

# Pond Siting Report

# TAMPA INTERSTATE STUDY

(the I-275/I-4 Downtown Interchange Operational Improvement)

WPI No. 7140004, State Project No. 99007-1402, FAP No. IR-9999(43)

Interstate 275 (I-275) from the Hillsborough River to Floribraska Avenue and Interstate 4 (I-4) from the I-275/I-4 merge to east of 22nd Street (Section 10320-MP 0.0 to MP 0.7 and Section 10190-MP 6.389 to MP 8.49) approximately 4.5 kilometers (2.8 miles) in length.

Prepared For  
**FLORIDA DEPARTMENT  
OF  
TRANSPORTATION**

Prepared By  
**GREINER, INC.**

APRIL 1996

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## **INTRODUCTION**

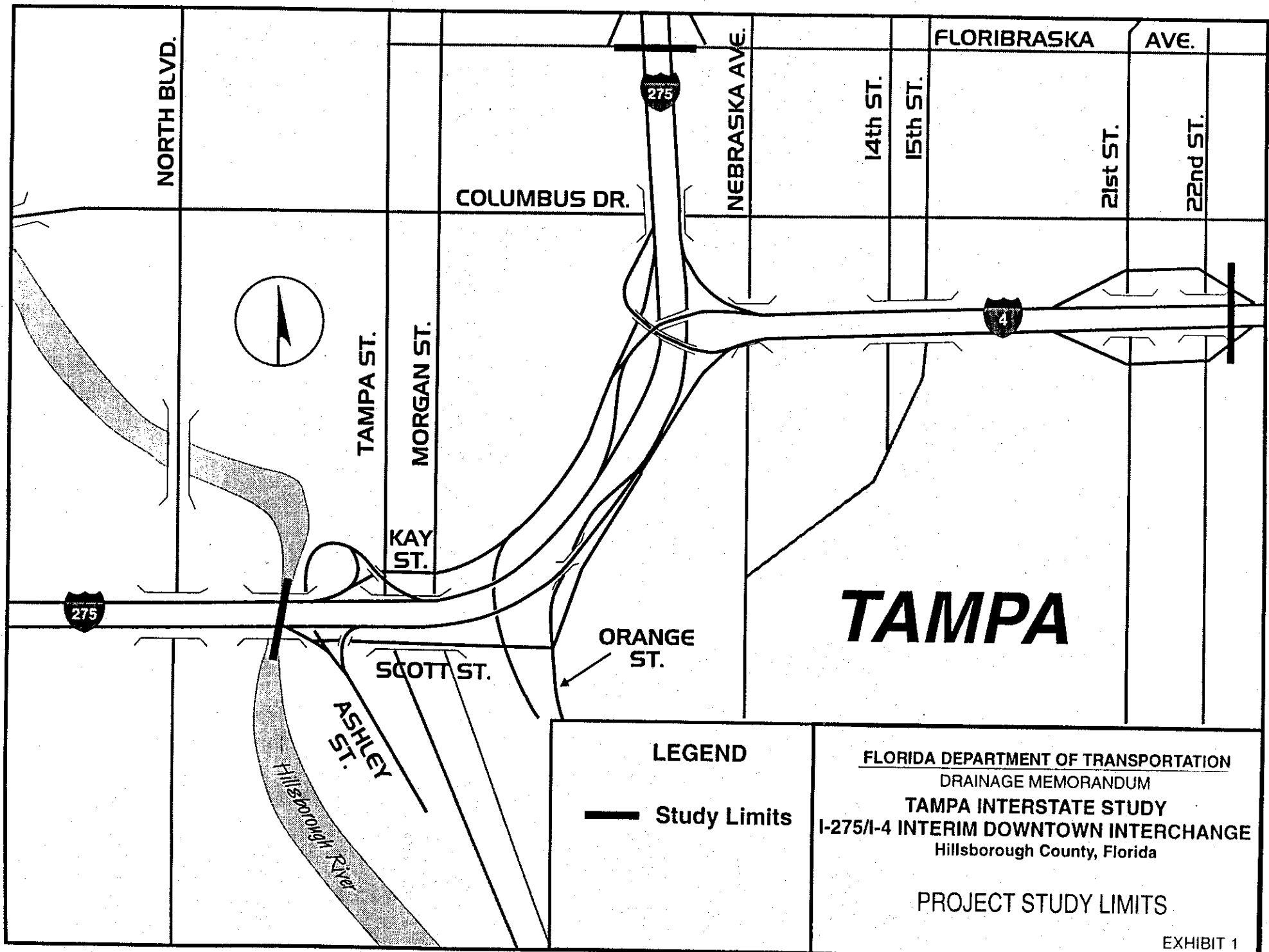
The I-275/I-4 downtown interchange was designed in the early 1960's and is a complex arrangement of overpasses and weaving areas that handle large volumes of traffic. Originally designed to handle 40,000 to 60,000 vehicles per day (vpd), traffic volumes in 1994 ranged as high as 164,000 vpd, nearly three times the amount of traffic intended to travel this section of roadway. With such high volumes of traffic on the interstate, the issue of safety on the I-275/I-4 downtown interchange has become a great concern to the Tampa Bay community. This operational improvement project is intended to improve conflicting merge/diverge areas that currently contribute to congestion in the downtown interchange area, to increase sight distance to reduce accidents and provide a pull off area when accidents occur by providing shoulders where economically and physically possible, and to identify any further safety improvements for the downtown interchange. No major flooding has been reported in the project study limits. The improvements are proposed for new construction. Detailed descriptions of the proposed project are provided in the Engineering Summary document, which is published separately. This report will discuss existing drainage conditions within the study limits and proposed roadway stormwater management requirements.

## **PROJECT DESCRIPTION**

The study limits for the proposed downtown interchange improvements are Interstate 275 (I-275) from the Hillsborough River north to Floribraska Avenue and Interstate 4 (I-4) from the I-275/I-4 merge to east of 22nd Street, approximately 4.5 kilometers (2.8 miles) in length. The project study limits are shown on Exhibit 1.

## **EXISTING CONDITIONS**

The project is located in an area which is characterized by heavily urbanized development. The existing stormwater systems within the project area outfall to the Hillsborough River or to McKay Bay.



NORTH BLVD.

COLUMBUS DR.

NEBRASKA AVE.

FLORIBRASKA

AVE.



14th ST.

15th ST.

21st ST.

22nd ST.



TAMPA ST.

MORGAN ST.

KAY ST.



**TAMPA**

ORANGE ST.

SCOTT ST.

ASHLEY ST.

Hillsborough River



The existing roadway through the study limits is elevated above adjacent ground elevations by either fill or bridge structures. The existing drainage system within the project area consists of enclosed storm sewer systems. The majority of the stormwater outfall systems for the existing interstate system were constructed in the early 1960's and are considered to be undersized or overloaded.

## **DRAINAGE BASINS**

There are two major drainage basins within the project limits. Each of the basins are open basins. Generally, all roadway runoff will be collected in either existing or proposed closed storm sewer system.

### **Basin 1**

Basin 1 includes the I-275 area between the Hillsborough River and the I-275/I-4 interchange. The drainage area for basin 1 is approximately 134 acres.

The existing interstate area (119 acres) and approximately 15 acres of offsite area currently drains to the FDOT outfall system which drains from the I-275/I-4 interchange south to the Hillsborough River via a 60-inch to 66-inch stormwater outfall.

Currently, no stormwater treatment is provided for the existing interstate roadway runoff that drains directly to the Hillsborough River.

### **Basin 2**

Basin 2 includes the area of Interstate 4 from 13th Street to 22nd Street. The basin is approximately 9 acres in size and includes only the interstate system. The basin drains south via the City of Tampa stormwater system to McKay Bay.

Currently, no stormwater treatment is provided for the existing interstate roadway runoff.

## **AGENCY COORDINATION**

Greiner reviewed the proposed project with representatives of FDOT, SWFWMD, and the City of Tampa. Minutes of the meetings are included in Appendix A. The major items discussed with the agencies will include:

- The existing interchange drainage system discharges directly to the Hillsborough River, which is tidally influenced. There is no existing stormwater treatment provided.
- FDOT indicated that since the interchange area is discharging to the Hillsborough River (tidal area), FDOT 14-86 requirements will not apply.
- Due to the combination of new and the expansion of existing pavement, equivalent stormwater treatment is proposed. SWFWMD wants us to maximize our treatment capacity. We are currently proposing to treat as a minimum, one-inch of runoff over the area of new pavement (wet-detention).
- No peak attenuation will be required by SWFWMD since we are discharging to the Hillsborough River provided that it is demonstrated that there is no adverse impact to adjacent drainage systems.
- The City will also not require peak attenuation for the interchange area discharging to the Hillsborough River. However, the City may require improvements to the outfall system in lieu of peak attenuation in the Ybor City area. During final design increase in peak discharge due to the roadway improvements will be calculated to determine what outfall improvements may be required.

## ALTERNATIVE EVALUATION

### Stormwater Pond Alternatives

This section contains a review and recommendations of the stormwater management facilities proposed for this project. This included determining proposed stormwater treatment volumes, preliminary detention pond locations and estimated conveyance and outfall system improvements. Each of the potential stormwater ponds were reviewed for wetland impacts, threatened and endangered species, hazardous materials and cultural/archaeological impacts. Due to the urbanized nature of the project location, wetland impacts and T&E species impacts are not considered a significant issue.

Existing and proposed new impervious areas were determined for the proposed project and are shown in Table 1. Since the runoff from the existing and proposed roadways flows to the tidally influenced Hillsborough River, no stormwater peak attenuation per FDOT 14-86, FAC. or SWFWMD 40D-4, FAC. was considered.

Stormwater treatment of the first one-inch of runoff from the new impervious areas was determined from 1"=100 foot scale aerial photographs. Approximately 0.8 ac-ft. of stormwater treatment volume will be required. Preliminary detention pond sizes were estimated assuming "wet" ponds with approximately two (2) feet of storage fluctuation and 20-foot maintenance berms. The total required detention pond area was approximately 0.8 acres. As discussed with the regulatory agencies, SWFWMD wants to maximize the stormwater treatment capacity, where feasible. Calculations of treatment volumes and preliminary pond sizes are included in Appendix B.

Alternative sites for each pond were located where pond areas were considered feasible. In locations where reasonable alternative sites were not available, no alternative site was considered.

**TABLE 1**

**TIS DOWNTOWN INTERCHANGE**

**EXISTING AND PROPOSED NEW IMPERVIOUS AREAS**

Location	Existing Pavement (Ac)	New Pavement Area (Ac)
Rome Ave. to Hill. River	9.0	*
Hills. River to Orange St.	10.6	1.4
Orange St. to Palm Ave.	9.9	1.5
Palm Ave. to Columbus Dr. to Nebraska Ave.	10.5	2.6
Nebraska Ave. To 13th St.	6.4	2.2
13th St. to 19th St.	6.4	2.2
19th St. to 22nd St.	2.6	0.5
Total	53.9	9.7

\* No construction proposed in these segments with the alternative



A priority for stormwater pond locations was to locate the ponds within existing or proposed right-of-way limits at the proposed interchange infield and ramp areas or within the impacted areas adjacent to the proposed right-of-way. Pond locations outside of the right-of-way limits were not considered feasible due to the degree of existing development and high land costs.

### Basin 1

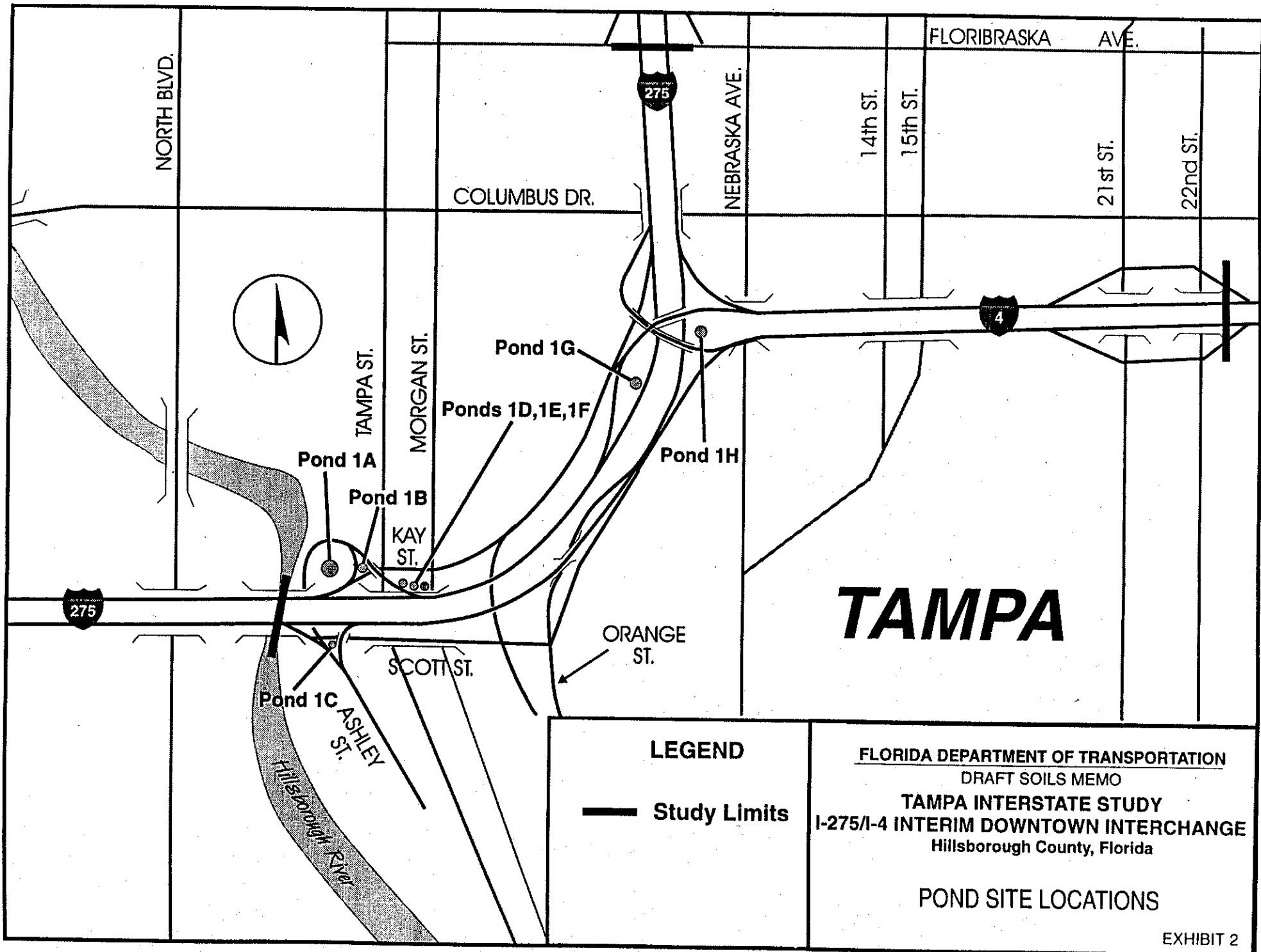
There are several possible stormwater pond alternative locations within this basin which are shown on Exhibit 2.

### Pond 1A

This pond is located on the north side of I-275 at the I-275/Ashley Street Loop Ramp. The proposed pond is approximately 0.9 acres and has a storage volume of 1.3 ac.-ft. Currently, the site is a landscaped infield area within existing right-of-way. The potential for wetland, hazardous material, threatened and endangered species, and archaeological/cultural impacts is low. The SCS Soil Survey for Hillsborough County indicates the soil type to be Urban Land.

### Pond 1B

This pond is located at Ashley Street and Ramp "B". The proposed pond is approximately 0.40 acres and has a storage volume of 0.43 ac.-ft. Currently, the site is a landscaped infield area within the existing right-of-way. The potential for wetland, hazardous material, threatened and endangered species, and archaeological/cultural impacts is low. The SCS Soil Survey for Hillsborough County indicates the soil type to be Urban Land.



**LEGEND**

— Study Limits

FLORIDA DEPARTMENT OF TRANSPORTATION  
 DRAFT SOILS MEMO  
**TAMPA INTERSTATE STUDY**  
**I-275/I-4 INTERIM DOWNTOWN INTERCHANGE**  
 Hillsborough County, Florida

**POND SITE LOCATIONS**

### Pond 1C

This pond is located on the south side of I-275 at the Scott Street Ramp. The proposed pond is approximately 0.73 acres in size and has a storage volume of 0.93 ac.-ft. Currently, the site is a landscaped infield area within the existing right-of-way. The potential for wetland, hazardous material, threatened and endangered species and archaeological/cultural impacts is low. The SCS Soil Survey for Hillsborough County indicates the soil type to be Urban Land.

### Pond 1D, 1E, 1F

These ponds are located on the north side of I-275 at Kay Street and Florida and Marion Streets. The proposed ponds are approximately 0.21, 0.31, and 0.21 acres in size with a storage volume of 0.18, 0.32 and 0.16 ac.-ft. respectively. Currently the sites have commercial development located outside of existing right-of-way. The proposed roadway right-of-way required a portion of each parcel; therefore, these pond locations will be adjacent to roadway improvements and utilize remainder parcels. The potential for wetland, threatened and endangered species and archaeological/cultural impacts is low. Pond 1D is located at the site of Central Animal Hospital. There is no regulatory information available for this property. There exists some potential for contamination. Field reviews identified one underground storage tank at the site. The SCS Soil Survey for Hillsborough County indicates the soil type to be Urban Land.

### Pond 1G

This pond is located at the I-275/I-4 interchange. The proposed pond is approximately 0.69 acres in size and has a storage volume of 0.63 ac.-ft. Currently the site is landscaped infield area within existing right-of-way.

The potential for wetland, hazardous material, threatened and endangered species and archaeological/cultural impacts is low. The SCS Soil Survey for Hillsborough County indicates the soil type is Tavares, hydrologic group "A" with a high water table depth of 3.5 to 6.0 feet.

#### Pond 1H

This pond is also located at the I-275/I-4 interchange adjacent to Nebraska Avenue. The proposed pond is approximately 1.8 acres in size and has a storage volume of 2.7 ac.-ft. Currently the site is landscaped infield area within the existing right-of-way. The potential for wetland, hazardous material, threatened and endangered species and archaeological/cultural impacts is low. The SCS Soil Survey for Hillsborough County indicates the soil type is Tavares, hydrologic group "A" with a high water table depth of 3.5 to 6.0 feet.

#### Basin 2

Due to the relatively small amount of new pavement proposed in Basin 2 and the limited available pond area within existing right-of-way, it is proposed to provide the stormwater treatment volume for Basin 2 in the ponds proposed in Basin 1.

### **OUTFALL IMPROVEMENTS**

With the construction of the proposed project, the existing stormwater conveyance and outfall system will require modifications and improvements. Currently, the interstate is on a fill or bridge section throughout the project area. The existing drainage is then conveyed to scuppers, inlets or ditches and directed down to ground level. The existing drainage is then conveyed via a system of large diameter pipes (54"-66" RCP) directly to the Hillsborough River along Scott Street. Drainage on the at-grade street is conveyed via pipes and inlets to either the FDOT Scott Street outfall or to and existing City of Tampa outfall system along Laurel Street. The proposed project will consist of adding new travel lanes and shoulders. Portions of the existing roadway collection system may

still be utilized. However, additional inlets and pipes may be required to tie the new lanes or shoulder drainage system to the existing drainage system. In other cases, due to the roadway geometry, a new separate drainage collection system will be required. The ultimate roadway drainage system will have to be determined during final design.

It is anticipated that the interstate outfall system to the Hillsborough River (Basin 1) will also require modification. This will be required for two reasons: the outfall will have to convey runoff from increased impervious area, and portions of the proposed alternatives will cover the existing pipe alignment. A preliminary hydraulic analysis of the interstate outfall system to the Hillsborough River was completed using proposed roadway impervious areas and alignments. Preliminary estimates of proposed outfall system pipe sizes are shown in Table 2.

As discussed with the regulatory agencies, during final design in Basin 2, the increase in peak discharge due to the proposed roadway improvements will be calculated to determine if any outfall improvements may be required.

## **RECOMMENDATIONS**

All of the alternative pond locations area within existing or proposed right-of-way. All have low potential for impacts to wetlands, threatened and endangered species, hazardous materials, and archaeological/cultural features.

As discussed with the regulatory agencies, although required treatment volume for new pavement is small (0.8 ac.-ft.) they want to maximize the stormwater treatment capacity, where feasible . In addition, we are proposing to “trade-off” treatment requirements in Basin 2 by providing compensating treatment volume in Basin 1. Therefore, additional pond acreage and stormwater treatment volume in excess of the required amount is proposed.

**TABLE 2**

**TIS DOWNTOWN INTERCHANGE  
PROPOSED OUTFALL PIPE SIZE TO THE HILLSBOROUGH RIVER**

Location	Existing Pipe Size (in.)	Proposed Pipe Size (in.)(1)
Columbus Dr. to Park	60	72
Park Ave. to Palm Ave.	60	72
Palm Ave. To Henderson	60	72
Henderson St. to Marion St.	66	84
Marion St. to Tampa St.	66	84
Tampa St. to Hills. River	66	84

(1) or equivalent

Ponds 1A, 1C, 1G, and 1H are recommended over Ponds 1B, 1D, 1E, 1F because these latter ponds have a relatively small storage volume.

It should be noted that the stormwater pond area sizes, locations, and outfalls are conceptual and are based on preliminary data and assumptions. At the time of final design, pond sizes and locations could be required to be modified pursuant to design and permitting requirements and geotechnical investigations.

## APPENDIX A



## RECORD OF CONVERSATION

DATE: 11/7/95 JOB NO: C102380.21

RECORDED BY: R. Johnson OWNER/CLIENT: FDOT

TALKED WITH: Carlos Lopez OF FDOT District 7 Drainage

NATURE OF CALL: INCOMING \_\_\_ OUTGOING X MEETING \_\_\_

ROUTE TO: Elaine Illes \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

MAIN SUBJECT OF CONVERSATION: TIS Downtown Interchange

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**ITEMS DISCUSSED:** I reviewed with Carlos my discussion with Alba Evans of SWFWMD concerning stormwater requirements for the TIS Downtown Interchange project.

Carlos concurred with the results of the discussion.

I asked Carlos about upgrading the existing 66-inch outfall from the interchange in lieu of providing peak attenuation ponds. Carlos said the outfall should be evaluated to determine existing capacity and upgrade requirements from this project. He said additional right-of-way for ponds should be avoided if possible. I told Carlos we would take a preliminary look at the outfall. I also asked Carlos about FDOT 14-86 requirements. He said since we are discharging to the Hillsborough River (tidal area), FDOT 14-86 will not apply.

I told him we would schedule meetings with SWFWMD and City of Tampa to discuss preferred alternative.



# Southwest Florida Water Management District

## PRE-APPLICATION MEETING NOTES

Date: 12.21.95  
Project Name: Tampa Interstate Study - Interchange  
Attendees: Robert Johnson  
Carlos Lopez  
Alba Már

The following is the District's understanding of the meeting. Please do not send copies of minutes. If you have any questions or need clarifications, please feel free to contact us at (813) 985-7481.

- 
- Ashley Exit will be rerouted  
Widening shoulders
  - New pavement is 8 acres  
will upgrade pipes so there's no attenuation
  - Treating <sup>only</sup> ~~the~~ road <sup>no site</sup> - will treat as much as he can in ponds  
(over 8 acres) can take equivalent treatment for portions that  
he can't treat by treating existing (even though he should have treated  
those anyway since not off line)
  - Standard General permit \$1600  
Forms A, C, E

# Greiner

C102380.21

December 26, 1995

## MEMORANDUM

TO: File

FROM: Robert E. Johnson, P.E. *ly*

SUBJECT: **Tampa Interstate Study Downtown Interchange  
Project - SWFWMD Meeting**

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On Thursday, December 21, 1995 a meeting was held at the SWFWMD Tampa office to discuss drainage issues regarding the TIS Downtown Interchange Project. The following were in attendance:

Alba Mas	SWFWMD
Carlos Lopez	FDOT
Robert Johnson	Greiner

The following major topics were discussed:

- \* Greiner reviewed the proposed project. The project improvements are intended to improve safety and lane movements and are not capacity improvements. Several alternatives have been identified and the preferred alternative selected. The alternative will include construction of new pavement areas, widening of existing areas and removal of pavement areas.
- \* Greiner indicated that approximately 8.0 acres of new pavement area is proposed.
- \* Pond areas within the Ashley Street and I-4/I-275 interchange are proposed for stormwater treatment areas.

- \* Due to the combination of new and the expansion of existing pavement, equivalent treatment is proposed. SWFWMD wants us to maximize our treatment capacity. We are currently proposing to treat one-inch of runoff over the 8.0 acres of new pavement (wet-detention).
- \* The interchange and interstate roadway from the interchange to the Hillsborough River (134 acres) is currently drained directly to the River via a storm sewer outfall system (54"-66" RCP). Since this area drains directly to the tidally influenced Hillsborough River, no peak attenuation is proposed. However, due to the interchange project construction, the outfall system may require upgrading of the pipes. SWFWMD did not object to this providing that it is demonstrated that there is no adverse impact to adjacent drainage systems.
- \* SWFWMD said the project will require a standard general permit (\$1600 permit fee). No wetland impacts are anticipated.
- \* See attached sheet for a copy of the SWFWMD minutes.

RJ:ha

xc: Elaine Illes  
Carlos Lopez

# Greiner

C102380.21  
January 18, 1996

## MEMORANDUM

TO: File

FROM: Robert E. Johnson, P.E. *REJ*

SUBJECT: **Tampa Interstate Study Downtown Interim Interchange  
City of Tampa Meeting**

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On Thursday, January 11, 1996 a meeting was held at Greiner, Inc. to discuss drainage and utility issues regarding the TIS Downtown Interim Interchange Project. The following were in attendance:

Henry Dorzback	-	City of Tampa
Michael Burwell	-	City of Tampa
Elaine Illes	-	Greiner, Inc.
Larry Sly	-	Greiner, Inc.
Robert Johnson	-	Greiner, Inc.

The following major topics were discussed:

- Greiner reviewed the proposed project. The project improvements are intended to improve safety and lane movements and are not capacity improvements. Several alternatives have been identified and the preferred alternative selected. The alternative will include construction of new pavement areas, widening of existing areas and removal of pavement areas.
- Greiner indicated that approximately 8.0 acres of new pavement area is proposed.
- Pond areas within the Ashley Street and I-4/I-275 interchange are proposed for stormwater treatment areas.

- Due to the combination of new and the expansion of existing pavement, equivalent treatment is proposed. We are currently proposing to treat one-inch of runoff over the 8.0 acres of new pavement (wet-detention).
- The interchange and interstate roadway from the interchange to the Hillsborough River (134 acres) is currently drained directly to the River via a storm sewer outfall system (54"-66" RCP). Since this area drains directly to the tidally influenced Hillsborough River, no peak attenuation is proposed. However, due to the interchange project construction, the outfall system may require upgrading of the pipes. The City of Tampa did not object to this providing that it is demonstrated that there is no adverse impact to adjacent drainage systems.
- The City may require improvements to the outfall system in lieu of peak attenuation in the Ybor City area. These outfalls are currently overloaded. Some discussion of outfall improvements has been done between the City and FDOT (Lisa Hansen).

During final design the increase in peak discharge due to the roadway improvements will be calculated to determine what outfall improvements may be required.

- Greiner discussed potential utility conflicts due to the lowering of Marion and Morgan Streets from the superelevation/widening of the interstate structures. The City requested that Greiner send proposed plans and profiles to the City (Mike Davis - Utility Coordinator) for review. The City may want to coordinate with FDOT on replacement of existing 8-inch sanitary line along Marion Street during construction.

REJ:ha

xc: Attendees

## APPENDIX B

# Greiner, Inc.

JOB TIS Downtown Interchange  
DESCRIPTION Post Sitting Report

SHEET 1 OF 5 PROJ. NO. G102380.21  
COMPUTED BY WJS DATE 11/21/96  
CHECKED BY \_\_\_\_\_ DATE \_\_\_\_\_

## TIS Downtown Interim Interchange

- Proposed Impervious Area - areas estimated from 1"=100' scale aerial photo
- New Impervious = 9.7 acres
- For SWFWMD, provide treatment for new impervious area

$$\text{Treatment Volume} = 9.7 \text{ acres} \times 1 \frac{1}{12} = \underline{0.8 \text{ ac-ft}}$$

- Since we are discharging to Hillsborough River (tidally influenced), no peak attenuation required.



# Greiner, Inc.

JOB TIS Downtown Interchange  
DESCRIPTION Pond Storage Report

SHEET 2 OF 5 PROJ. NO. C102380.21  
COMPUTED BY WES DATE 4/22/96  
CHECKED BY \_\_\_\_\_ DATE \_\_\_\_\_

## Pond 1A

- Utilize available area within ramp
- Assume storage depth = 2'
- Area @ NWL = .72 ac
- Area @ Storage Volume = .58 ac
- Storage Provided @ 2' = 1.3 ac-ft
- Total area = .91 ac

## Pond 1B

- Utilize available area within ramp
- Assume storage depth = 2'
- Area @ NWL = .16 ac
- Area @ storage volume = .27 ac
- Storage provided @ 2' = .43 ac-ft
- Total area = .40 ac

# Greiner, Inc.

JOB TIS Downtown Interchange  
DESCRIPTION Pond Siting Report

SHEET 3 OF 5 PROJ. NO. C102380.21  
COMPUTED BY WES DATE 4/22/96  
CHECKED BY \_\_\_\_\_ DATE \_\_\_\_\_

## Pond 1C

- Utilize available area within ramp
- Assume storage depth = 2'
- Area @ NWL = .38 ac
- Area @ storage volume = .55 ac
- Storage provided @ 2' = .93 ac-ft
- Total area = .73 ac

## Pond 1D

- Utilize area of parcels north of interstate
- Assume storage depth = 2'
- Area @ NWL = .05 ac
- Area @ storage volume = .13 ac
- Storage provided @ 2' = 0.18 ac-ft
- Total area = .21 ac

# Greiner, Inc.

JOB TIS Downtown Interchange  
DESCRIPTION Pond Site Report

SHEET 4 OF 8 PROJ. NO. C102380.21  
COMPUTED BY RES DATE 4/22/56  
CHECKED BY \_\_\_\_\_ DATE \_\_\_\_\_

## Pond IE

- Utilize area of parcel north of interstate
- Assume storage depth = 2'
- Area @ NWL = .12 ac
- Area @ storage volume = .20 ac
- Storage provided @ 2' = 0.32 ac-ft
- Total area = .31 ac

## Pond IF

- Utilize area of parcel north of interstate
- Assume storage depth = 2'
- Area @ NWL = .05 ac
- Area @ storage volume = .11 ac
- Storage provided @ 2' = 0.16 ac-ft
- Total area = .21 ac

# Greiner, Inc.

JOB T15 Downtown Interchange  
DESCRIPTION Pond Sizing Report

SHEET 5 OF 5 PROJ. NO. C102380.21  
COMPUTED BY WES DATE 4/22/96  
CHECKED BY \_\_\_\_\_ DATE \_\_\_\_\_

## Pond 1G

- Utilize area within interchange infield area
- Assume storage depth = 2'
- Area @ NWL = .21 ac
- Area @ storage volume = .42 ac
- Storage provided @ 2' = 0.43 ac-ft
- Total area = .69 ac

## Pond 1H

- Utilize area within interchange infield area
- Assume storage depth = 2'
- Area @ NWL = 1.2 ac
- Area @ storage volume = 1.5 ac
- Storage provided @ 2' = 2.7 ac-ft
- Total area = 1.8 ac