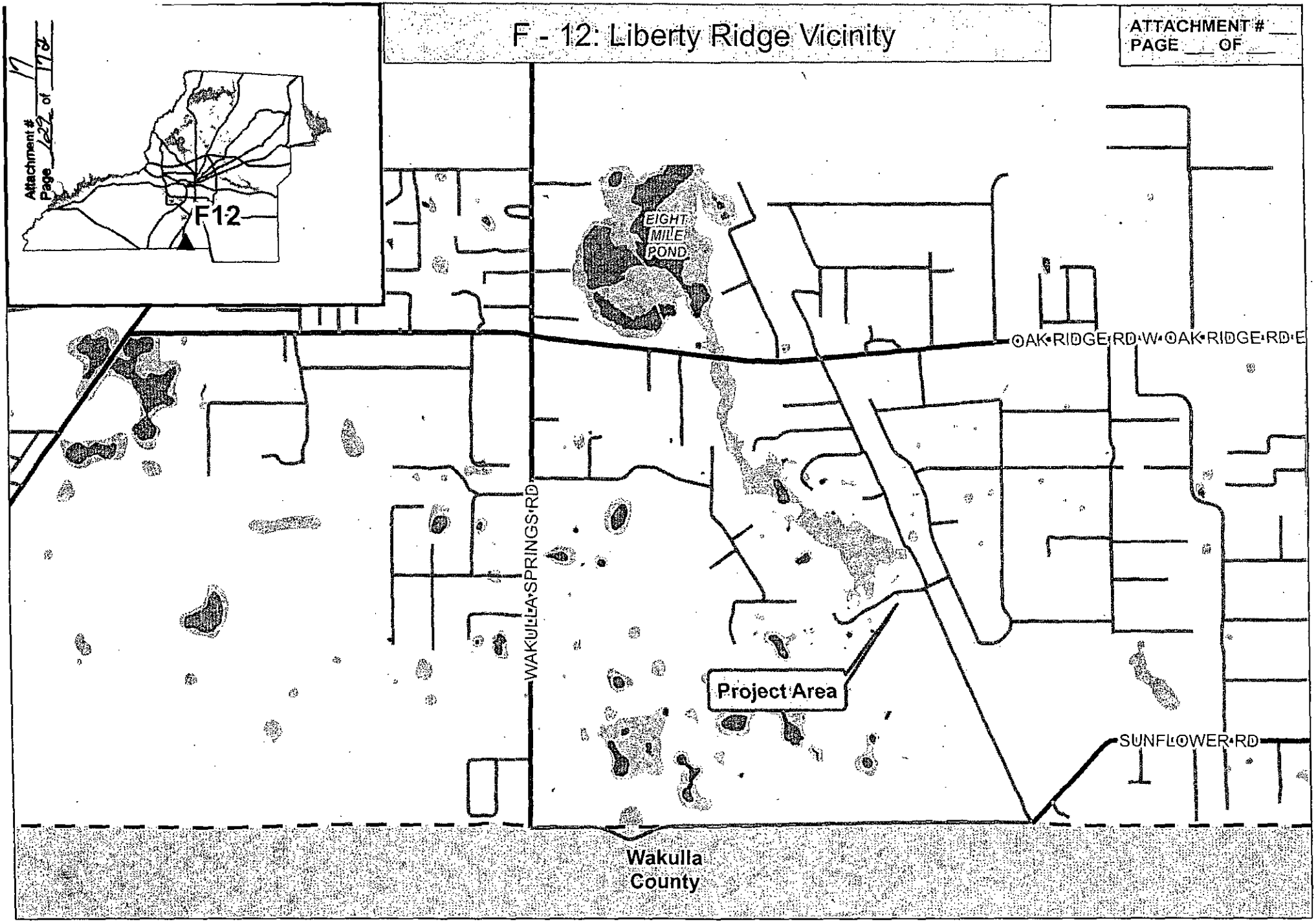

Tallahassee-Leon County GIS
www.tlcgis.org

0 1 Miles

N W E S

Roads
Major Roads
Water Bodies
Wetland

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F - 12: Liberty Ridge Project Area

ATTACHMENT # ___
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POND DR
OAK RIDGE RD W
RIVERS WILLIAMS CIR
WILD BER
COLBER
KIMB
LENOVA DR
OAK RIDGE RD W
COMMUNITY RD
OAK RIDGE RD E
FREEDOM RD
LOVIC RD
CELIA RD
D L CROSBY LN
MUSTANG DR
BUNTING RD
TERN RD
ANGELA DR
SCOTT LN
MISTY DAWN LN
COTTONWOOD LN
FLICKER RD
STAN CIR
LONESOME WOOD RD
CASEY DR
MARKIM RD
SWEET GRASS LN
ABSA CT
T BIRD RD
BOATWRIGHT RD
AMANDA RD
WARBLER ST
SPIRAL GARDEN WAY
DARIEN RD
ASPEN CT
ELENA DR
VAUGHANS LN
CARLISLE LN
WAX MYRTLE CT
WAX MYRTLE RD
SORA RD
JESSICA ST
STACIA ST
NOCATEE RD
WAKULLA SPRINGS RD
SONORA LN
RANCHERO RD
SUNFLOWER RD
SIPSEY WAY
SUNNYBROOK LN
LAINEY LN
CELIA CT
SUNFLOWER LN
COUNTY LINE RD

Tallahassee-Leon County GIS
WWW.TLCGIS.ORG

0 500 1,000 Feet

N
W E
S

Flood Projects FPAP
Flood Projects non FPAP
FPAP Adopted list

Waterbody
Wetlands
Parcels

Roads
Index Contours
Inter Contours

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F13 – Mystic Warrior Trail

Background Information

Drainage Basin:	Lafayette
Prior Studies by NWFWMD and/or CDM that identified this issue:	None
Impacted parcels are served by road and/or drainage systems that are:	Private
Proposed improvements are located on property that is:	Private
Development of the impacted property occurred on or before:	Prior to 1964

Mystic Warrior Trail is a small unimproved dirt road north of Highway 90, east of Interstate I-10 that provides access to three residential lots.

Description of Problem

General Problem Type:	Structural and yard Flooding
Problem Source:	Conveyance Deficiency

Two residents report structure flooding during major storm events. The area is poorly drained and is not served by any designed conveyances. Flooding conditions may prevent access to the northern parcel.

Recommended Solution:

Estimated Cost of Solution	$580,000
Number of Parcels Benefiting from Proposed Improvements	2
Estimated Cost per Parcel Benefiting	$290,000
Implementation Vehicle for Proposed Improvements	Flooded Property Acquisition Program

The proposed action would purchase the 2 developed sites which experience structural flooding.

Alternate Solutions:

No action will result in continued structural flooding and potential greater impacts in storm events more severe than those experienced to date. An alternate capital project to construct approximately 2400 linear feet of 42 inch diameter concrete pipe within the Highway 90 right of way would bypass the runoff around the impacted area. The work would require the reconstruction of at least five driveways. The alternate cost is, coincidentally, the same as the cost to purchase, $580,000. The purchase, however would have a lower long term cost since it would not require maintenance.

Issues to be Resolved During Project Development:

One of the affected owners acquired the vacant north parcel in September 2008. Unity of title has not been recorded to date.

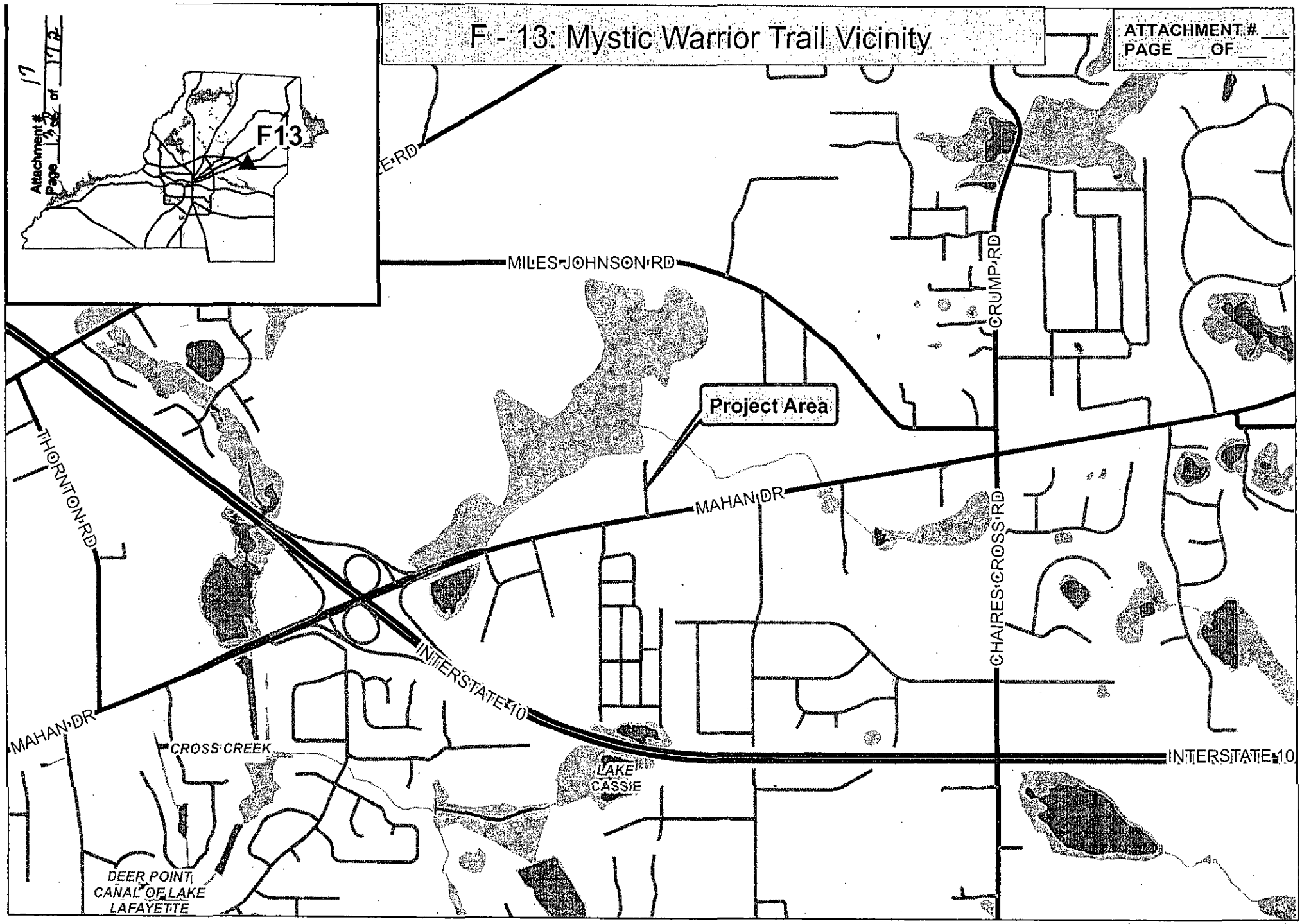
The capital project is subject to potential underground utility conflicts within the US 90 right of way and requires permission from the Florida Dept. of Transportation for the construction within state right-of-way.

Attachments:

Vicinity Map
Project Map

F - 13: Mystic Warrior Trail Vicinity

ATTACHMENT # ___
PAGE ___ OF ___



Tallahassee-Leon County GIS
www.TLCGIS.org

0 1 Miles

N W E S

Roads
Major Roads
Water Bodies
Wetland

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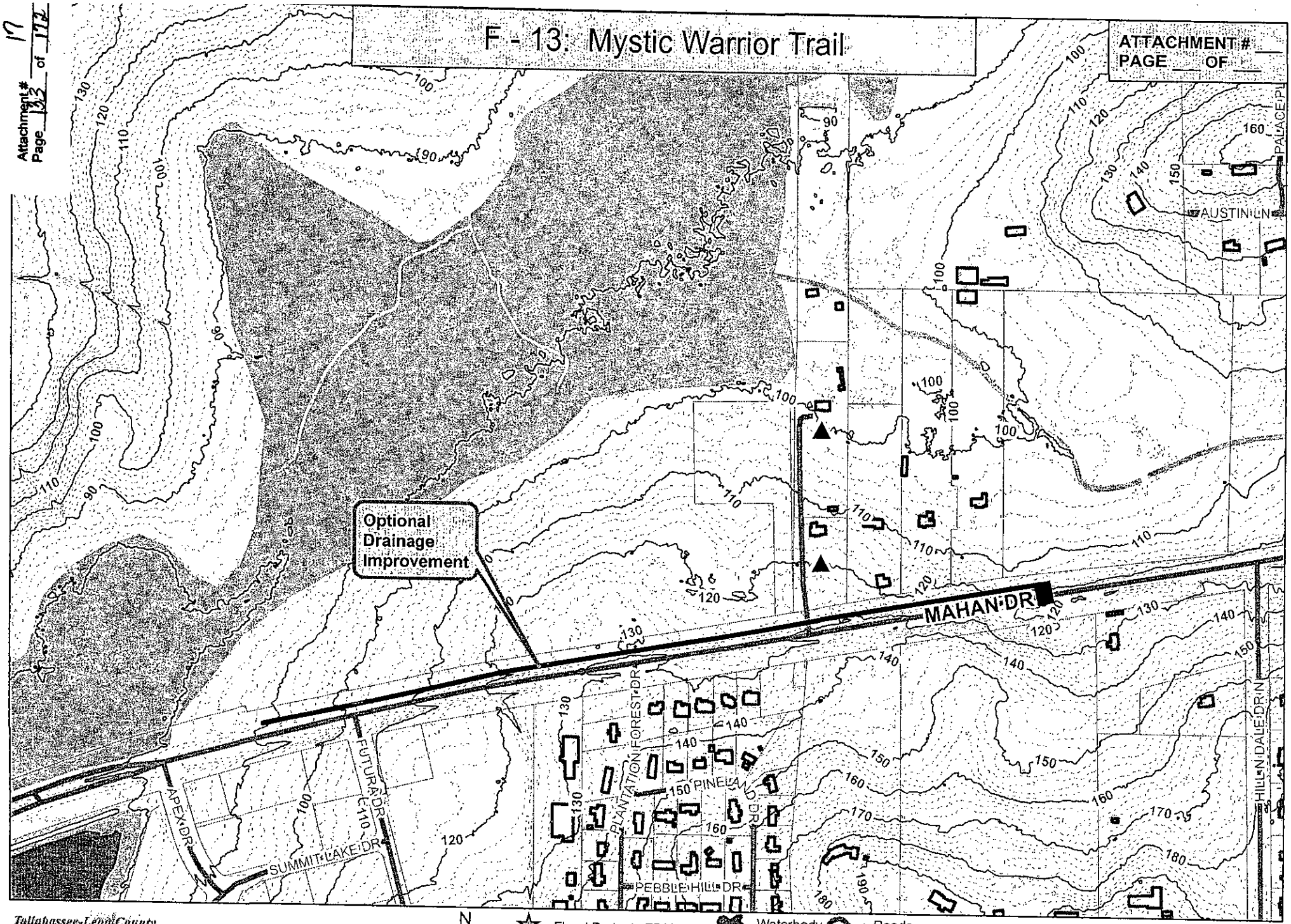
F - 13: Mystic Warrior Trail



Tallahassee-Leon County GIS
www.tlcgis.org

0 500 1,000 Feet

N W E S

Flood Projects FPAP
Flood Projects non FPAP
FPAP Adopted list
Waterbody
Wetlands
Buildings
Parcels
Roads
Index Contours
Inter Contours

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F14 – Omaha Trail

Background Information

Drainage Basin:	Lafayette
Prior Studies by NWFWMD and/or CDM that identified this issue:	None
Impacted parcels are served by road and/or drainage systems that are:	Public
Proposed improvements are located on property that is:	Private
Development of the impacted property occurred on or before:	1969

6500 Omaha Trail is located at the intersection of Whirlaway Trail, outside of the current Killearn Acres Drainage Project. Extensive structure flooding was reported in 1994. The federal Department of Housing and Urban Development foreclosed on the mortgage and subsequently resold the site in October 1995, with the only deed restriction that the site was not eligible for FHA financing. The current owners purchased the property in March 2004.

Description of Problem

General Problem Type:	Structural Flooding
Problem Source:	Closed Basin

Stormwater is normally contained within the roadside ditches for Whirlaway and Omaha Trails. Intense storm events cause runoff from the surrounding properties and roadside ditches to collect on the site and enter the residence. Although Public Works staff improved the ditches to better contain this flow, high intensity storms cannot be directed to and contained within the right-of-way. The structure sits too low compared to the downstream drainage system to benefit from the current capital project.

Recommended Solution:

Estimated Cost of Solution	$360,000
Number of Parcels Benefiting from Proposed Improvements	1
Estimated Cost per Parcel Benefiting	$360,000
Implementation Vehicle for Proposed Improvements	Flooded Property Acquisition Program

The proposed action would purchase the site which experiences structural flooding.

Alternate Solutions:

No action will result in continued structural flooding

Issues to be Resolved During Project Development:

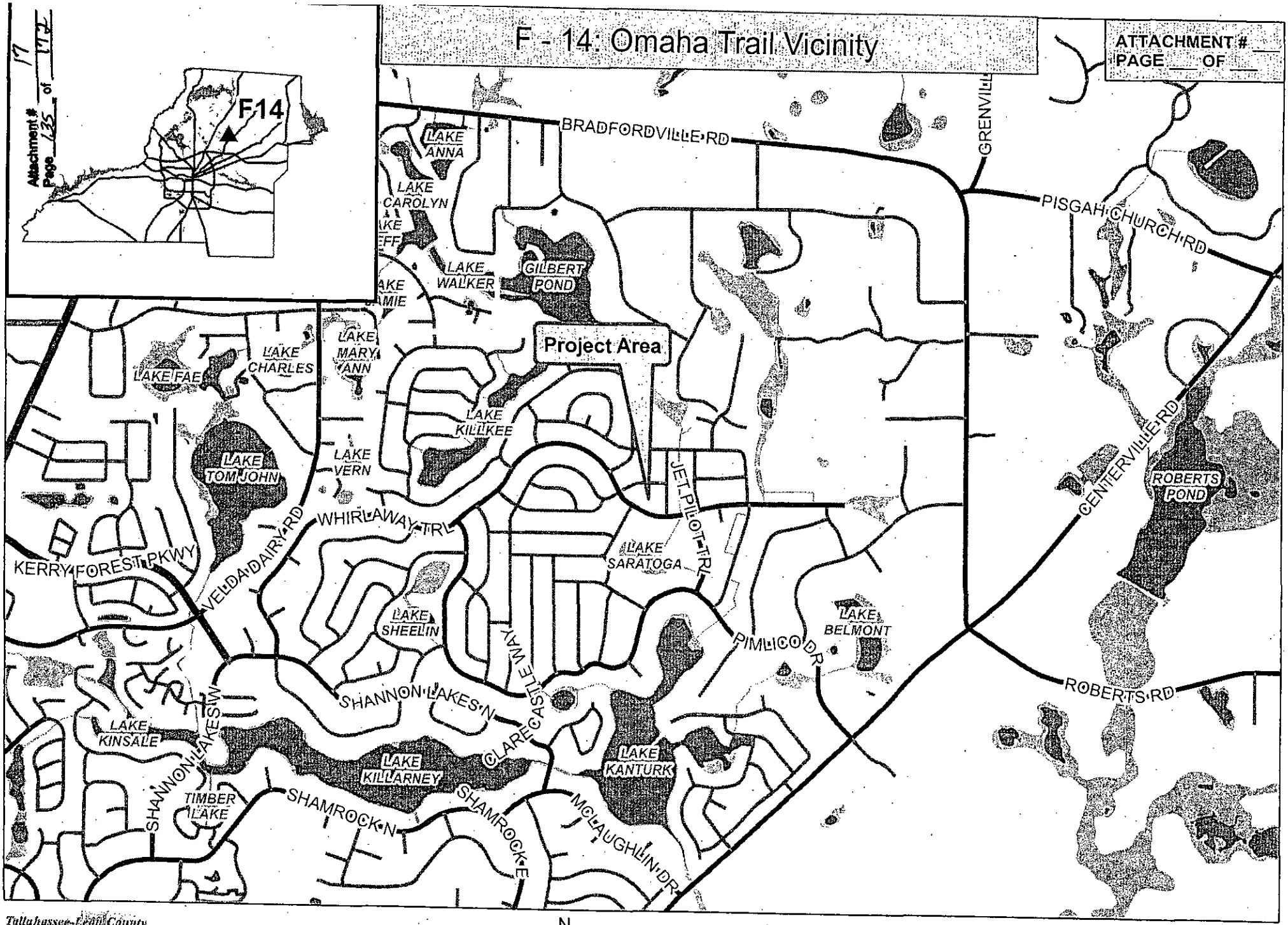
None.

Attachments:

Vicinity Map
Project Map

F - 14: Omaha Trail Vicinity

ATTACHMENT # ___
PAGE ___ OF ___



Tallahassee-Leon County GIS
www.tlcgis.org

0 1 Miles

N W E S

Roads
Major Roads
Water Bodies
Wetland

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F - 14: Omaha Trail

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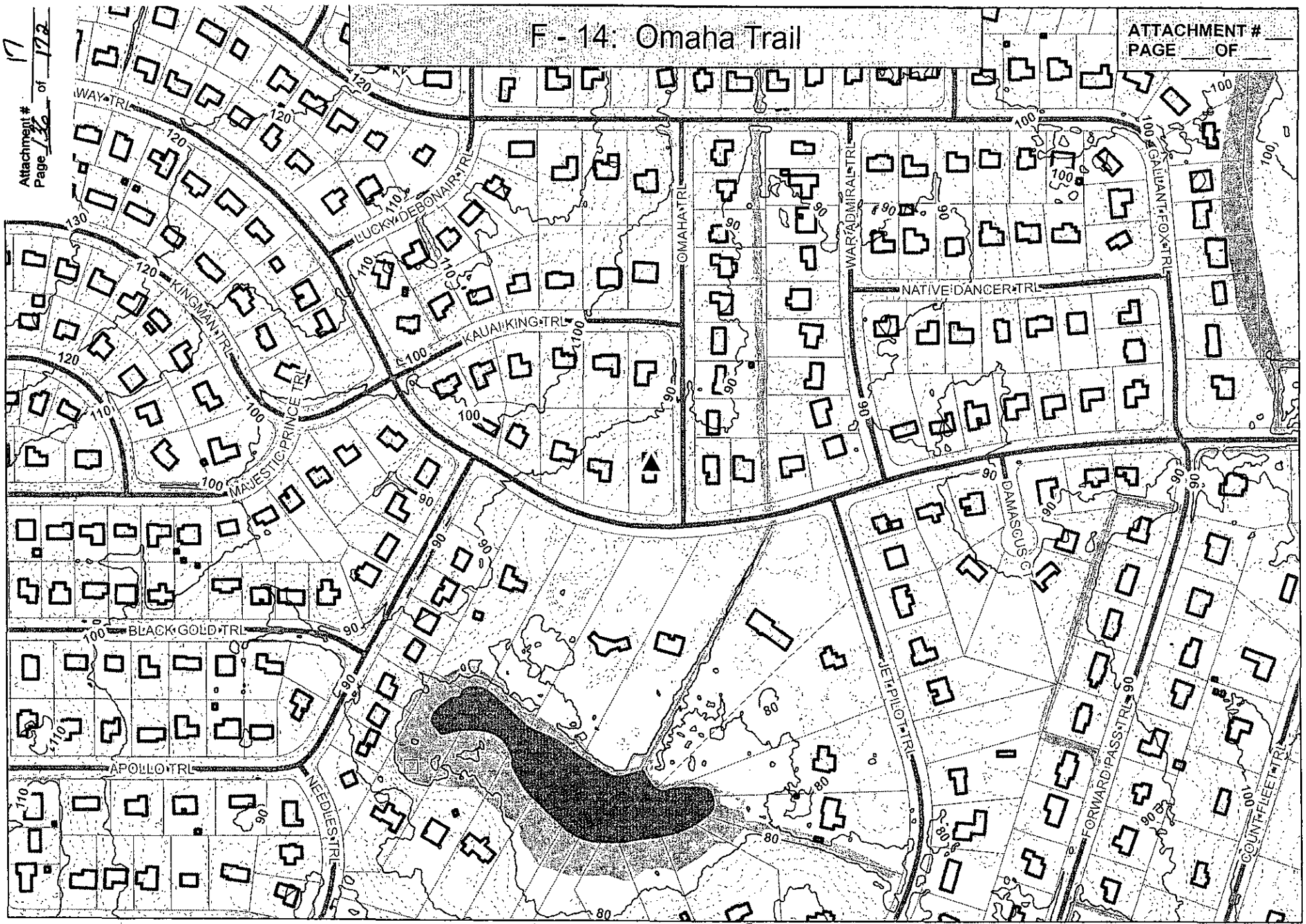

Tallahassee-Leon County GIS
www.tlcgis.org

0 500 Feet

N W E S

Flood Projects FPAP
Flood Projects non FPAP
FPAP Adopted list

Waterbody
Wetlands
Buildings
Parcels
Roads
Index Contours
Inter Contours

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F15 - Perker Lane

Background Information

Drainage Basin:	St. Marks
Prior Studies by NWFWMD and/or CDM that identified this issue:	No
Impacted parcels are served by road and/or drainage systems that are:	Private
Proposed improvements are located on property that is:	Private
Development of the impacted property occurred on or before:	Prior to 1981

This small closed basin was created by elevating Chaires Crossroad during the original construction of Interstate 10.

Description of Problem

General Problem Type:	Structural Flooding
Problem Source:	Closed Basin

Property located at 8855 Perker Lane currently experiences structural flooding during major storm events due to property being located within a small closed basin.

Recommended Solution:

Estimated Cost of Solution	$520,000
Number of Parcels Benefiting from Proposed Improvements	1
Estimated Cost per Parcel Benefiting	$520,000
Implementation Vehicle for Proposed Improvements	FPAP

The recommended solution consists of purchasing the affected property. The property owner is pursuing assistance through the Federal Flood Insurance Program.

Alternate Solutions:

The alternate solution would consist of constructing 385 linear feet of pipe and inlets to the east under Chaires Cross Road to convey water to an existing water body located at the southeast corner of Chaires Cross Road and Interstate 10. This solution would require the acquisition of two drainage easements. Strormwater permitting may require further study that was not considered in this solution. The construction cost of the alternate solution is estimated to be $219,315, plus the cost of easements. Staff notes that if this project were constructed, it would leave the subject property subject to flooding if maintenance issues were to develop at the wrong time. Accordingly, the recommended solution is property acquisition.

Issues to be Resolved During Project Development:

N/A

Attachments:

Vicinity Map
Project Map

F - 15: Perker Ln Vicinity

ATTACHMENT # ___
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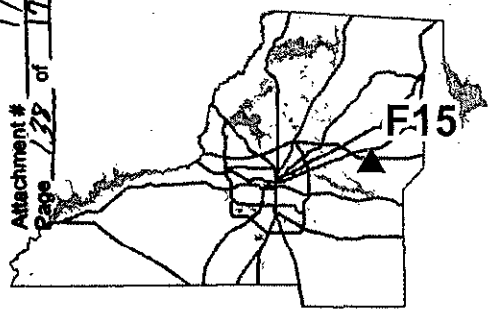
Attachment # 17
Page 122 of 192



S JOHNSON RD
CRUMP RD
WADESBORO RD
MAHAN DR
INTERSTATE 10
LAKE CASSIE
Project Area
CHAIRES CROSS RD
BUCK LAKE RD
BUCK LAKE RD
BENJAMIN CHAIRES RD

Tallahassee-Leon County GIS
www.tlcgis.org

0 1 Miles

N W E S

Roads
Major Roads
Water Bodies
Wetland

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F - 15: Perker Ln

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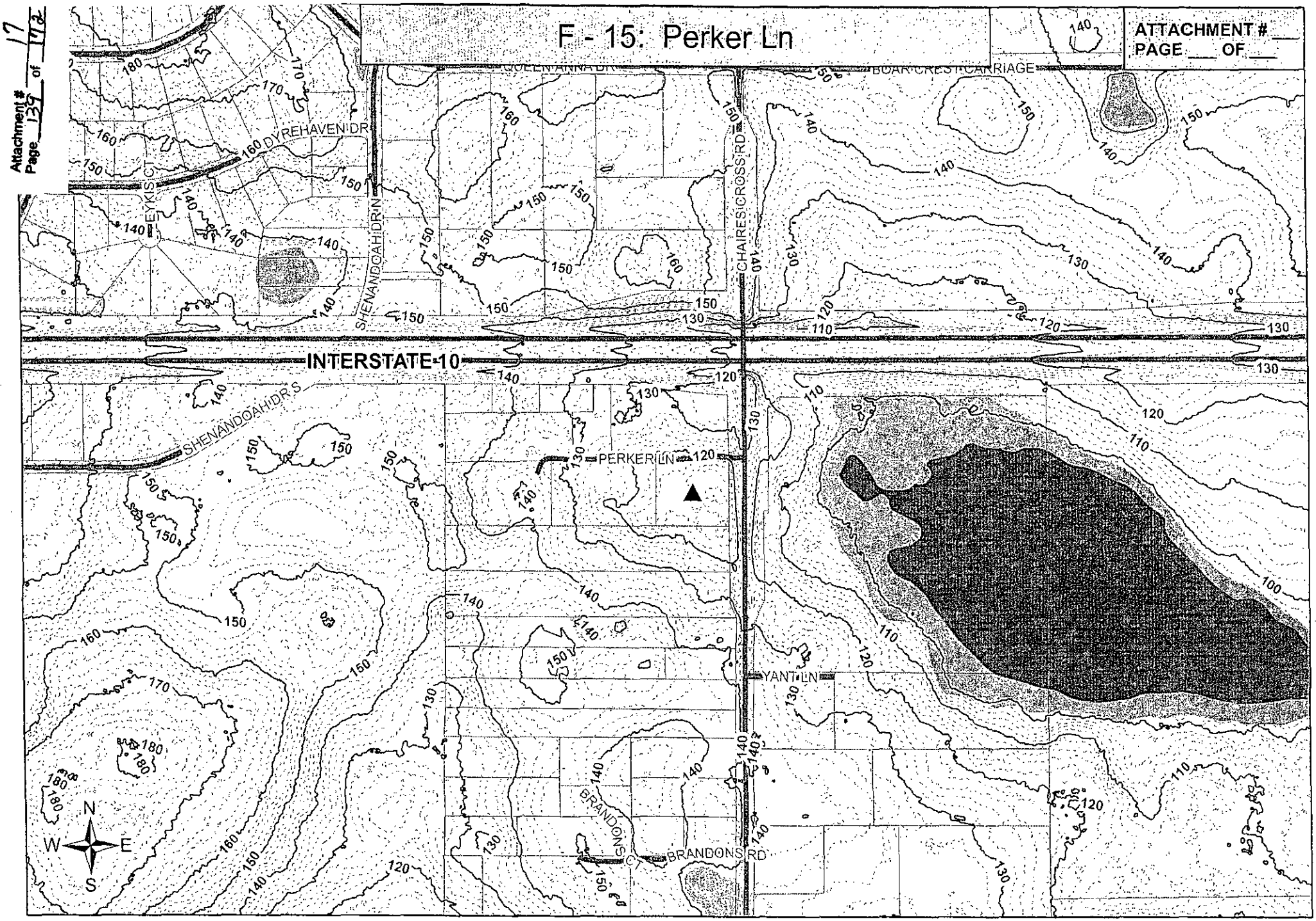

Tallahassee-Leon County GIS
www.tlcgis.org

0 500 1,000 Feet

Flood Projects FPAP
Flood Projects non FPAP
FPAP Adopted list
Waterbody
Wetlands
Parcels
Roads
Index Contours
Inter Contours

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F16 – Regiment Loop

Background Information

Drainage Basin:	St. Marks
Prior Studies by NWFWMD and/or CDM that identified this issue:	None
Impacted parcels are served by road and/or drainage systems that are:	Private
Proposed improvements are located on property that is:	Private
Development of the impacted property occurred on or before:	1973

Regiment Loop is part of Natural Bridge Acres Unrecorded subdivision, located north of the intersection of Old Plank Road and Natural Bridge Road. The St. Marks River normally flows east of the subdivision to enter the aquifer at Natural Bridge Battlefield Historic State Park and rise again one-quarter mile south with a substantially increased flow. The contributing area upstream of St. Marks Rise is 535 square miles (over 342,000 acres).

Description of Problem

General Problem Type:	Structural Flooding
Problem Source:	St. Marks River overflow

Extreme high-volume storm events generate river flows which exceed the capacity of the sinkhole north of Natural Bridge. The St. Marks River will flood over Natural Bridge Road before extending west through Regiment Loop and over Old Plank Road. The wetland areas and sinkholes west of Old Plank Road increase discharges also in response to the increased St. Marks River flow into the aquifer, creating isolated flooding as well.

Recommended Solution:

Estimated Cost of Solution	$3,940,000
Number of Parcels Benefiting from Proposed Improvements	19
Estimated Cost per Parcel Benefiting	$207,368
Implementation Vehicle for Proposed Improvements	Flooded Property Acquisition Program

The proposed solution is to purchase the sites which experience structural flooding. One property remains in the Flooded Property Acquisition Program.

Alternate Solutions:

No action will result in continued structural flooding. The river and aquifer interaction do not allow for any capital projects.

Issues to be Resolved During Project Development:

None.

Attachments:

Vicinity Map
Project Map

F - 16: Regiment Loop Vicinity

ATTACHMENT # ___
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Attachment # 17
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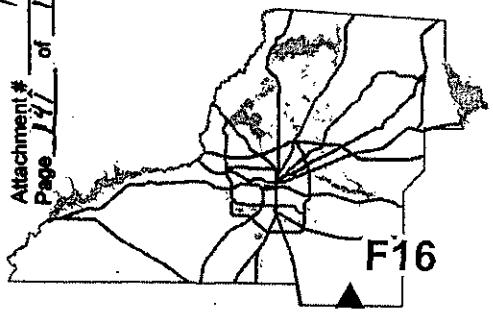

Project Area

BRIDGE RD

OLD PLANK RD

NATURAL BRIDGE RD

ST. MARKS SPRING

Wakulla County

Tallahassee-Leon County GIS
WWW.TLCGIS.ORG

0 1 Miles

N W E S

Roads
Major Roads
Water Bodies
Wetland

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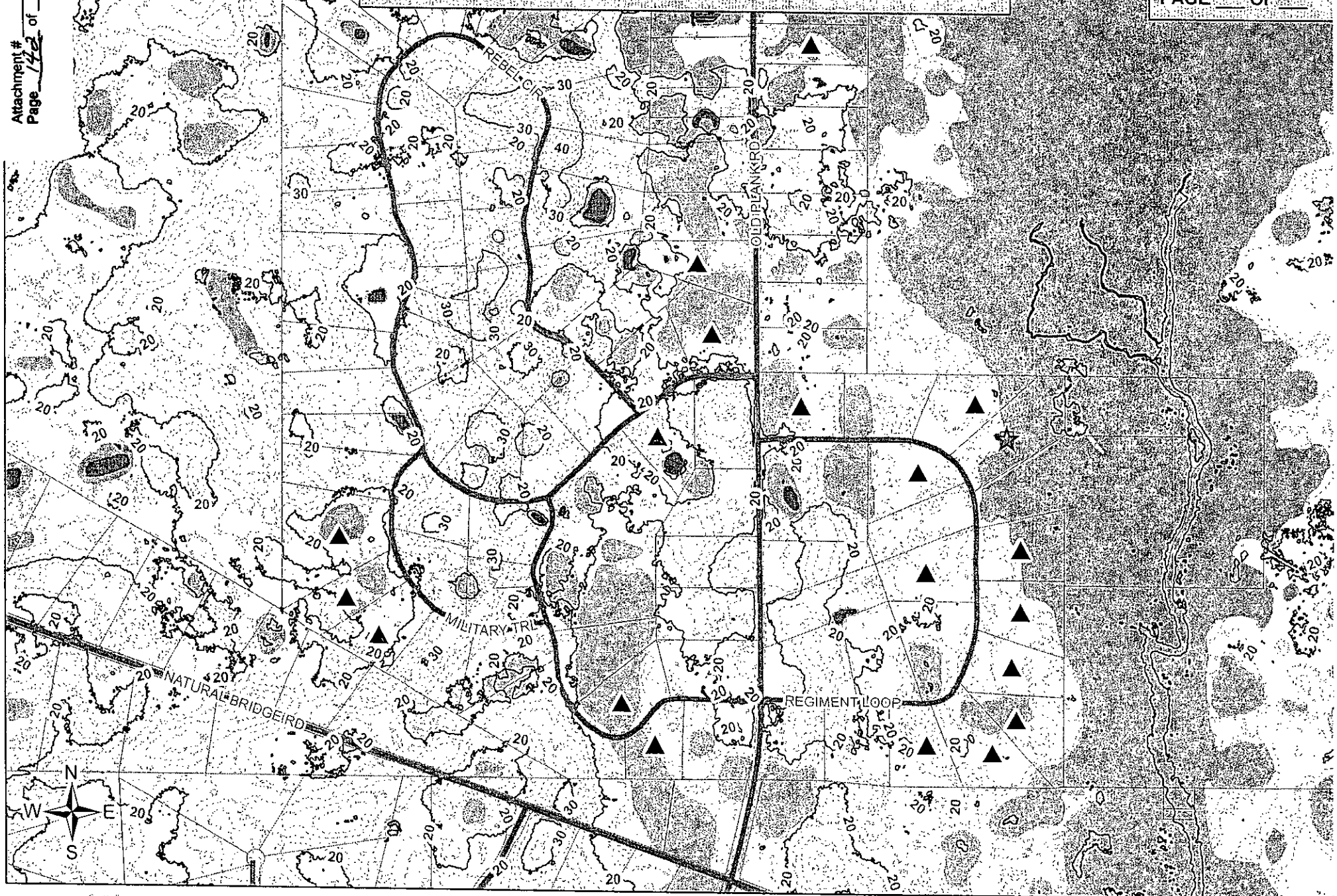
F - 16: Regiment Loop



Tallahassee-Leon County GIS
WWW.TLCGIS.ORG

0 500 1,000 Feet

Flood Projects FPAP
Flood Projects non FPAP
FPAP Adopted list
Waterbody
Wetlands
Parcels
Roads
Index Contours
Inter Contours

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F17 - Scott Tower Road

Background Information

Drainage Basin:	Lake Iamonia
Prior Studies by NWFWMD and/or CDM that identified this issue:	None
Impacted parcels are served by road and/or drainage systems that are:	Private
Proposed improvements are located on property that is:	Private
Development of the impacted property occurred on or before:	1970

Scott Tower Road is a private dirt road located in a 138-acre closed basin which may overtop to flow north to Lake Iamonia.

Description of Problem

General Problem Type:	Driveway access and property flooding
Problem Source:	Conveyance and closed basin

Residents currently experience property and driveway access flooding during major storm events due to inadequate conveyance capacity in the existing roadside drainage system. Structures on two parcels are lower than the closed basin breakover elevation and are subject to flooding.

Recommended Solution:

Estimated Cost of Solution	$700,000
Number of Parcels Benefiting from Proposed Improvements	2
Estimated Cost per Parcel Benefiting	$350,000
Implementation Vehicle for Proposed Improvements	Flooded Property Acquisition Program

The proposed solution is to purchase the two (2) parcels which experience structural flooding.

Alternate Solutions:

1. No action will result in continued property flooding and driveway access flooding and potential greater impacts in storm events more severe than those experienced to date.
2. . Conduct a further stormwater study to evaluate opportunities to lower the breakover elevation and convey the runoff north to Lake Iamonia.
3. To initiate the process of County Acceptance of Road and Drainage System to construct an 18 ft wide paved road for 2,108.00 ft and the associated stormwater facilities to create a paved road connecting with Bannerman Road. The 60 ft right-of-way is to be donated by the home owners.

Estimated Cost of Solution	$990,000
Number of Parcels Benefiting from Proposed Improvements	24
Estimated Cost per Parcel Benefiting	$41,250
Implementation Vehicle for Proposed Improvements	CARDS

Issues to be Resolved During Project Development:

Drainage easement acquisition may be required to convey overflow stormwater from the closed basin to alleviate the flooding problems. Therefore, a detailed stormwater analysis will be required at the time of permit application.

Attachments:

Vicinity Map
Project Map

F - 17: Scott Tower Rd Vicinity

ATTACHMENT # ___
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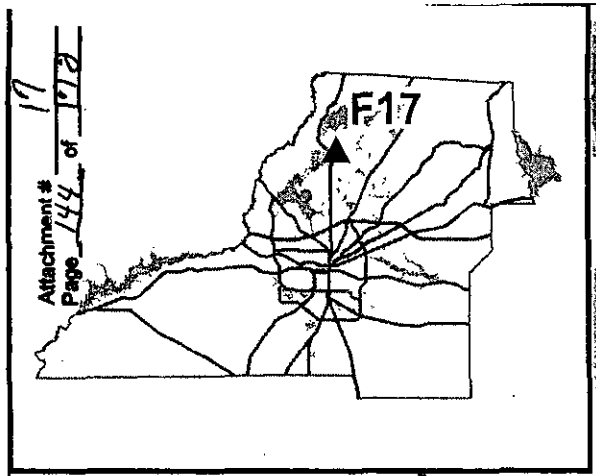

TAMONIA
DEER LAKE W
DEER LAKE
LAKE MONKEY BUSINESS
UPPER LAKE DIANNE
LOWER LAKE DIANNE
BULL HEADLEY RD
N MERIDIAN RD
Project Area
ORCHARD POND RD
BANNERMAN RD
DEER LAKE W
DEER LAKE
TEKESTA DR
LAKE ALYSSA
SUMMERBROOKE DR
SOMERSET LAKE
SHELLY POND
HOLLEY POND
MALLARD POND

Tallahassee-Leon County GIS
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0 1 Miles

N W E S

Roads
Major Roads
Water Bodies
Wetland

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F - 17: Scott Tower Rd

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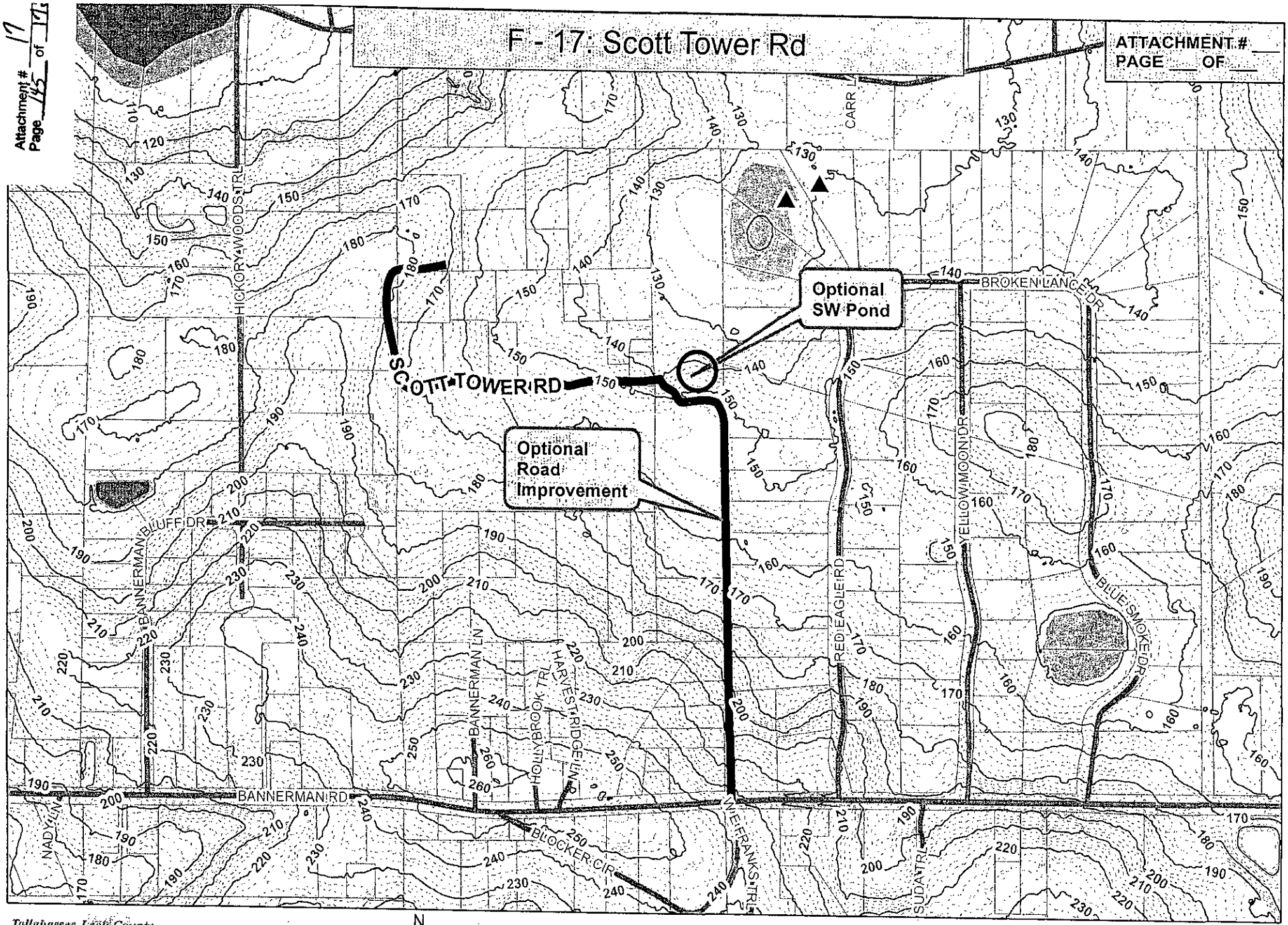

Tallahassee-Leon County GIS
WWW.TLCGIS.ORG

0 500 Feet

N W E S

Flood Projects FPAP
Flood Projects non FPAP
FPAP Adopted list
Waterbody
Wetlands
Parcels
Roads
Index Contours
Inter Contours

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F18 – Sistowbell Lane/Tan Mouse Road

Background Information

Drainage Basin:	Bird Sink
Prior Studies by NWFWMD and/or CDM that identified this issue:	None
Impacted parcels are served by road and/or drainage systems that are:	Private
Proposed improvements are located on property that is:	Private
Development of the impacted property occurred on or before:	Prior to 1974

Sistowbell Lane and Tan Mouse Road are located in the Miccosukee Land Cooperative. Black Creek flows through the wetland toward the southeast to cross under US 90.

Description of Problem

General Problem Type:	Structural and yard Flooding
Problem Source:	Conveyance Deficiency

Approximately 7,000 acres contributes flow to Black Creek upstream of the US 90 crossing. The shallow grade difference through the wetland between McCracken Road and US 90 forces the creek to rise and spread into adjacent parcels following intense storm events.

Recommended Solution:

Estimated Cost of Solution	$3,640,000
Number of Parcels Benefiting from Proposed Improvements	12
Estimated Cost per Parcel Benefiting	$303,333
Implementation Vehicle for Proposed Improvements	Flooded Property Acquisition Program

The proposed solution is to purchase the 12 developed sites subject to structural flooding.

Alternate Solutions:

No action will result in continued structural flooding and potential greater impacts in storm events more severe than those experienced to date. Capital construction such as increasing the US 90 crossing or modifying the creek bed would have substantial environmental impacts and potentially increase historic downstream flooding.

Issues to be Resolved During Project Development:

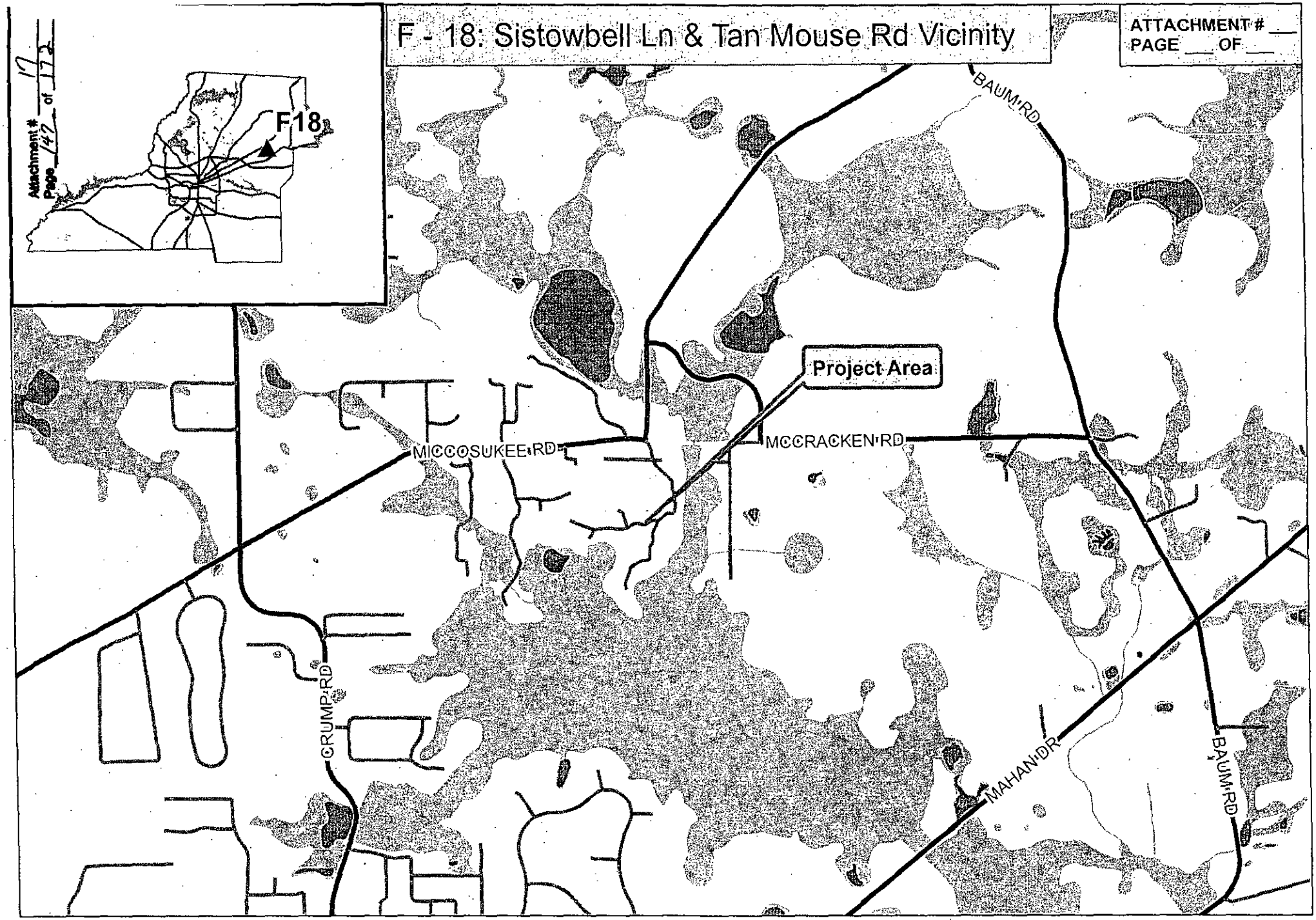
The priority to acquire the 12 properties would need to be established.

Attachments:

Vicinity Map
Project Map

F - 18: Sistowbell Ln & Tan Mouse Rd Vicinity

ATTACHMENT # ___
PAGE ___ OF ___



Tallahassee-Leon County GIS
www.tlcgis.org

0 1 Miles

N W E S

Roads
Major Roads
Water Bodies
Wetland

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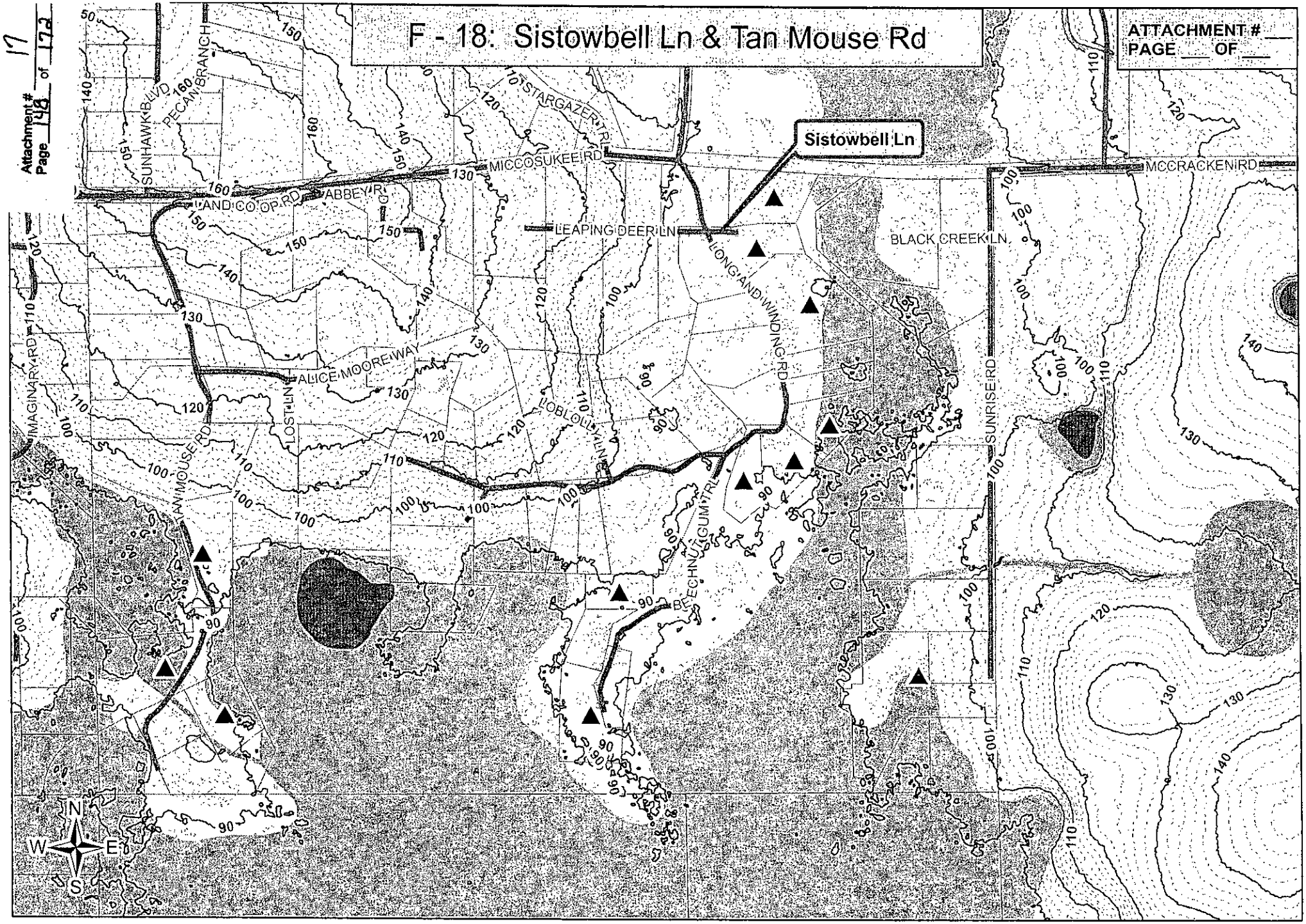
F - 18: Sistowbell Ln & Tan Mouse Rd



Tallahassee-Leon County GIS
www.tlcgis.org

0 500 1,000 Feet

Flood Projects FPAP
Flood Projects non FPAP
FPAP Adopted list
Waterbody
Wetlands
Parcels
Roads
Index Contours
Inter Contours

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F19 – Tanglewood Estates

Background Information

Drainage Basin:	Munson
Prior Studies by NWFWMD and/or CDM that identified this issue:	None
Impacted parcels are served by road and/or drainage systems that are:	Private
Proposed improvements are located on property that is:	Private
Development of the impacted property occurred on or before:	Prior to 1986

Tanglewood Estates is a mobile home subdivision located between Capital Circle NW and Blountstown Highway, adjacent to Gum Creek and Gum Swamp. Gum Creek joins the West Drainage Ditch 300 feet east of the Blountstown Highway crossing. Blueprint 2000 evaluated Tanglewood properties for floodplain compensation credits for the Capital Circle NW/SW project but selected upstream sites for purchase.

Description of Problem

General Problem Type:	Structural Flooding
Problem Source:	Conveyance Deficiency

Over 8 square miles (5,200 acres) contribute flow to Gum Creek upstream of the Blountstown Highway crossing. The West Drainage Ditch (WDD) was constructed in the 1960's and receives flow from almost 4.5 square miles of developed property. High-intensity storms cause the WDD to overwhelm Gum Creek, forcing the water into Gum Swamp and the mobile homes adjacent to the creek.

Recommended Solution:

Estimated Cost of Solution	$430,000
Number of Parcels Benefiting from Proposed Improvements	14
Estimated Cost per Parcel Benefiting	$30,714
Implementation Vehicle for Proposed Improvements	Flooded Property Acquisition Program

The proposed solution is to purchase the 14 developed sites subject to structural flooding. Fourteen (14) additional sites remain in the Flooded Property Acquisition Program.

Alternate Solutions:

No action will result in continued structural flooding.

Issues to be Resolved During Project Development:

The priority to acquire the 14 properties would need to be established.

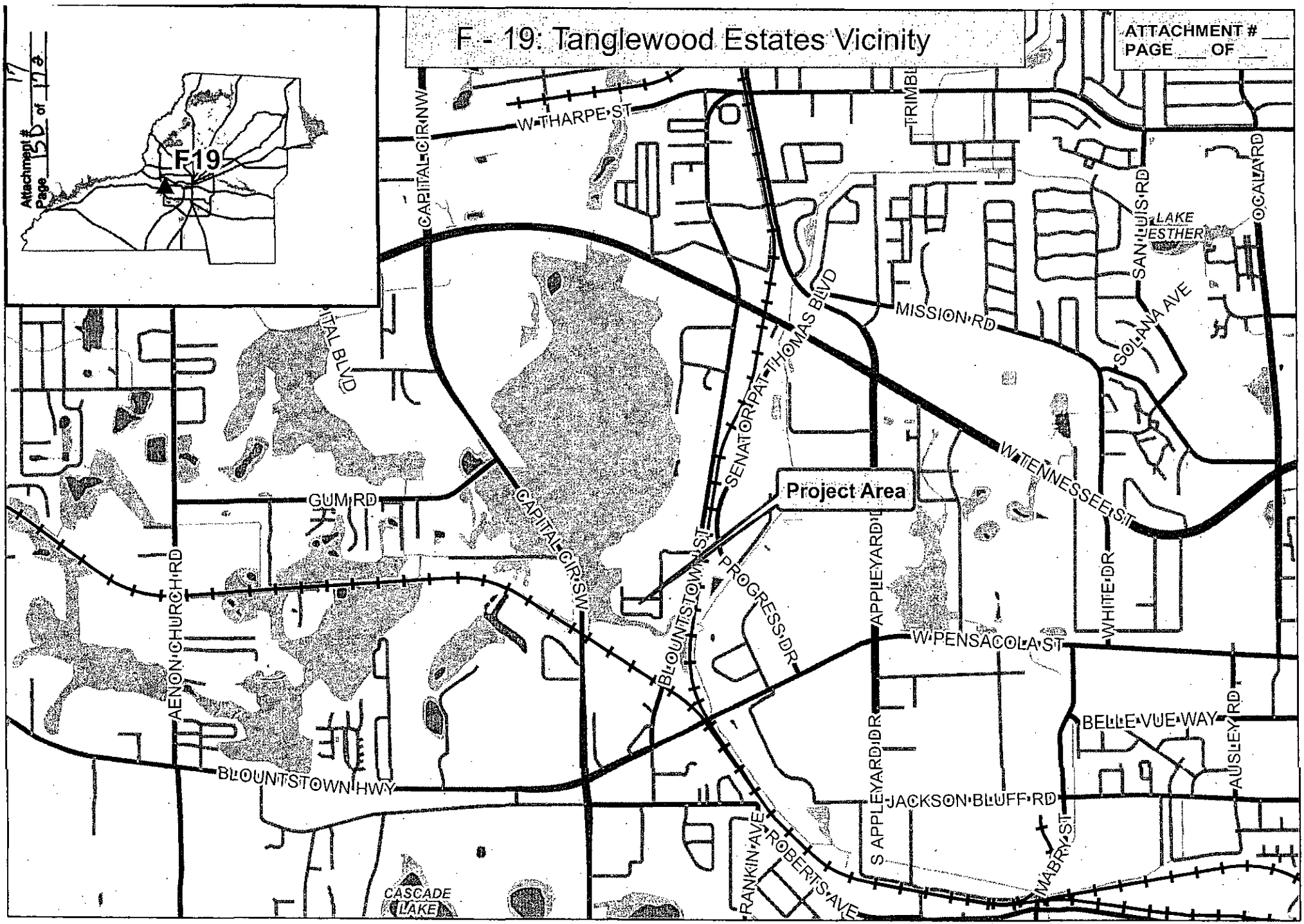
Attachments:

Vicinity Map
Project Map

F - 19: Tanglewood Estates Vicinity

ATTACHMENT # ___
PAGE ___ OF ___

Attachment # 15D
Page 17 of 17a



Tallahassee-Leon County GIS
www.tlcgis.org

0 1 Miles

N W E S

Railroad
Roads
Major Roads
Water Bodies
Wetland

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F - 19: Tanglewood Estates

ATTACHMENT # ___
PAGE ___ OF ___

Attachment # 1
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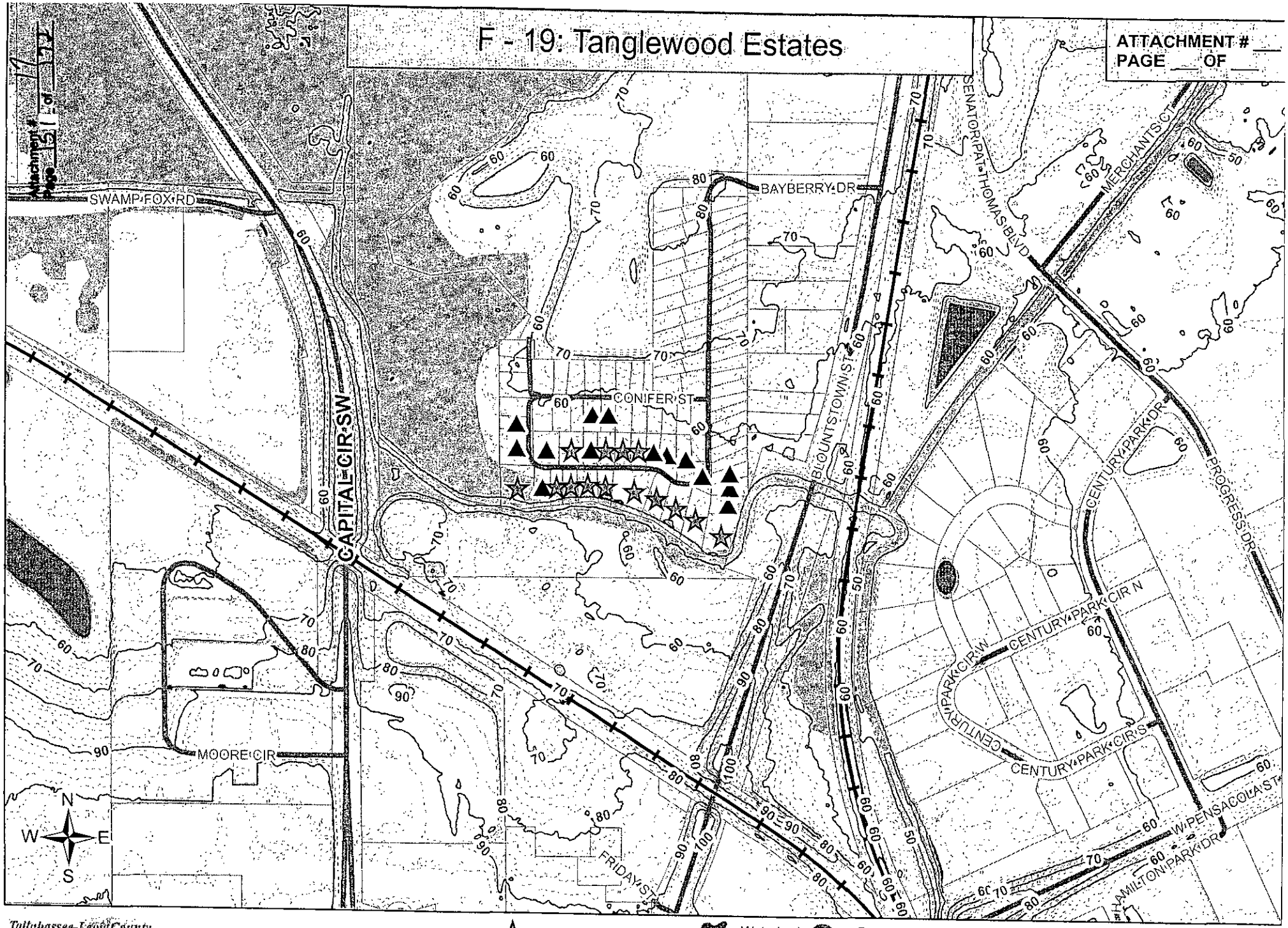

Tallahassee-Leon County GIS
www.tlcgis.org

0 500 1,000 Feet

Flood Projects FPAP
Flood Projects non FPAP
FPAP Adopted list
Waterbody
Wetlands
Parcels
Roads
Railroad
Index Contours

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F20 – W.W. Kelley Road

Background Information

Drainage Basin:	St. Marks
Prior Studies by NWFWMD and/or CDM that identified this issue:	None
Impacted parcels are served by road and/or drainage systems that are:	Public
Proposed improvements are located on property that is:	Private
Development of the impacted property occurred on or before:	1957

The site is located on the upstream side of a creek crossing under W.W. Kelley Road, approximately one mile south of Old St. Augustine Road. Over 900 acres contribute flow to the creek at this point.

Description of Problem

General Problem Type:	Structural Flooding
Problem Source:	St. Marks River overflow

The creek normally flows east approximately one-quarter mile to join the St. Marks River. The elevation of the St. Marks River during flood events slows the creek flow from the west side of W.W. Kelley, forcing floodwaters into the adjacent structure which has a floor level lower than the road surface.

Recommended Solution:

Estimated Cost of Solution	$420,000
Number of Parcels Benefiting from Proposed Improvements	1
Estimated Cost per Parcel Benefiting	$420,000
Implementation Vehicle for Proposed Improvements	Flooded Property Acquisition Program

The proposed solution is to purchase the developed site subject to structural flooding.

Alternate Solutions:

No action will result in continued structural flooding.

Issues to be Resolved During Project Development:

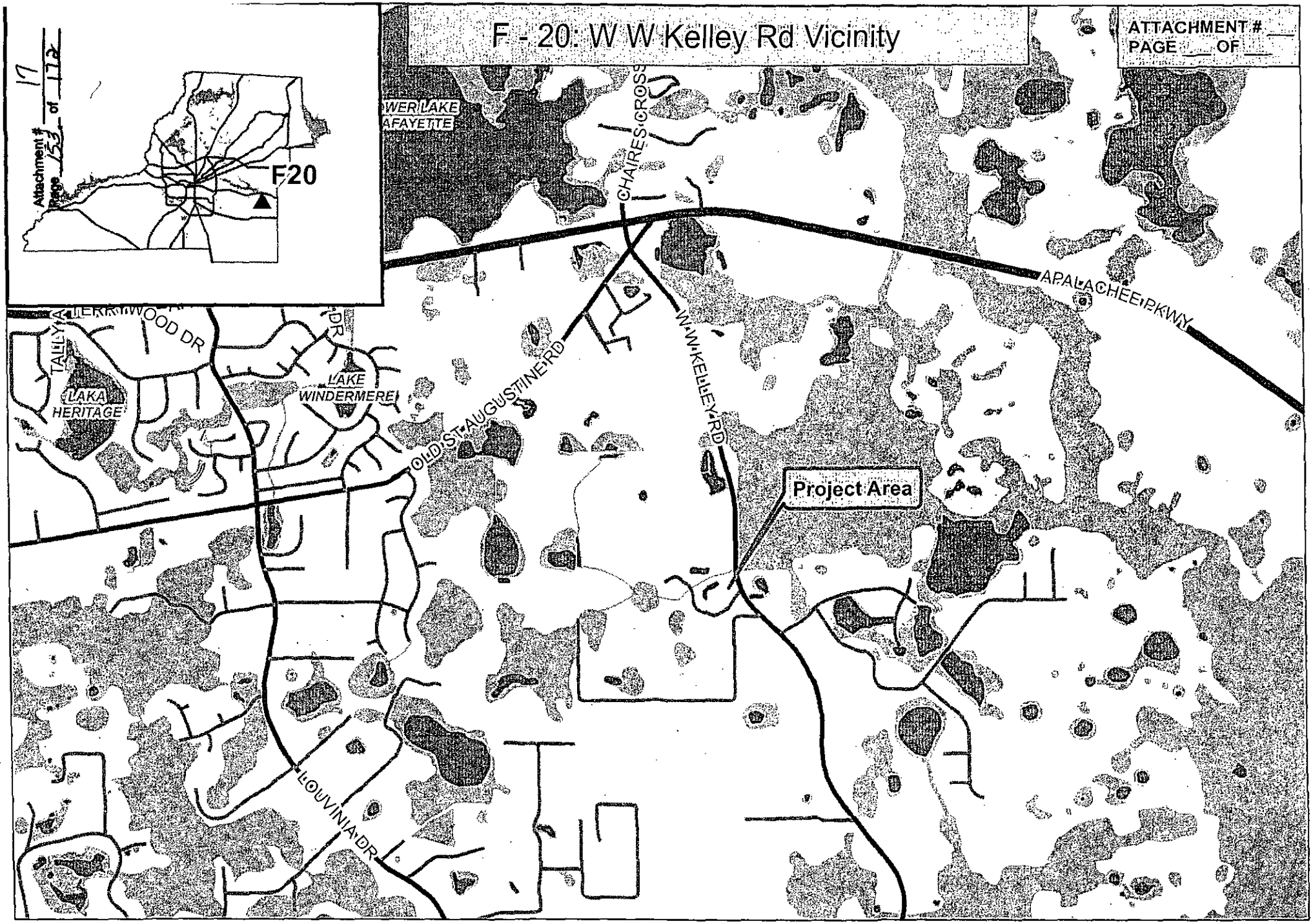
None.

Attachments:

Vicinity Map
Project Map

F - 20: W W Kelley Rd Vicinity

ATTACHMENT # ___
PAGE ___ OF ___



Tallahassee-Leon County GIS
www.tlcgis.org

0 1 Miles

N W E S

Roads
Major Roads
Water Bodies
Wetland

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F - 20: W W Kelley Rd

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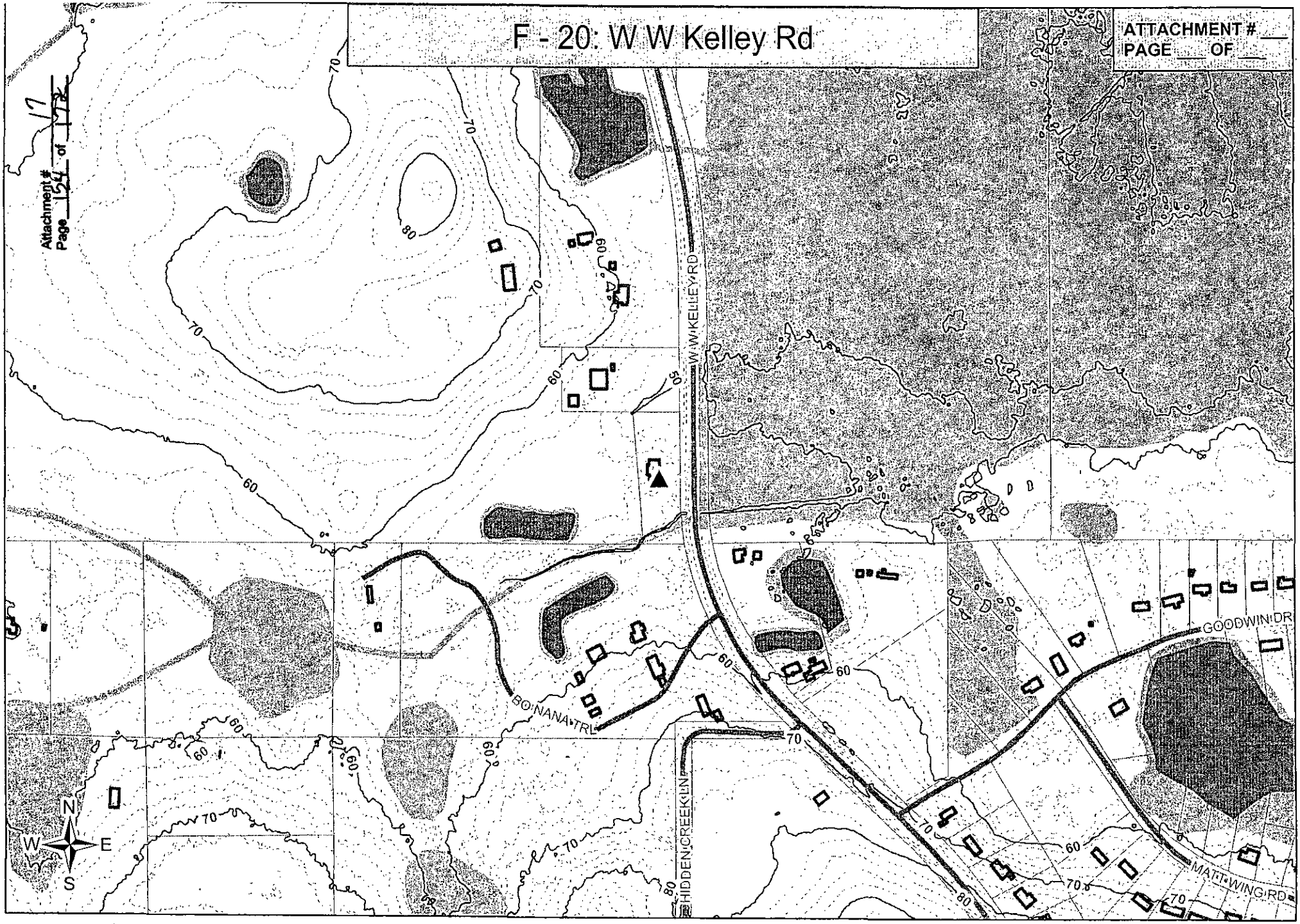

Tallahassee-Leon County GIS
www.tlcgis.org

0 500 1,000 Feet

Flood Projects FPAP
Flood Projects non FPAP
FPAP Adopted list
Waterbody
Wetlands
Buildings
Parcels
Roads
Index Contours
Inter Contours

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F21 – Waterfront Drive

Background Information

Drainage Basin:	Iamonia
Prior Studies by NWFWMD and/or CDM that identified this issue:	None
Impacted parcels are served by road and/or drainage systems that are:	Private
Proposed improvements are located on property that is:	Private
Development of the impacted property occurred on or before:	1962

Waterfront Drive extends 0.6 miles west of Iamonia Landing Drive along the northeast shore of Lake Iamonia.

Description of Problem

General Problem Type:	Structural Flooding
Problem Source:	Lake Iamonia overflow

Although the Lake Iamonia drainage basin incorporates almost 80 square miles, the lake floods in response to the Ochlockonee River. More than 1,000 square miles contribute flow to the river upstream of its connection to Lake Iamonia. Meridian Road bridges a one-half mile gap in the ridge that defines the east bank of the Ochlockonee River. River floodwaters spread eastward into Lake Iamonia until the water levels are equalized. Historic development around the lake is subject to structural flooding during these peak events.

Recommended Solution:

Estimated Cost of Solution	$4,270,000
Number of Parcels Benefiting from Proposed Improvements	25
Estimated Cost per Parcel Benefiting	$170,800
Implementation Vehicle for Proposed Improvements	Flooded Property Acquisition Program

The proposed solution is to purchase the 25 developed sites subject to structural flooding. One additional site remains on the Flooded Property Acquisition Program.

Alternate Solutions:

No action will result in continued structural flooding. Restricting the inflow of floodwaters would be expected to have substantial impacts to the lake ecology as well as increasing river flooding both upstream and downstream.

Issues to be Resolved During Project Development:

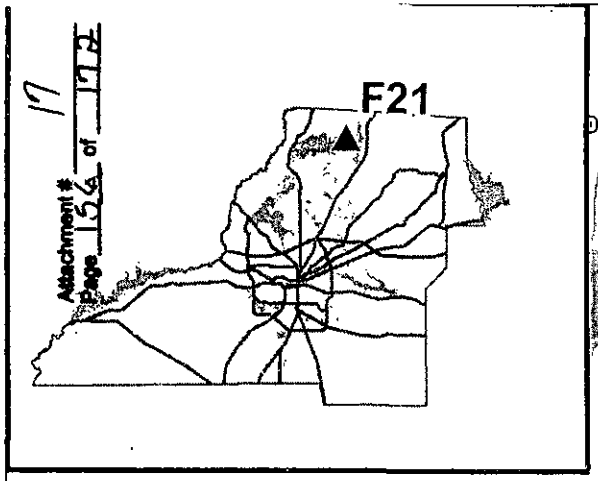
The priority to purchase the 25 affected parcels must be determined.

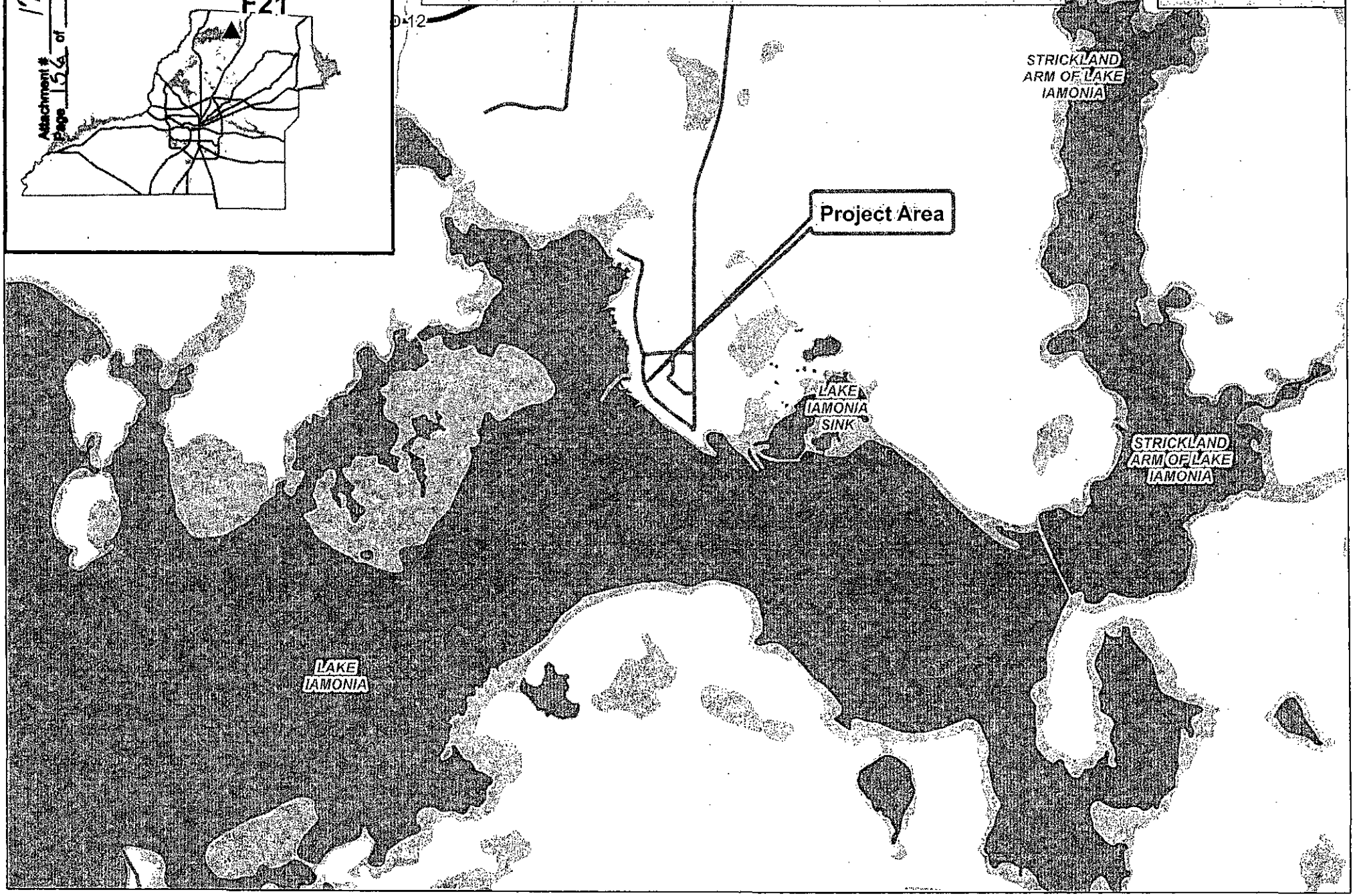
Attachments:

Vicinity Map
Project Map

F - 21: Waterfront Drive Vicinity

ATTACHMENT # ___
PAGE ___ OF ___





Tallahassee-Leon County GIS
www.tlcgis.org

0 1 Miles

N W E S

Roads
Major Roads
Water Bodies
Wetland

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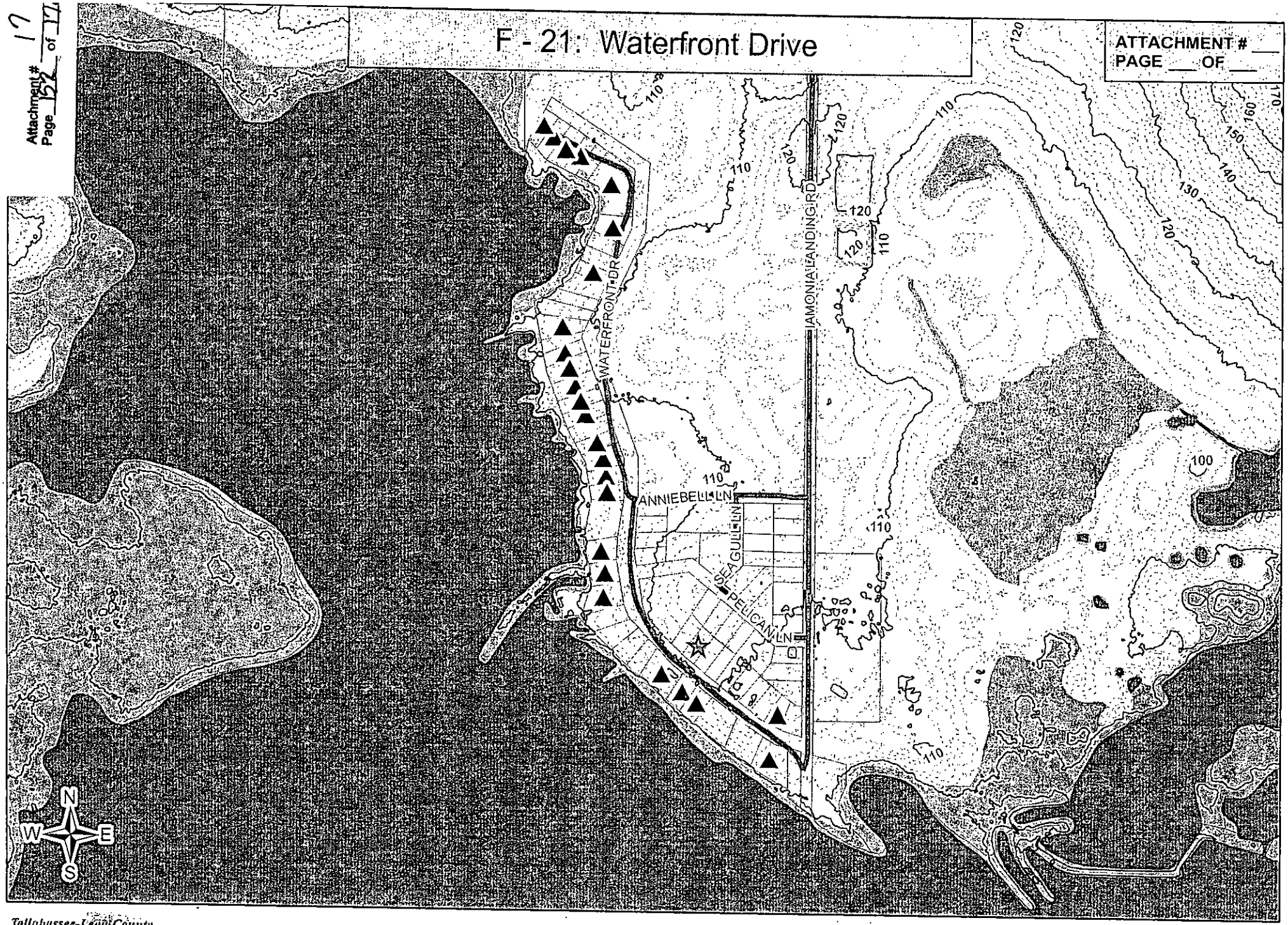
F - 21: Waterfront Drive



Tallahassee-Leon County GIS
www.tlcgis.org

0 500 1,000 Feet

Flood Projects FPAP
Flood Projects non FPAP
FPAP Adopted list
Waterbody
Wetlands
Parcels
Roads
Index Contours
Inter Contours

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F22 – Flooded Property Acquisition Program Completion

Background Information

Drainage Basin:	Multiple
Prior Studies by NWFWMD and/or CDM that identified this issue:	None
Impacted parcels are served by road and/or drainage systems that are:	Varies
Proposed improvements are located on property that is:	Private
Development of the impacted property occurred on or before:	Varies

The Flooded Property Acquisition Program (FPAP) was established to purchase properties in the unincorporated area identified by the owners to be subject to flooding. Applications were received and prioritized in accordance with Board policy. The prioritization list was adopted by the Board in January 2004. (The Board has not accepted any additional requests for purchase.) Of the 261 parcels originally listed, 25 were purchased under FPAP, 6 were purchased for capital projects, 10 owners declined offers, 7 withdrew, and 1 was annexed into the City.

Description of Problem

General Problem Type:	Flooding
Problem Source:	Multiple

Property owners identified flooding conditions ranging from full structural flooding to yard flooding. Greater priority was given to structural flooding of owner-occupied home sites, but all applications were ranked for purchase.

Recommended Solution:

Estimated Cost of Solution	$40,670,000
Number of Parcels Benefiting from Proposed Improvements	216
Estimated Cost per Parcel Benefiting	$170,800
Implementation Vehicle for Proposed Improvements	Flooded Property Acquisition Program

The proposed solution is to purchase the 216 sites remaining on the Flooded Property Acquisition Program.

Alternate Solutions:

No action will result in continued flooding.

Issues to be Resolved During Project Development:

Sixty-nine (69) parcels are no longer owned by the original applicant. It is not known if the current owners were informed of the flood condition and whether they would choose to sell to the County. Board policy states that these sites are not eligible for purchase if ownership changes.

Attachments:

Vicinity Map
Project Map

F - 22: Flooded Property Acquisition Program

ATTACHMENT # ___
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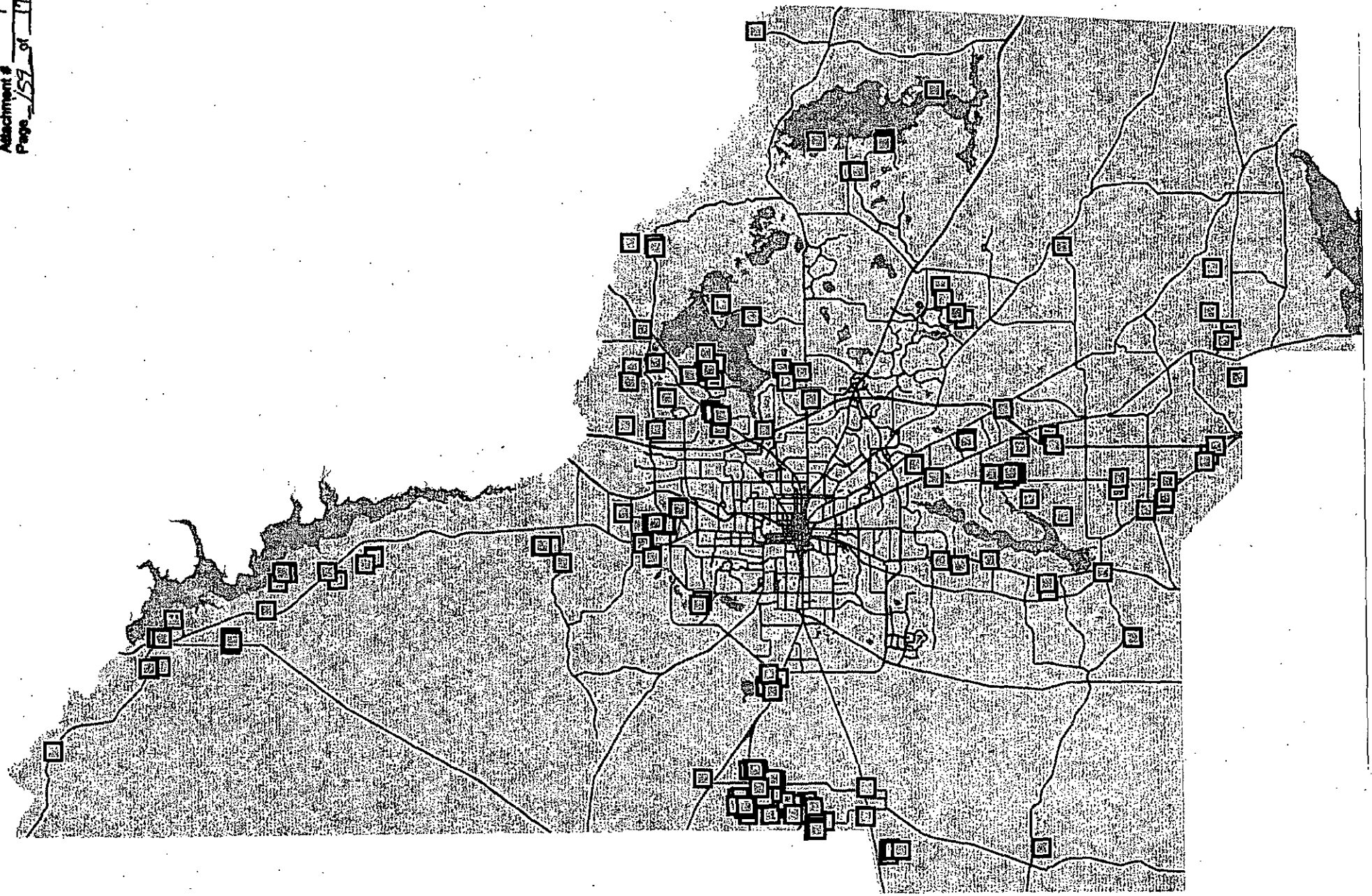

Tallahassee-Leon County GIS

0 5 10 Miles

N W E S

FPAP Adopted list
Major Roads
Major Lakes

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R1 - Chaires Cross Road Bridge from Capitola Road to U.S. 27

Background Information

Drainage Basin:	Lafayette/St. Marks
Prior Studies by NWFWMD and/or CDM that identified this issue:	Yes
Impacted parcels are served by road and/or drainage systems that are:	Public
Proposed improvements are located on property that is:	Public
Development of the impacted property occurred on or before:	1930

Description of Problem

General Problem Type:	Accessibility
Problem Source:	Conveyance Deficiency

Chaires Cross Road between Capitola Road and Apalachee Parkway (U.S. 27) is flooded and inaccessible during major storm events when the water levels in Lafayette Basin and Upper St. Marks River equalizes on both sides of the road.

Recommended Solution:

Estimated Cost of Solution	$37,850,000
Number of Parcels Benefiting from Proposed Improvements	1,200
Estimated Cost per Parcel Benefiting	$32,000
Implementation Vehicle for Proposed Improvements	Capital Improvement Project

Based on the Stormwater Management Master Plan for Non-Urban Basins completed by CDM (May, 1995), a 4,900-foot bridge between Capitola Road and Apalachee Parkway (U.S.) is proposed to ensure accessibility during and up to a 100-Year storm event.

Alternate Solutions:

No action will result in continued accessibility problems during major storm events.

Issues to be Resolved During Project Development:

The length of the bridge is measured from the 54 foot GIS contour (as the targeted bridge approach elevation recommended by CDM) north of U.S. 27 to the north side of the Capitola Road. This recommended improvement is based on the study completed by CDM in 1995, the stormwater model may need to be updated to confirm the recommendation with the new TOPO data. The existing maintained right of way (ROW) width for this segment of the Chaires Cross Road is ranging from 40 feet to 60 feet. The ROW acquisition cost is estimated based on a 90-foot construction width and an additional 50 feet to be acquired.

During the bridge construction, the Chaires Cross Road will be closed. A detour route needs to be provided.

Attachments:

Vicinity Map
Project Map
Cost Estimate Detail

R - 1: Chaires Cross Bridge Vicinity

ATTACHMENT # ___
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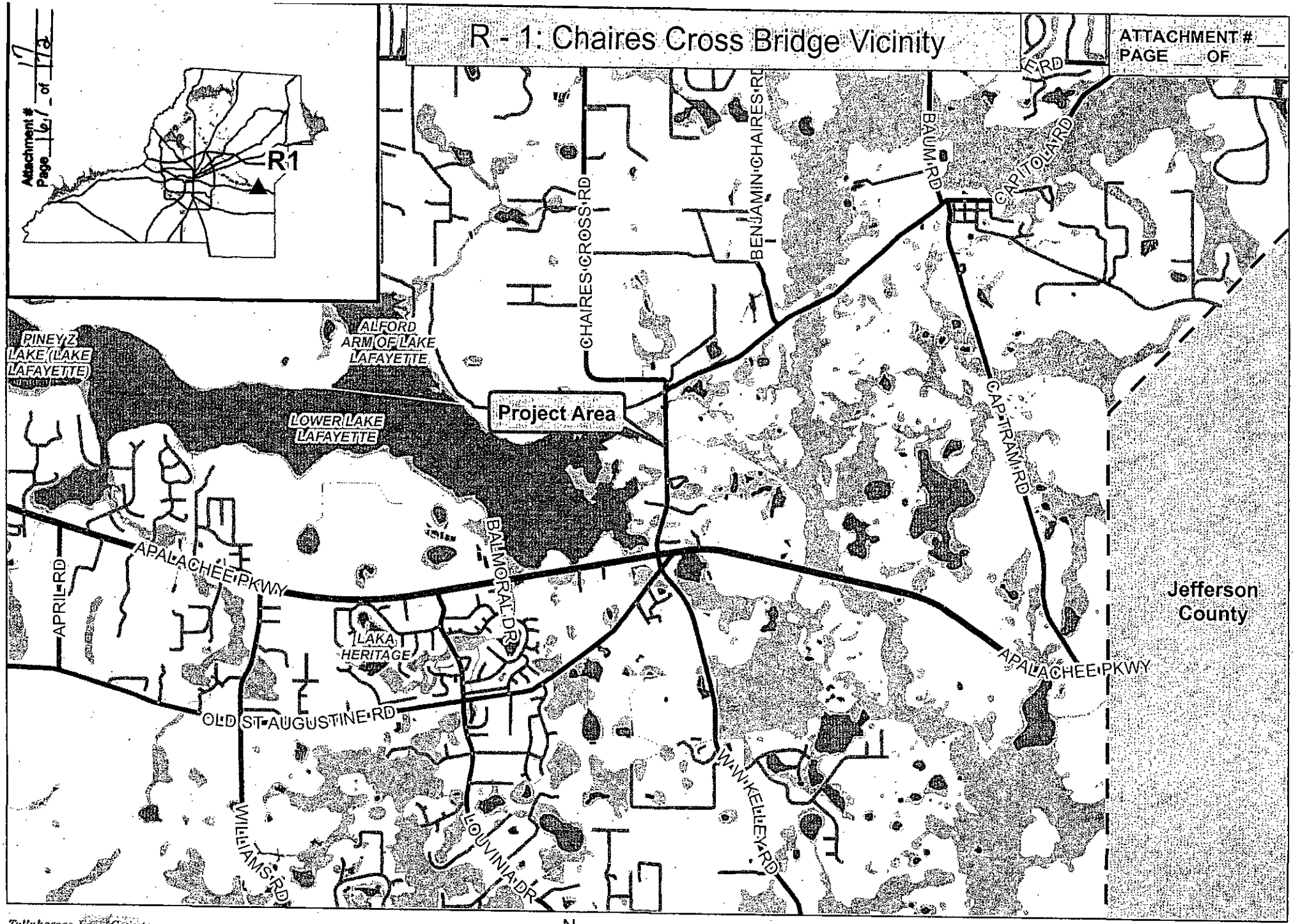

Tallahassee-Leon County GIS
www.tlcgis.org

0 1 Miles

N W E S

Roads
Major Roads
Water Bodies
Wetland

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R - 1: Chaires Cross Road Bridge

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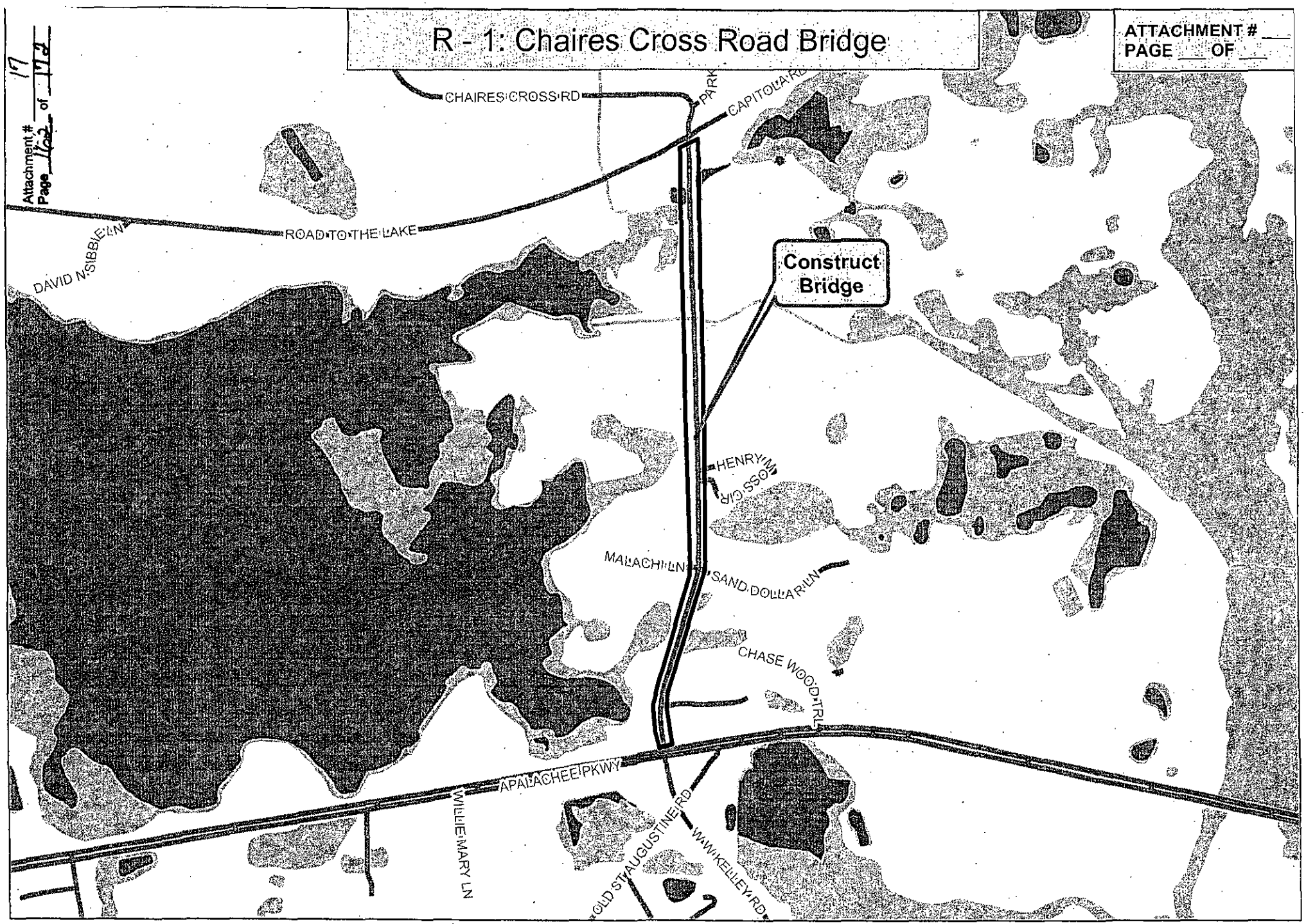

Tallahassee-Leon County GIS
www.tlcgis.org

0 0.5 Miles

N W E S

Waterbody
Roads
Wetlands

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R2 - Benjamin Chaires/Buck Lake Area/Chaires/Capitola Area (Roadway Improvement)

Background Information

Drainage Basin:	St. Marks
Prior Studies by NWFWMD and/or CDM that identified this issue:	Yes
Impacted parcels are served by road and/or drainage systems that are:	Public
Proposed improvements are located on property that is:	Public
Development of the impacted property occurred on or before:	1930

Description of Problem

General Problem Type:	Accessibility
Problem Source:	Conveyance Deficiency

Benjamin Chaires, Buck Lake Area, Chaires Cross Road and Capitola Area are flooded and inaccessible during major storm events when the water levels in Upper St. Marks River rise.

Recommended Solution:

Estimated Cost of Solution	$31,700,000
Number of Parcels Benefiting from Proposed Improvements	Regional
Estimated Cost per Parcel Benefiting	N/A
Implementation Vehicle for Proposed Improvements	Capital Improvement Project

This solution recommends the raising of portions of Benjamin Chaires, Buck Lake Road, Chaires Cross Road and Capitola Road by three feet. A portion of Capitola Road will require the construction of 2200 liner feet of bridge.

Alternate Solutions:

No action will result in continued accessibility problems during major storm events.

Issues to be Resolved During Project Development:

Rights-of Way and Easement acquisition may be more extensive than evaluated in this proposal. A comprehensive and extensive stormwater study may be required to evaluate the feasibility of the proposed recommendations. Permitting requirements are not fully known at this time and may be more restrictive than initially anticipated.
During the bridge construction, the Capitola Road will be closed. A detour route needs to be provided.

Attachments:

Vicinity Map
Project Map
Cost Estimate Detail

R - 2: Benjamin Chaires/Buck Lake Vicinity

ATTACHMENT # ___
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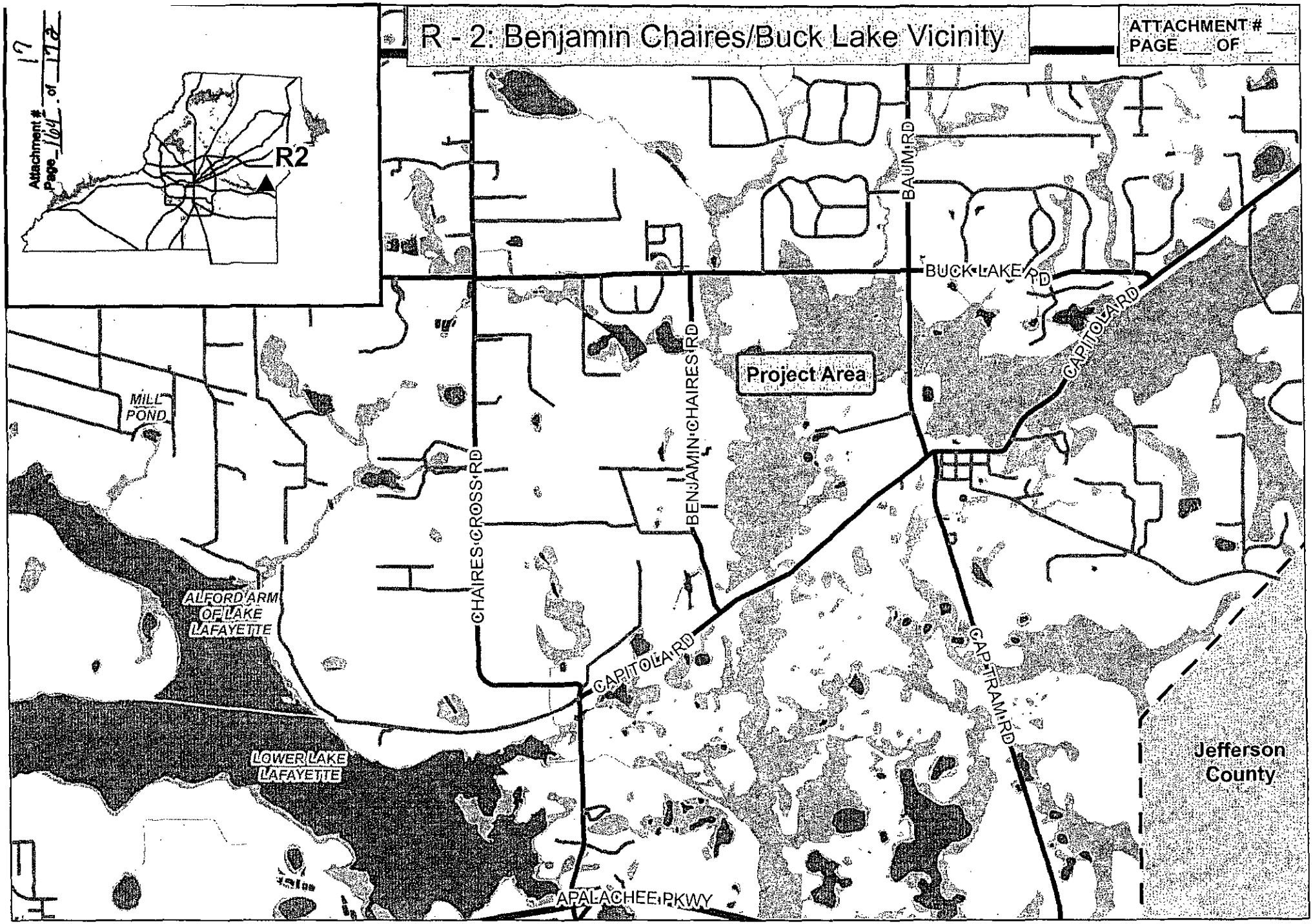

Tallahassee-Leon County GIS
www.TLCGIS.org

0 1 Miles

N W E S

Roads
Major Roads
Water Bodies
Wetland

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R - 2: Benjamin Chaires/Buck Lake Area

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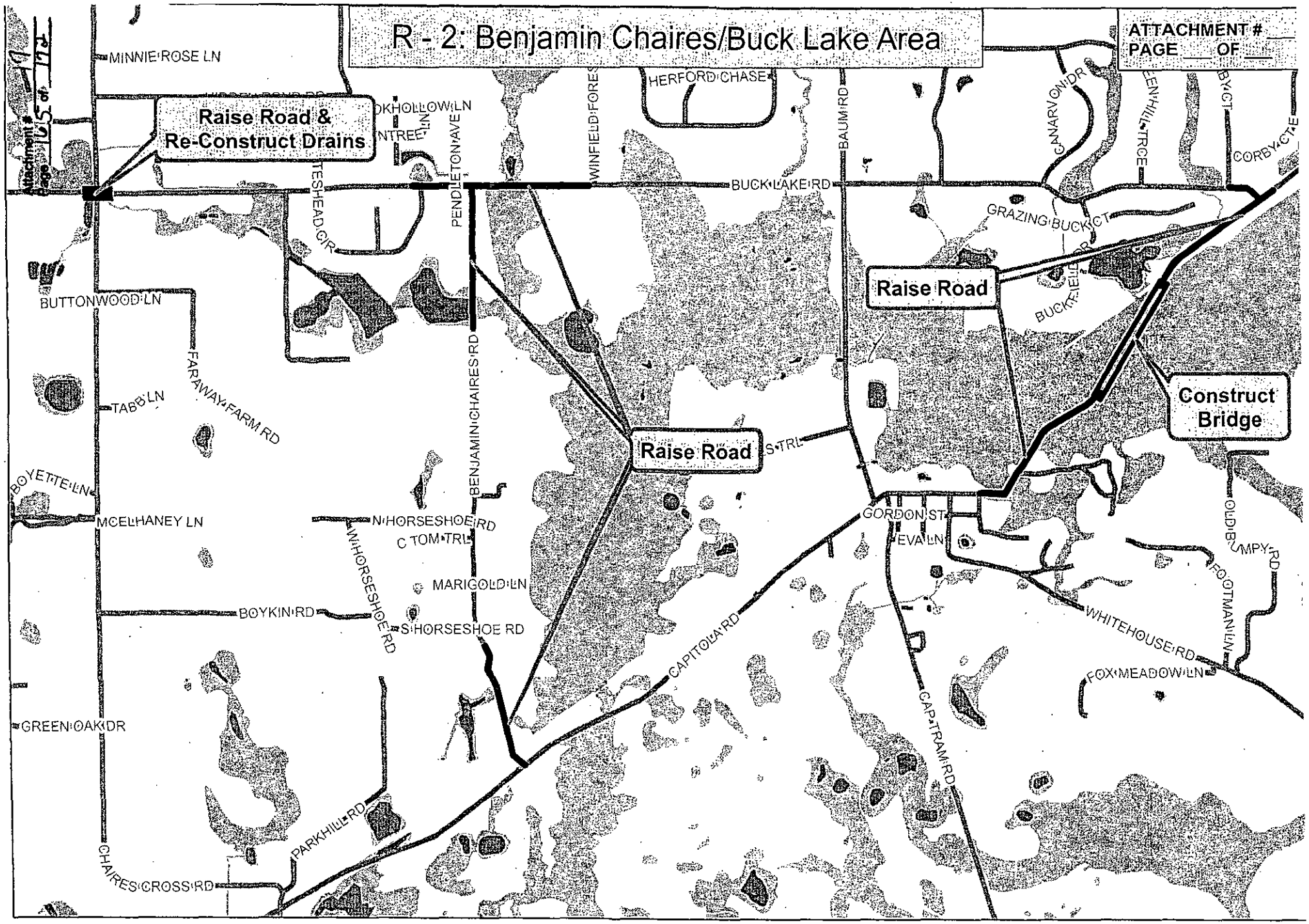

Tallahassee-Leon County GIS
www.tlcgis.org

0 1 Miles

N W E S

Waterbody
Roads
Wetlands

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R3 - Fairbanks Ferry Court

Background Information

Drainage Basin:	Ochlocknee
Prior Studies by NWFWMD and/or CDM that identified this issue:	None
Impacted parcels are served by road and/or drainage systems that are:	Public
Proposed improvements are located on property that is:	Public
Development of the impacted property occurred on or before:	1963

Description of Problem

General Problem Type:	Property isolated due to flooded roads
Problem Source:	Ochlockonee River overflow

Residents currently experience property isolation during major storm events due to Ochlockonee River overflow and flooded Fairbanks Ferry Road and Fairbanks Ferry Court.

Recommended Solution:

Estimated Cost of Solution	$12,520,000
Number of Parcels Benefiting from Proposed Improvements	40
Estimated Cost per Parcel Benefiting	$313,000
Implementation Vehicle for Proposed Improvements	Capital Improvement Project

The proposed solution is to construct a 2,800 ft long and 8 ft high levee/floodwall system similar to New Orleans to protect impacted homes, with a 50 ft removable floodwall section on Fairbanks Ferry Road.

Alternate Solutions:

During TS Fay and other prior storm events, residents were able to access their property by crossing property to the east and north of their residential area. When TS Fay occurred, the property had been developed into a gated residential subdivision, but the developer allowed the use of the new roads in the development to allow access. Unfortunately, the developer reports that the allowed use was abused and trash and other materials were left along the roadway. An alternative solution could be developed to establish a permanently available access across this development which would only be used during storm events. The cost of acquisition of an access easement over the private roads could be quite high due to the potential negative impacts of opening up the roads to the public in a private and gated subdivision. The cost would be indeterminate at this time.

Issues to be Resolved During Project Development:

Due to the limited right-of-way and the newly constructed school bus turn-around, it will be a challenge for construction and future maintenance. Therefore, additional right-of-way acquisition probably will be required at the time of permit review. The design and permitting process for this proposed project may identify additional work elements to ensure no adverse impact to adjacent properties, as well as any mitigation needed for construction in the watercourse and wetlands.

Attachments:

Vicinity Map
Project Map

R - 3: Fairbanks Ferry Vicinity

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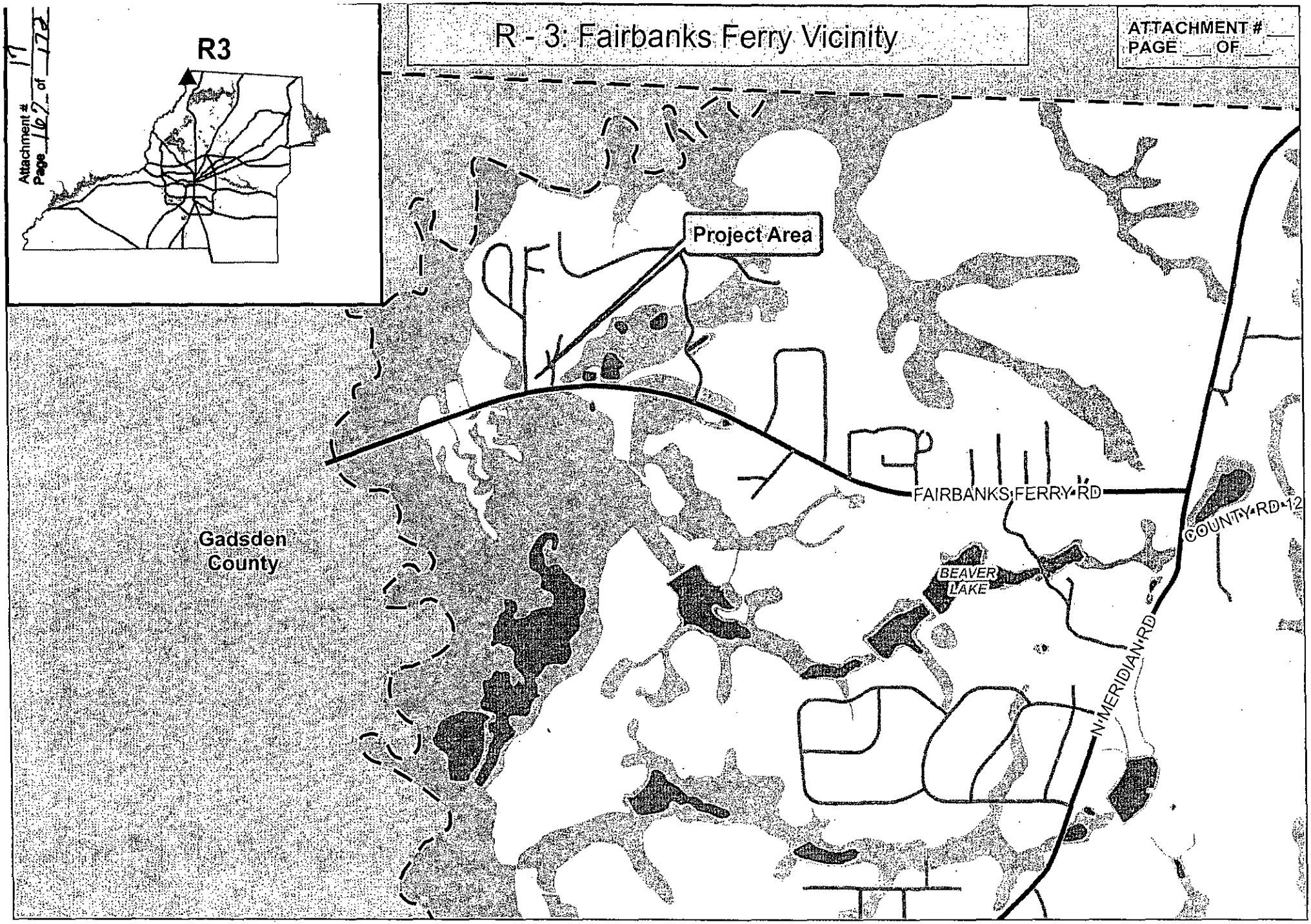

Tallahassee-Leon County GIS
www.tlcgis.org

0 1 Miles

N W E S

Roads
Major Roads
Water Bodies
Wetland

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R - 3: Fairbanks Ferry Road Levee/Floodwall

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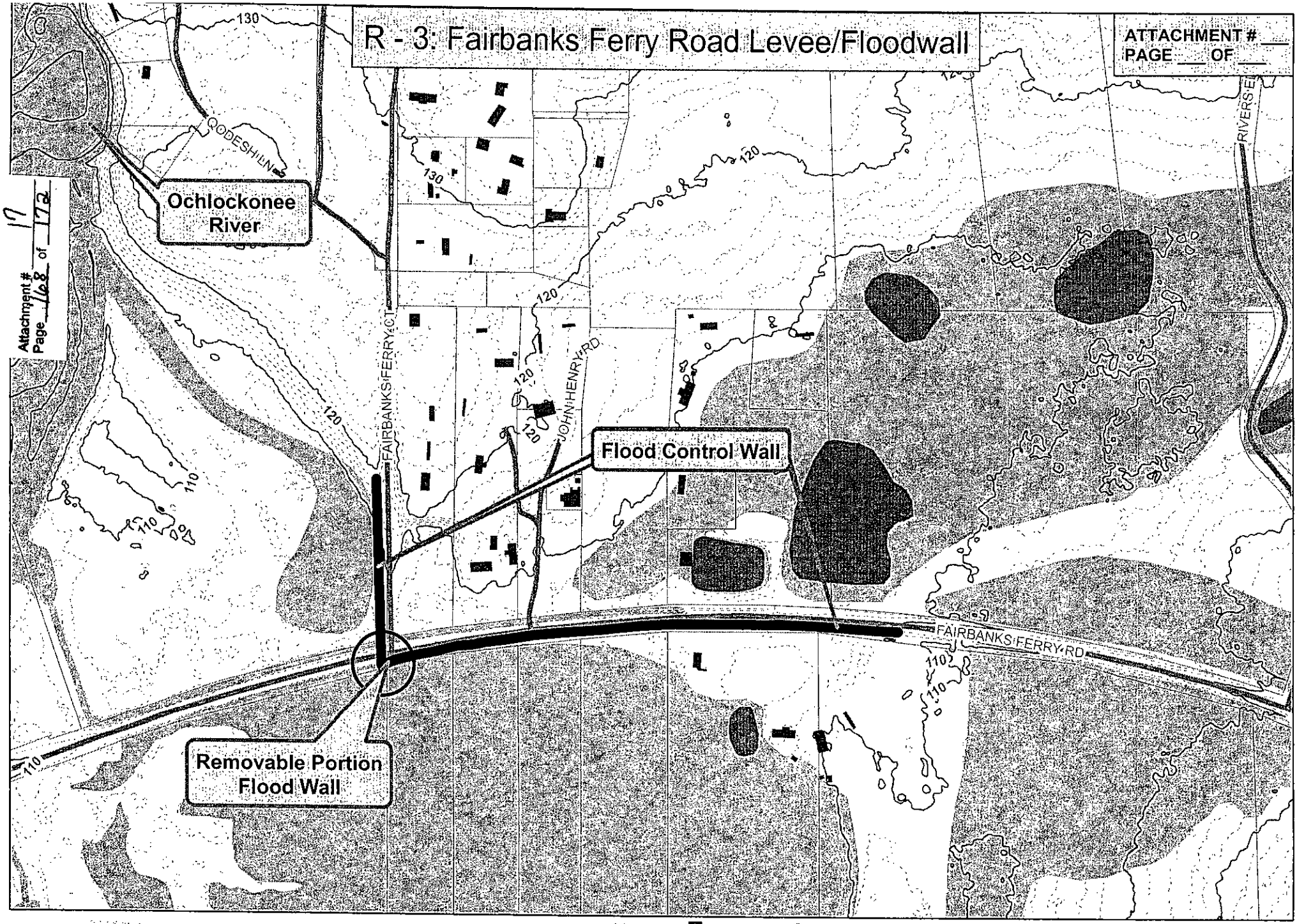

Tallahassee-Leon County GIS
www.tlcgis.org

0 500 1,000 Feet

N W E S

Buildings
Waterbody
Wetlands
Parcels
Roads
Index Contours
Inter Contours

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N1 – 4632 Centerville Road

Background Information

Drainage Basin:	Lafayette
Prior Studies by NWFWMD and/or CDM that identified this issue:	No
Impacted parcels are served by road and/or drainage systems that are:	Public
Proposed improvements are located on property that is:	Private
Development of the impacted property occurred on or before:	1961

Description of Problem

General Problem Type:	Yard Flooding
Problem Source:	Conveyance

Large tract of land occupied by several dwellings receives water from small closed basin, conveying water across the property to other properties then to a lake. Owner complains of flooding of the property as a result.

Recommended Solution:

Estimated Cost of Solution	N/A
Number of Parcels Benefiting from Proposed Improvements	1
Estimated Cost per Parcel Benefiting	N/A
Implementation Vehicle for Proposed Improvements	No Action

Staff site visits have noted that the property owner has created a dam by constructing a raised access road to a rear dwelling, cutting off the discharge of water from the property, resulting in ponding of water 3 to 4 feet deep. Owner was advised that he should get professional engineering assistance in developing a cross drain under the access road that will allow the water to drain. This is a private property issue.

Alternate Solutions:

None

Issues to be Resolved During Project Development:

None

Attachments:

Vicinity Map
Project Map

N2 - Farms Road Neighborhood

Background Information

Drainage Basin:	Lafayette
Prior Studies by NWFWMD and/or CDM that identified this issue:	None
Impacted parcels are served by road and/or drainage systems that are:	Private
Proposed improvements are located on property that is:	Private
Development of the impacted property occurred on or before:	Prior to 1980

Farms road is private road that connects between Capitola and Whitehouse Roads

Description of Problem

General Problem Type:	Properties isolated
Problem Source:	St. Marks River Overflow

The northern end of Farms road is built within the St. Marks River Floodplain. Flooding inundates approximately 1600 feet of the road preventing access to residential homes via Capitola Road and requiring extensive detours.

Recommended Solution:

Estimated Cost of Solution	N/A
Number of Parcels Benefiting from Proposed Improvements	N/A
Estimated Cost per Parcel Benefiting	N/A
Implementation Vehicle for Proposed Improvements	N/A

No action is recommended. The parcels have alternative access via Whitehouse Road.

Alternate Solutions:

CIP to construct 1600 foot concrete bridge and elevate roadway approaches. Estimated cost per parcel $239,130 for a total estimated cost of $11,000,000.

Issues to be Resolved During Project Development:

N/A

Attachments:

Vicinity Map
Project Map

N3 – Lonnie Road

Background Information

Drainage Basin:	Lafayette
Prior Studies by NWFWMD and/or CDM that identified this issue:	No
Impacted parcels are served by road and/or drainage systems that are:	Public
Proposed improvements are located on property that is:	Private
Development of the impacted property occurred on or before:	

Description of Problem

General Problem Type:	Structural Flooding
Problem Source:	Closed Basin

Residential property previously experienced structure flooding during storm events due to inadequate conveyance along Lonnie Road. Water entered basement window in such events.

Recommended Solution:

Estimated Cost of Solution	N/A
Number of Parcels Benefiting from Proposed Improvements	1
Estimated Cost per Parcel Benefiting	N/A
Implementation Vehicle for Proposed Improvements	No Action

In 20xx Public Works installed a drainage pipe system along Lonnie Road that provides positive drainage for the property in question. The property owner has not performed minor grading on their property to allow connection to the new roadside drainage system. Resolution to this problem is available to the homeowner.

Alternate Solutions:

None

Issues to be Resolved During Project Development:

None

Attachments:

Vicinity Map
Project Map

N4 – Walden Road (1158 & 1166)

Background Information

Drainage Basin:	Lafayette
Prior Studies by NWFWMD and/or CDM that identified this issue:	No
Impacted parcels are served by road and/or drainage systems that are:	Public
Proposed improvements are located on property that is:	Public
Development of the impacted property occurred on or before:	1987

Description of Problem

General Problem Type:	Yard Flooding
Problem Source:	Conveyance

The Alford Arm Tributary to Lake Lafayette flows along the west property boundary of the Deer Pointe subdivision, between US 90 and Buck Lake Road. Following high-volume storm events, the stream overflows into the adjacent yards. Structural flooding from the stream has not been reported.

Recommended Solution:

Estimated Cost of Solution	N/A
Number of Parcels Benefiting from Proposed Improvements	2
Estimated Cost per Parcel Benefiting	N/A
Implementation Vehicle for Proposed Improvements	No Action

The developer recorded a drainage easement in 1987 over the 100-year floodplain associated with the stream. Drainage maintenance within a stream system is limited to removal of fallen trees or other major debris to restore normal flow. The yard flooding was within the limits of the easement, and due to high water downstream. Consequently, no action is proposed.

Alternate Solutions:

None

Issues to be Resolved During Project Development:

None

Attachments:

Vicinity Map
Project Map