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BRANDON HYATT

MASTER DRAINAGE PLAN

DRAINAGE REPORT

Derek L. Doughty, P.E.
FL. P.E. #54010

Date: 5/2/08

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DRAINAGE REPORT

FOR

BRANDON HYATT

Master Drainage Plan

HILLSBOROUGH COUNTY, FL

Submitted to:

SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT
HILLSBOROUGH COUNTY

Prepared by:

Brooks & Amaden, Inc.
205 Ridgewood Avenue
Brandon, Florida 33510

March 26, 2008

Project # 5021-01

BRANDON HYATT

Master Drainage Plan

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PROJECT NARRATIVE

The proposed BRANDON HYATT project is currently an agricultural parcel located south of S.R. 60 and east of I-75 in Section 20, Township 29 South, Range 20 East, in Hillsborough County. A location map is provided in the Supporting Material section. This Master Drainage Plan is for a stormwater management system with lake creation to serve a proposed Hotel/Restaurant commercial development. Stormwater runoff water quality treatment and attenuation will be provided in created ponds.

The majority of the project site is listed as Myakka fine sand (29), Basinger soils (5) and Malabar fine sand (27) by the Soil Conservation Service. These are identified from Hydrologic Group B/D to D type soils with the majority soil type of B/D.

Water quality treatment is provided by detention with effluent filtration prior to discharge into the wetlands adjacent to the site for ultimate discharge into Delaney Creek. Runoff analysis was performed using Advanced Interconnected Pond Routing (AdICPR). The stormwater management system for this project was designed to equal or exceed the requirements of the Southwest Florida Water Management District (SWFWMD) and Hillsborough County. Calculations supporting this design are included in this report.

SCS / NRCS SOILS IDENTIFICATION

A map of the soils areas is provided in the Supporting Material section along with descriptive fact sheets for each of the soils included. As mentioned in the Project Narrative, the soils are identified as Hydrologic Group B/D to D type soils. Calculations in this report reference D type soils.

FEMA FLOOD INSURANCE RATE MAP

According to the currently effective Flood Insurance Rate Map (FIRM 1201120380E dated August 15 1989) prepared by the Federal Emergency Management Agency (FEMA), the 100-year floodplain does not encroach upon the subject property. According to the preliminary Flood Insurance Rate Map (FIRM 12057C0380H dated September 28, 2007), the 100-year floodplain inundates the area shown as a pre-treatment sump adjacent to the subject property, yet also indicates the 100-year floodplain does not encroach upon the subject property. A copy of the applicable portions of the referenced FEMA FIRM Panels are included in the Supporting Material section.

100-YEAR FLOODPLAIN DETERMINATION

The FIRM's specify the area as Flood Zones C or X, depending upon which map you

view (currently effective vs preliminary). Neither map supports a necessary 100-year floodplain elevation determination.

OFF-SITE DRAINAGE

As stated in the project narrative, the project ultimately drains to Delaney Creek. The site is bounded to the north by SR 60, to the west by I-75 and to the east and south by the developments of Romano's Macaroni Grill and Brandon Town Center. No offsite areas drain through the project.

EXISTING CONDITIONS DRAINAGE ANALYSIS

The project is less than 10 acres in size and therefore falls within the County Small Site Design Criteria which requires the maximum allowable discharge to be limited to the peak discharge based upon the 5-year FDOT Zone VI storm and the pre-developed condition. Additionally, the project is located in Delaney Creek and is identified to be contained within a peak sensitive design restricted area. Peak sensitive designs in Hillsborough County are recommended to utilize the 2.33-year storm and the pre-developed condition. Both criteria, however, allow for a capacity adjustment based upon a drainage capacity analysis of the flood-free capacity of the system.

A request was made of the Hillsborough County Planning and Growth Management Department (HCPGMD) which was forwarded to the Hillsborough County Public Works Department (HCPWD) for the location and design storm event for the critical restriction which resulted in the peak sensitive identification for the area. Dr. Junshan Su of HCPWD provided a reference to a previous request for the same information on a separate project as follows "The restriction peak water at 70th St. is 13.83 ft, NGVD, which is between 5 yr/24 hr and 10 yr/24 hr design storm event peak water levels. I would like to recommend you use 5 year existing conditions discharge, which is conservative." A copy of this e-mail is included in the Supporting Material Section.

Based upon this information the design was predicated upon the use of the 5-year storm and the pre-developed condition to limit the post-development 25-year discharge. As a significant storage and conveyance network does not exist on the proposed portion of the subject property to be developed, only surface runoff calculations have been performed for the existing condition.

The project area has been broken into four local drainage basins (100, 200, 300 and 400). The "Existing Basin Map" in the Supporting Material section shows the existing conditions drainage divides utilized for the stormwater modeling. Each of these local drainage basins was further subdivided to the respective portions which will be

included in the "project area" (subscript d). The remaining portions of the subject property which will continue to drain offsite as in the existing condition have not been included in the computations for allowable peak discharge.

Table 1 in Appendix D depicts the 5-year peak discharge rates from the project site. For detailed basin data sheets, input data, and hydrologic results please refer to Appendix D.

PROPOSED CONDITIONS DRAINAGE ANALYSIS

In the proposed condition, the subscript d basins were revised to account for the proposed grading and the inclusion of three stormwater ponds. The "Proposed Basin Map" in the Supporting Material section shows the internal basin divides for the project site and the connectivity utilized.

There are three proposed ponds (Ponds A, B and C). Discharge from pond C is directed to the wetland immediately to the east of its location, while discharges from ponds A and B are to the wetland to the west of the project site.

Water quality treatment volumes shall be bled down in accordance with State water quality design standards, as required by the Southwest Florida Water Management District and Hillsborough County. The method utilized is effluent filtration (underdrain).

The site specific geotechnical report indicates SHGWT elevations are expected to be a one foot below the average existing grade, which indicates an elevation of approximately 29 NAVD 1988. This data conforms favorably to the average of the wetland SHW elevations noted for the eastern and western wetlands on the site. The site survey depicts a control structure with a top of 29.12 which provides a control for the eastern wetland. This value also conforms favorably to the predicted SHGWT, therefore an existing condition SHGWT of 29 is deemed acceptable.

In order to properly provide routing calculations for the proposed condition, a tailwater condition needed to be established at the wetland discharge points from the subject property. As the FIRM panels indicate, no 100-year floodplain inundation occurs on this property. The County stormwater model does not contain any nodes in the immediate vicinity of the subject property. The closest node to the discharge locations is Junction 217020 which corresponds to the stormwater pond for Brandon Town Center with a predicted 100-year flood stage of 30.07 NAVD 1988. Review of the topography collected in the general vicinity of the subject property indicate inundation of a significant amount of the commercial property to the south would begin at elevations around 31.1 NAVD 1988. Considering the development of the

project site was requiring a significant depth of fill, a conservative tailwater condition of 32.0 was imposed upon the property. This conservative tailwater condition still provides for a free-outfall condition from the designed ponds.

Table 1 in Appendix E depicts a comparison of the allowable 5-year peak discharges to the proposed 25-year peak discharges and provides the post 100-year peak stages in the proposed ponds.

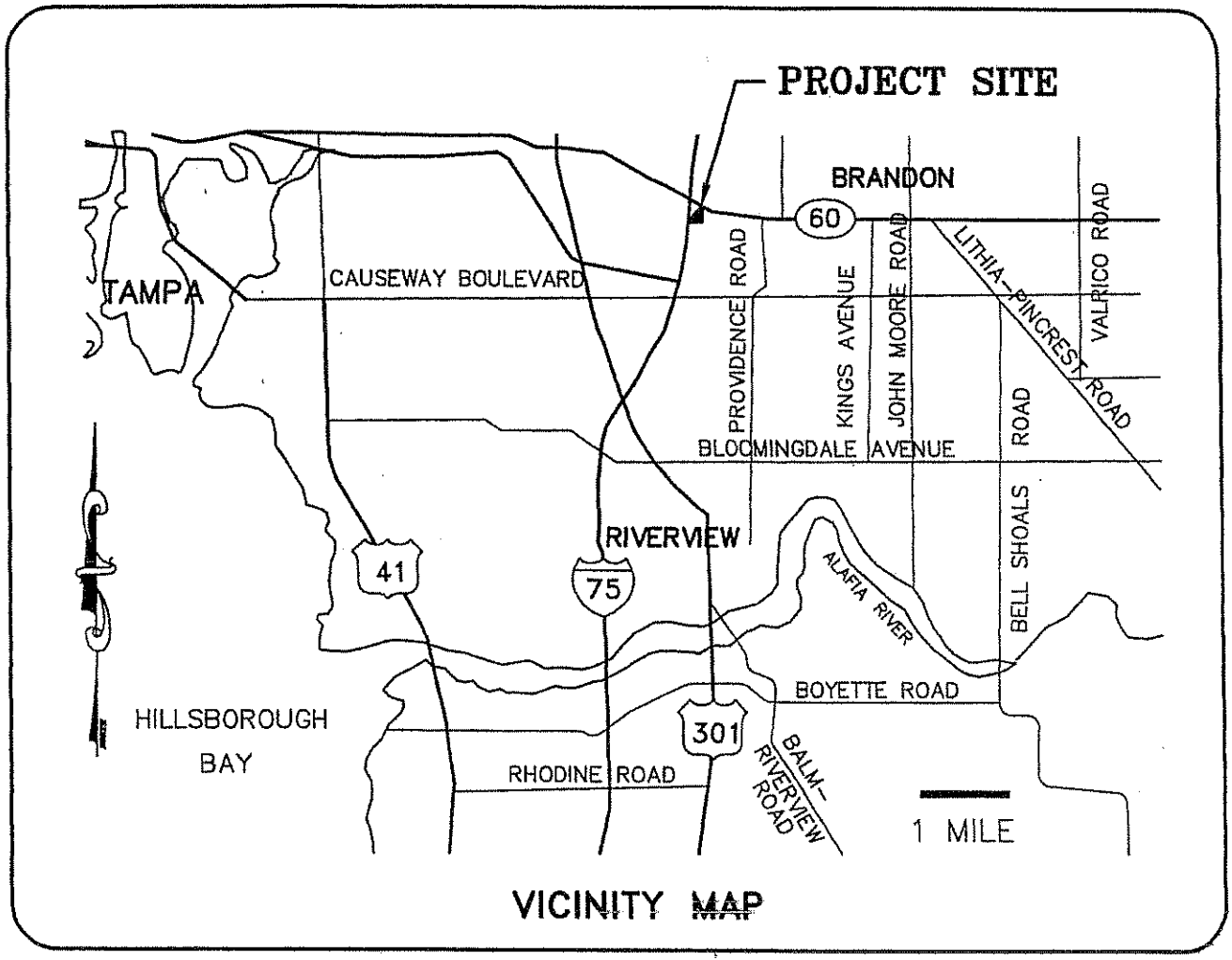
For detailed basin data sheets, input data, hydrologic and hydraulic results please refer to Appendix E.

WATER QUALITY TREATMENT

The water quality treatment on the project will be provided by utilizing effluent filtration (underdrain). Each treatment pods provides ½ inch of treatment for its respective contributing area.

Water quality treatment volumes will be bled down in accordance with State water quality design standards, as required by the Southwest Florida Water Management District. Underdrain sizing and treatment calculations are contained within Appendix C.

SUPPORTING MATERIAL



VICINITY MAP

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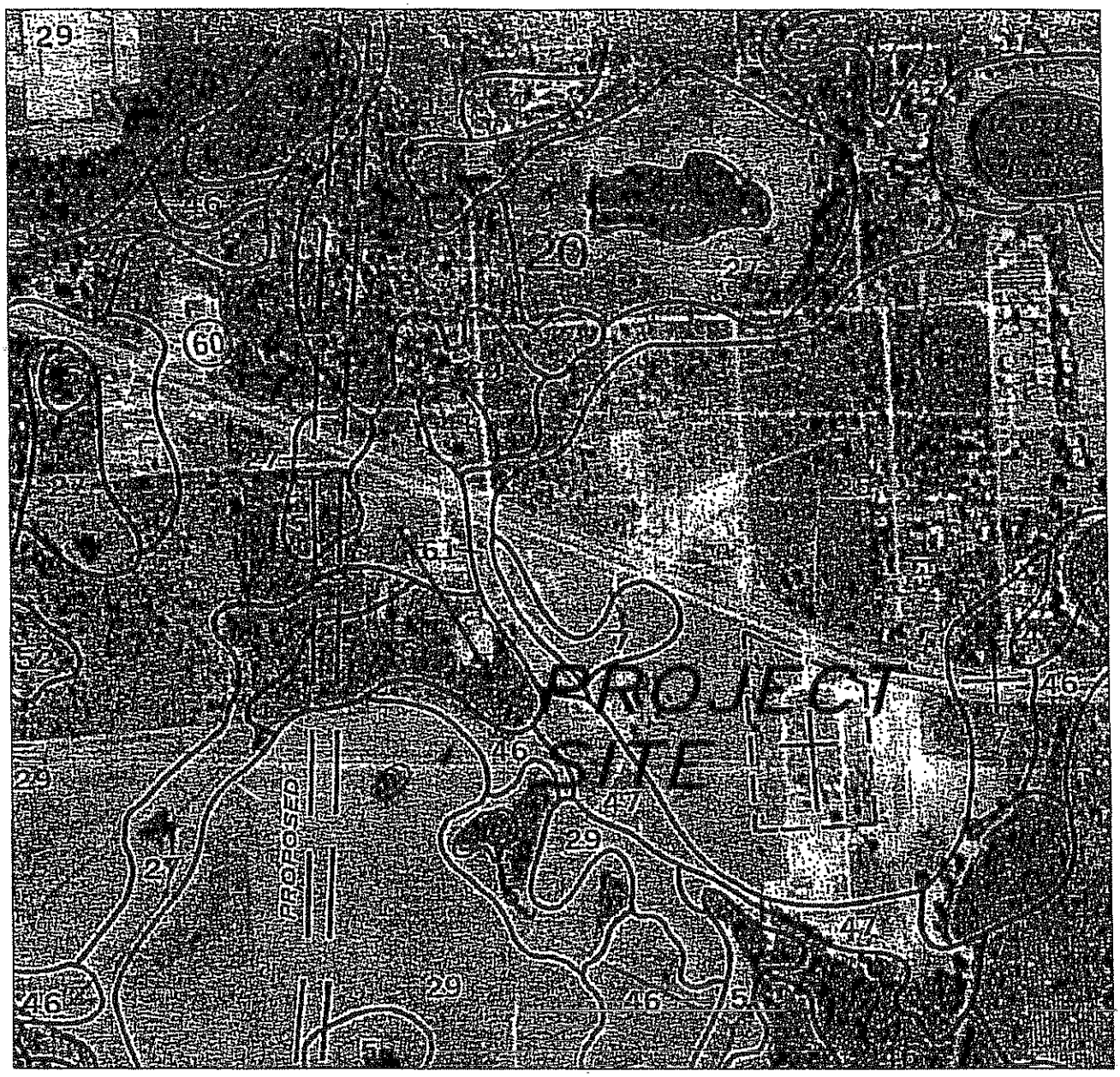
Figure 1
Location Map

Project No.: 5021-01	Date: 03/27/08	By: DLD
Section 20	Township 29	Range 20



5	Basinger	D
27	Malabar	B/D
29	Myakka	B/D

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Figure 2
Soils Map

Project No.: 5021-01 | Date: 03/27/08 | By: DLD

Section 20 Township 29 Range 20

5-Basinger, Holopaw and Samsula soils, depressional. The soils in the mpa unit are nearly level and very poorly drained. They are in swamps and depressions on the flatwoods. Generally, Basinger soils is along the exterior of swamps or in shallow depressions. Holopaw and Samsula soils are in the interior areas of the swamps or in deeper depressions. Undrained areas are frequently ponded for very long periods. The slope is 0 to 2 percent.

In 90 percent of the areas of this map unit, Basinger, Holopaw and Samsula soils, depressional, and similar soils make up 78 to 96 percent of the mapped areas, and dissimilar soils make up about 4 to 22 percent of the mapped areas. Generally, the mapped areas consists of about 35 percent Basinger soil and similar soils, 31 percent Holopaw soil and similar soils, and 18 percent Samsula soil and similar soils. The individual soils are generally in large enough areas to be mapped. separately, but in considering their present and predicted use, they were mapped as one unit.

Typically, the surface layer of Basinger soil is black find sand about 7 inches thick. The subsurface layer, to a depth of about 28 inches, is gray fine sand. The subsoil, to the depth of about 42 inches, is brown and about 80 inches is light brownish gray fine sand. Similar soils included in mapping, in some areas, have surface layer of mucky fine sand, and it is more than 7 inches thick.

Typically, the surface layer of Holopaw soil is black mucky fine sand about 6 inches thick. The upper part of the subsurface layer, to a depth of about 12 inches, is dark gray fine sand. The middle part to a depth of about 42 inches, is light gray fine sand. The lower part, to a depth of about 52 inches, is grayish brown fine sand. The upper part of the subsoil, to a depth of about 64 inches, is grayish brown fine sand. The lower part to a depth of about 80 inches is gray, mottled sandy loam. Similar soils included in mapping, in some areas, have a black surface layer more than 10 inches thick.

Typically, the upper part of the surface tiers of Samsula soil is black much about 10 inches thick. The lower part, to a depth of about 34 inches, is dark reddish brown much. The layer below the organic material, to a depth of about 40 inches, is black fine sand. The underlying material to a depth of 80 inches is light brownish gray fine sand. Similar soils included in mapping, in some areas, have organic material that is more than 51 inches thick.

In most years, the undrained areas in this map unit are ponded for about 6 months. Permeability is rapid in Basinger and Samsula soils. It is rapid in the surface and subsurface layer of Holopaw soil and moderately slow or moderate in the subsoil. The available water capacity is low in Basinger soil, low or moderate in Holopaw soil, and high in Samsula soil.

In most areas, the soils making up this map unit have been left in natural vegetation. In some drained areas, the soils are used as pasture. In other areas that have been filled, the soils are used for homesite or urban development. The natural vegetation consists of cypress. The understory includes bluestem, maidencane, panicum, Jamaica sawgrass, and cutgrass.

The soils are generally not suited to most cultivated crops, citrus crops, or pasture because of ponding, excessive wetness, and low natural fertility. A drainage system in needed in most areas to remove excess surface water and reduce soil wetness, but suitable outlets are generally not available.

These soils are generally not suited to the production of pines because of ponding or extended wetness. They may be suited to the production of cypress and hardwoods through natural regeneration.

If these soils are used for building site development or for onsite waste disposal, ponding is the main limitation. Drainage is needed to lower the water table, and fill material is needed in most areas. While surface drainage helps to control ponding, the seasonal high water table is a continuing limitation.

The soils in the map unit are in capability subclass VIIw. Basinger and Holopaw soils are in woodland group 2W. Samsula soil has not been assigned to a woodland

TABLE 14.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS

Map symbol and soil name	Depth	Clay	Moist Bluk density	Permea-bility	Available water capacity	Soil reaction	Salinity	Shrink-swell potential	Erosion factors		Wind erodi bility group	Organic matter
									K	T		
	In	Pct	G/cc	In/hr	In/in	pH	mmhos/cm					Pct
ssinger----------	0-7	0-4	1.40-1.55	6.0-20	0.05-0.10	3.6-7.3	<2	Low----------	0.10	5	2	1-8
	7-28	0-4	1.40-1.55	6.0-20	0.05-0.10	3.6-7.3	<2	Low----------	0.10			
	28-42	1-3	1.40-1.65	6.0-20	0.10-0.15	3.6-7.3	<2	Low----------	0.10			
	42-80	1-3	1.50-1.70	6.0-20	0.05-0.10	3.6-7.3	<2	Low----------	0.10			
lopaw----------	0-6	1-3	1.15-1.25	6.0-20	0.15-0.20	5.1-7.3	<2	Low----------	0.10	5	2	6-10
	6-52	1-7	1.35-1.60	6.0-20	0.03-0.10	5.1-7.3	<2	Low----------	0.10			
	52-80	13-28	1.60-1.70	0.2-2.0	0.10-0.20	5.1-8.4	<2	Low----------	0.20			
msula----------	0-34	---	0.25-0.50	6.0-20	0.20-0.25	4.5-5.5	<2	Low----------	----	2	2	>20
	34-80	1-14	1.35-1.55	6.0-20	0.02-0.05	3.6-5.5	<2	Low----------	0.17			

TABLE 15.--SOIL AND WATER FEATURES

Map symbol and soil name	Hydro-logic group	Flooding			High water table			Bedrockk		Subsidence		Risk of Corrosion	
		Frequency	Duration	Months	Depth	Kind	Months	Dept	Hard-ness	Ini-tial	Total	Uncoasted Steet	Concrete
					Ft			In		In	In		
singer----------	D	None------	---	---	+2-1.0	Apparent	Jun-Feb	>60	---	---	---	High------	Moderate
lopaw----------	D	None------	---	---	+2-1.0	Apparent	Jun-Feb	>60	---	---	---	High------	Moderate
msula----------	D	None------	---	---	+2-1.0	Apparent	Jun-Feb	>60	---	16-20	30-34	High------	High

27-Malabar fine sand. This soil is nearly level and poorly drained. It is in low-lying sloughs and shallow depressions on the flatwoods. The slope is 0 to 2 percent.

In 80 percent of the areas mapped as Malabar fine sand, the Malabar soil and similar soils make up 79 to 92 percent of the mapped areas. Dissimilar soils make up 8 to 21 percent of the mapped areas.

Typically, this soil has a surface layer of dark gray fine sand about 4 inches thick. The subsurface layer, to a depth of about 12 inches, is light brownish gray fine sand. The upper part of the subsoil, to a depth of about 30 inches, is brownish yellow fine sand. The next layer, to a depth of about 50 inches, is pale brown fine sand. The lower part, to a depth of about 66 inches, is gray, mottled fine sandy loam. The substratum to a depth of about 80 inches is grayish brown fine sand. Similar soils included in mapping, in some areas, have a Btg horizon that is within 40 inches of the surface. Other similar soils, in some areas, do not have Bw horizon; and in some areas are similar soils that have a subsoil that is brown or dark brown in the upper part.

Dissimilar soils included in mapping are Basinger and Wabasso soils in some areas. Basinger soils are very poorly drained. Wabasso soils have a dark color sandy subsoil below the subsurface layer. Also included are some unnamed soils that have a dark color sandy subsoil at a depth of more that 30 inches and do not have a loamy subsoil below the sandy subsoil.

In most years, a seasonal high water table fluctuates from the soil surface to a depth of about 10 inches for 2 to 6 months. Permeability is rapid in the surface and subsurface layers, slow in the subsoil, and moderately rapid or rapid in the substratum. The available water capacity is very low or low. The depressions are subject to shallow flooding during heavy rains.

In most areas, the Malabar soil has been left idle in native vegetation. In some areas, the soil has been drained and is used for cultivated crops or pasture or for homesite or urban development. The natural vegetation consists of cabbage palm, longleaf pine, and slash pine. The understory includes broomsedge, bluestem, inberry, maindencane, saw palmetto, and waxmyrtle.

If a water control system is established and maintained and soil-improving measures applied, this soil is suited to most cultivated crops, citrus crops, and pasture. Proper arrangement and bedding of tree rows, lateral ditches or tile drains, and well constructed outlets will help lower the water table. Returning all crop residue to the soil and using a cropping system that includes grasses, legumes, or a grass-legume mixture help to maintain fertility. Frequent applications of fertilizer and lime are generally needed to improve soil quality.

If an adequate water control system is established and maintained, this soil is well suited to pasture. Wetness limits the choice of plants that can be grown and restricts grazing during periods of wetness. Proper stocking, pasture rotation, and restricted grazing during wet periods help keep the pasture and the soil in good condition. Fertilizer and lime are needed for optimum growth of grasses and legumes.

The potential of this soil for the production of slash pines is moderately high. Seedling mortality and the equipment use limitation are the main limitations. Water-tolerant tress should be planted. Planting and harvesting operations should be scheduled during dry periods. Bedding of rows helps to minimize the excessive wetness limitation. Wetness limits the use of equipment.

If this soil is used for building site development, the main management concerns are excessive wetness, slow permeability or the subsoil, and instability of the cutbanks. Drainage is needed to lower the high water table, and fill material is needed in most areas. Slow permeability and the high water table increase the possibility that the septic tank absorption fields will not function properly. Cutbanks are not stable and are subject to slumping.

This Malabar soil is in capability subclass IVw, in woodland group 10W, and in the Slough range site.

TABLE 14.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS

[The symbol < means less that; > means more than. Entries under "Erosion factors--T" apply to the entire profile. Entries under "Wind erodibility group"and "Organic matter" apply only to the surface layer. Absence of an entry indicates that data were not available or were not estimated]

Map symbol and soil name	Depth	Clay	Moist Bluk density	Permea-bility	Available water capacity	Soil reaction	Salinity	Shrink-swell potential	Erosion factors		Wind erodi-bility group	Organic matter
									K	T		
	In	Pct	G/cc	In/hr	In/in	pH	mmhos/cm					Pct
27---------- Malabar	0-12	0-4	1.35-1.55	6.0-20	0.03-0.08	5.1-8.4	<2	Low----------	0.10	5	2	1-2
	12-30	1-5	1.35-1.70	6.0-20	0.05-0.10	5.1-8.4	<2	Low----------	0.10			
	30-50	1-5	1.40-1.70	6.0-20	0.02-0.05	5.1-8.4	<2	Low----------	0.10			
	50-66	12-25	1.55-1.75	<0.2	0.10-0.15	5.1-8.4	<2	Low----------	0.24			
	66-80	1-8	1.40-1.70	6.0-20	0.03-0.08	5.1-8.4	<2	Low----------	0.15			

TABLE 15.--SOIL AND WATER FEATURES

["Flooding" and "water table" and terms such as "rare," "brief," "apparent," and "perched" are explained in the text. The symbol < means less than; > menas more than. Absence of and entry indicates that the feature is not a concern or that data were not estimated]

Map symbol and soil name	Hydro-logic group	Flooding			High water table			Bedrockk		Subsidence		Risk of Corrosion	
		Frequency	Duration	Months	Depth	Kind	Months	Depth	Hard-ness	Ini-tial	Total	Uncoasted Steet	Concrete
					Ft			In		In	In		
27---------- Malabar	B/D	None------	----	----	0-0.10	Apparent	Jun-Nov	>60	----	---	---	High-----	Low

29-Myakka fine sand. This soil is nearly level and poorly drained. It is on broad plains on the flatwoods. The slope is 0 to 2 percent.

In 95 percent of the areas mapped as Myakka fine sand, the Myakka soil and similar soils make up 84 to 93 percent of the mapped areas. Dissimilar soils make up 7 to 16 percent of the mapped areas.

Typically, this soil has a surface layer of very dark gray find sand about 5 inches thick. The subsurface layer, to a dept of about 20 inches, is gray fine sand. The upper part of the subsoil, to a depth of about 25 inches, is black fine sand. The middle part, to a depth of 30 inches, is dark reddish brown fine sand. The lower part, to a depth of about 38 inches, is brownish yellow fine sand. The upper part of the substratum, to a depth of about 55 inches, is very pale brown fine sand. The lower part to a depth of about 80 inches is dark grayish brown fine sand. Similar soils included in mapping, in some areas, have a surface layer that is more that 8 inches thick. Other similar soils, in some places, have a subsoil within 20 inches of the surface, and some included similar soils have a subsoil at a depth of more than 30 inches or have a brown or dark brown subsoil, or both.

Dissimilar soils included in mapping are Basinger and Wabasso soils in small areas. Basinger soils are very poorly drained. Wabasso soils have a loamy subsoil below a sandy subsoil.

In most years, a seasonal high water table fluctuates from the soil surface to a depth of 10 inches for 1 to 4 months and recedes to a depth of 40 inches during prolonged dry periods. Permeability is rapid in the surface and subsurface layers, moderate or moderately rapid in the subsoil, and rapid in the substratum. The available water capacity is low.

In most areas, this Myakka soil is used for native pasture or cultivated crops. In a few areas, it is used for improved pasture or citrus crops, or it is used for homesite or urban development. The natural vegetation consists of longleaf pine and slash pine. The understory includes galiberry, running oak, saw palmetto, pineland threeawn, and waxmyrtle.

If a water control system is established and maintained and soil-improving measures applied, this soil is suited to most cultivated crops, citrus crops, and pasture. Proper arrangement and bedding of tree rows, lateral ditches or tile drains, and well constructed outlets will help lower the water table. Returning all crop residue to the soil and using a cropping system that includes grasses, legumes, or a grass-legume mixture help to maintain fertility. Frequent applications of fertilizer and lime are generally needed to improve soil quality.

If a water control system is established and maintained, this soil is well suited to pasture. Wetness limits the choice of plants that can be grown and restricts grazing during periods of excessive wetness. Proper stocking, pasture rotation, and restricted grazing during wet periods help keep the pasture and the soil in good condition. Fertilizer and lime are needed for optimum growth of grasses and legumes.

The potential of this soil for the production of slash pines is moderate. The main management concerns for producing and harvesting timber are the equipment use limitations and seedling mortality. Equipment use limitations are a concern if the soil is not properly drained. Water-tolerant trees should be planted. Planting and harvesting operations should be scheduled during dry periods. Bedding of rows help to minimize the excessive wetness limitation.

If this soil is used for building site development, the main management concerns are excessive wetness, possible contamination of the ground water, and instability of cutbanks. Population growth has resulted in increased construction of houses on this soil. Drainage is needed to lower the high water table, and fill material is needed in most areas. Septic tank absorption fields need to be mounded in most areas. If the density of housing is moderate to high, a community sewage system can help to prevent contamination of water supplies by seepage. Cutbanks are not stable and are subject to slumping.

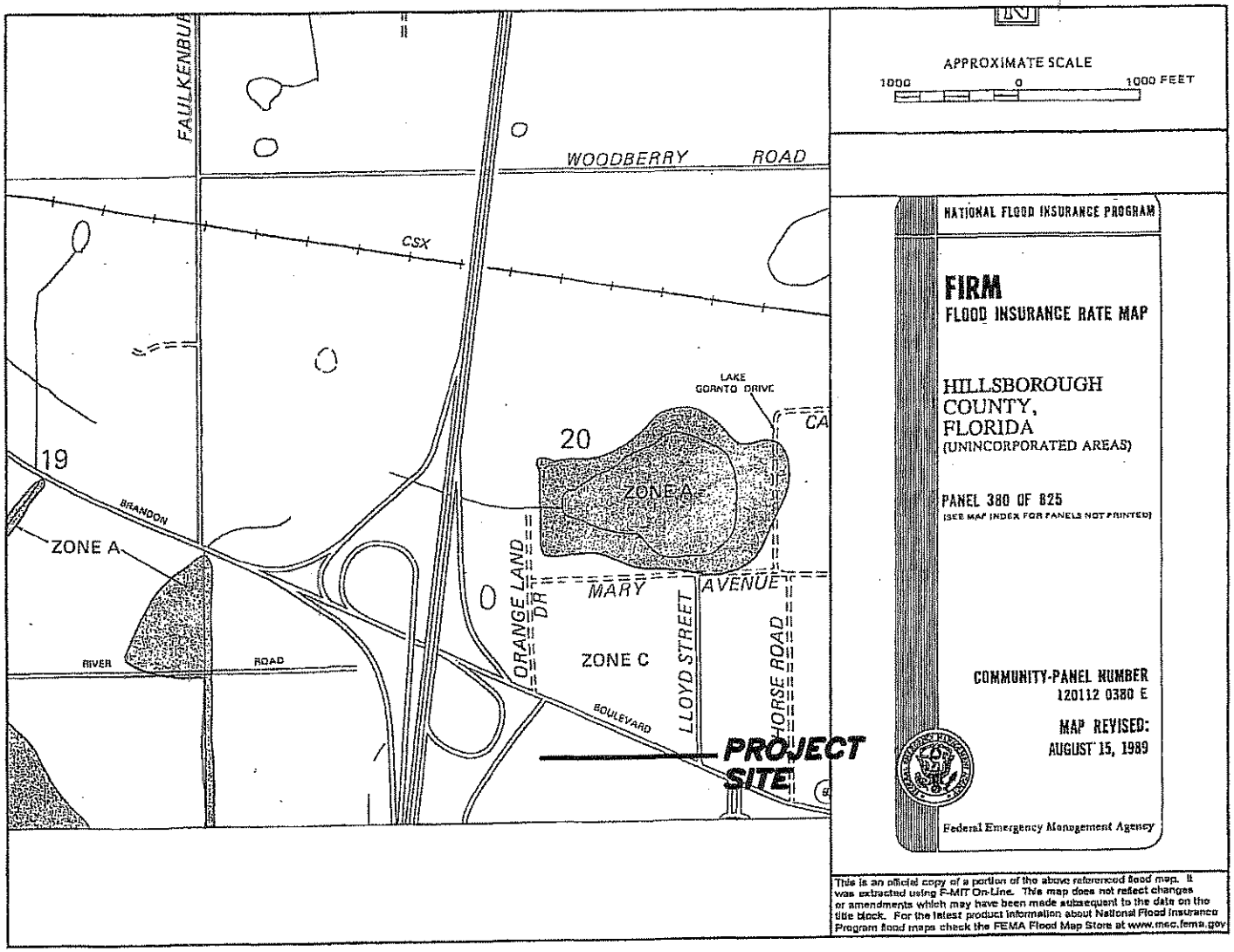
This Myakka soil is in capability subclass IVw, in woodland group 8W, and in the South Florida Flatwoods range site.

TABLE 14.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS

Map symbol and soil name	Depth	Clay	Moist Bluk density	Permea-bility	Available water capacity	Soil reaction	Salinity	Shrink-swell potential	Erosion factors		Wind erodi-bility group	Organic matter
									K	T		
	In	Pct	G/cc	In/hr	In/in	pH	mmhos/cm					Pct
9---------- yakka	0-20	<2	1.35-1.55	6.0-20	0.02-0.05	3.6-6.5	<2	Low----------	0.10	5	2	<2
	20-30	1-8	1.45-1.66	0.6-6.0	0.10-0.20	3.6-6.5	<2	Low----------	0.15			
	30-80	<2	1.48-1.70	6.0-20	0.02-0.10	3.6-6.5	<2	Low----------	0.10			

TABLE 15.--SOIL AND WATER FEATURES

Map symbol and soil name	Hydro-logic group	Flooding			High water table			Bedrockk		Subsidence		Risk of Corrosion	
		Frequency	Duration	Months	Depth	Kind	Months	Depth	Hard-ness	Ini-tial	Total	Uncoasted Steet	Concrete
					Ft			In		In	In		
9---------- yakka	B/D	None------	---	---	0-1.0	Apparent	Jun-Nov	>60	---	---	---	High-----	High



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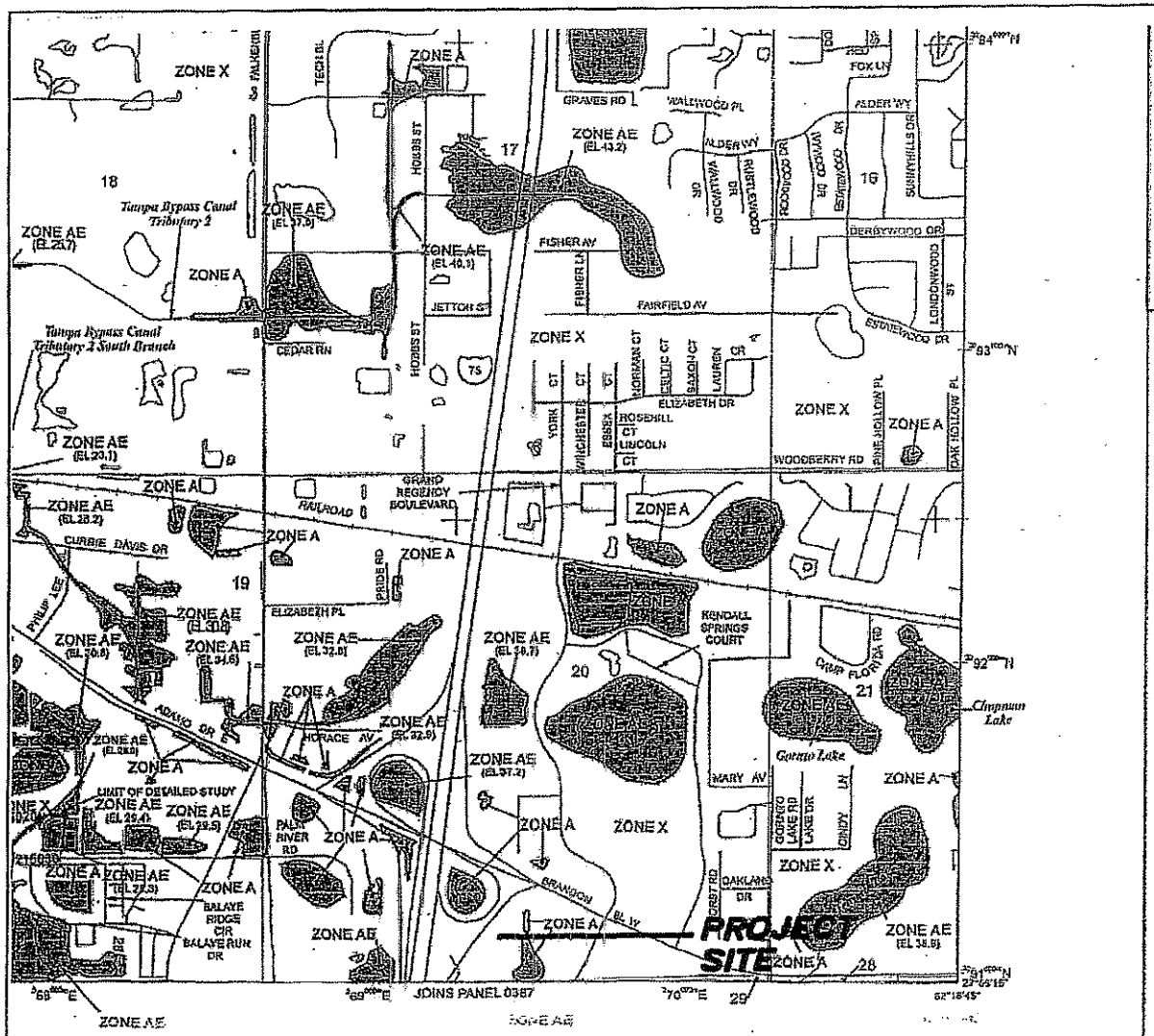
Brandon Hyatt
Currently Effective FIRM Panel
Figure 3

Project No.: 5021-01			Date: 03/27/08
Section 20	Township 29	Range 20	
Sheet 1 of 1			By: DLD



FLOOD INSURANCE RATE MAP

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 1000'

500 0 1000 2000 FEET

300 0 300 600 METERS

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0380H

FIRM

FLOOD INSURANCE RATE MAP

HILLSBOROUGH COUNTY, FLORIDA AND INCORPORATED AREAS

PANEL 380 OF 801

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
HILLSBOROUGH COUNTY	120112	0380	H

REVISED PRELIMINARY SEPTEMBER 28, 2007

Notice to User: The Map Number shown below should be used when placing map orders; the Community Number shown above should be used on insurance applications for the subject community.

MAP NUMBER 12057C0380H

EFFECTIVE DATE

Federal Emergency Management Agency

BROOKS AND AMADEN, INC.
civil engineering • land surveying
205 RIDGEWOOD AVENUE • BRANDON, FLORIDA 33510
P: 813-653-1125 • F: 813-653-1679 • www.brooks-amaden.com
State of Florida, D.B.P.R. Certificate of Auth. #5221

Brandon Hyatt
Preliminary FIRM Panel
Figure 4

Project No.: 5021-01		Date: 03/27/08	
Section 20	Township 29	Range 20	
Sheet 1 of 1		By: DLD	

Derek,

The restriction peak water at 70 Th St. is 13.83 ft, NGVD, which is between 5 yr/24 hr and 10 yr/24 hr design storm event peak water levels. I would like to recommend you use 5 year existing conditions discharge, which is conservative.

Please let me know if you have any questions.

Regards
Junshan

-----Original Message-----
From: Richard Cabrera [mailto:CabreraR@HillsboroughCounty.ORG]
Sent: Wednesday, March 05, 2008 8:51 AM
To: Junshan Su
Cc: Derek Doughty
Subject: Fwd: RE: Peak Sensitive Restriction Location Request

Dr. Su:

Mr. Doughty has requested the location of the restriction of the basin (Delaney Creek) down-stream from the below folios:

068101.0000 and # 068100.0000

Thanks in advance for your assistance.

Rick

>>> "Derek Doughty" <derek.doughty@brooks-amaden.com> 03/05/2008 8:47 AM >>>
folios # 068101.0000 and # 068100.0000

-----Original Message-----
From: Richard Cabrera [mailto:CabreraR@HillsboroughCounty.ORG]
Sent: Wednesday, March 05, 2008 8:41 AM
To: Derek Doughty
Subject: Re: Peak Sensitive Restriction Location Request

Please provide a folio number to accompany your request.

Thanks, Rick

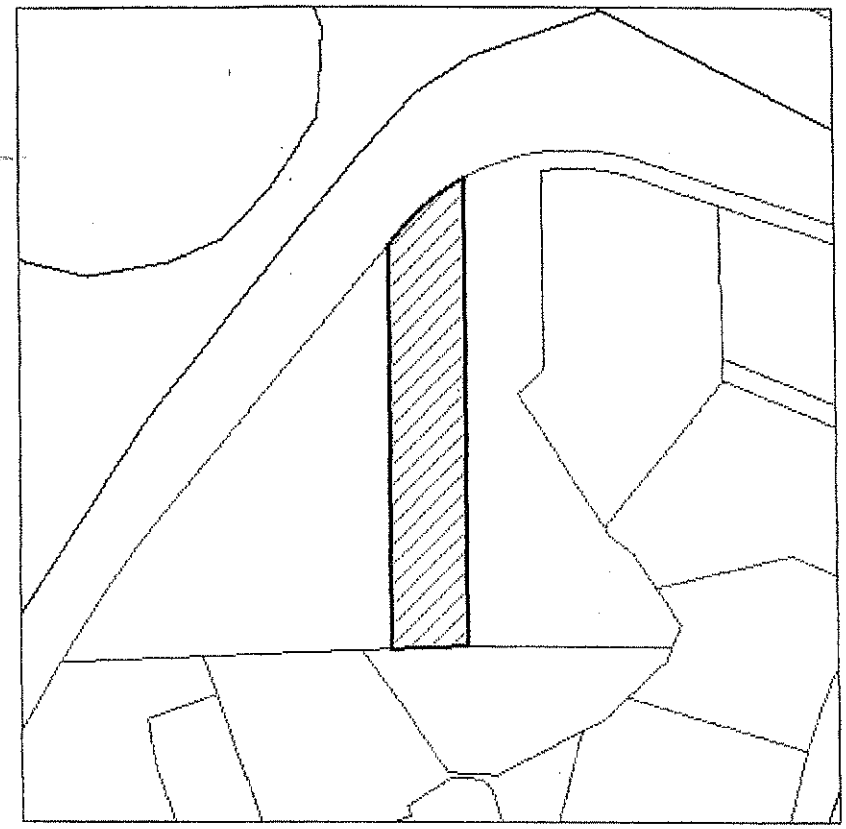
>>> "Derek Doughty" <derek.doughty@brooks-amaden.com> 03/05/2008 8:38 AM >>>
We have a current project on the Carey Farms property adjacent to Brandon Town Center in the Delaney Creek Watershed. I am requesting the County identify for me the location (specific Node) of the constriction which causes this area to be peak sensitive and the elevation of the concern so that a design storm can be computed.

Thanks

APPENDIX A

[PRINT THIS PAGE] [CLOSE THIS PAGE]

ROB TURNER, C.F.A.
HILLSBOROUGH COUNTY PROPERTY APPRAISER



[VIEW PROPERTY RECORD INFORMATION]

FOLIO:	0681000000
PIN NUMBER:	U-20-29-20-ZZZ-000002-5282(
OWNER 1:	CAREY FARMS
ADDRESS:	0
	UNINCORPORATED
LEGAL DESC:	S OF I-75 R/W
DOR CODE:	6000

VALUE SUMMARY:

BUILDING VALUE:
EXTRA FEATURE VALUE:
LAND VALUE (MARKET):
LAND VALUE (AGRI.):
JUST (MARKET) VALUE:
ASSESSED VALUE (A10):
EXEMPT VALUE:
TAXABLE VALUE:

SALES INFORMATION

4/1/1993	$
1/1/1969	$

FOLIO: 0681000000 PIN: U-20-29-20-ZZZ-000002-52820.0 ACREAGE: 1.63255278

Map created on 5/1/2008 11:04:54 AM.

0

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ROB TURNER
HILLSBOROUGH COUNTY PROPERTY APPRAISER
Search Results

www.hcpafl.org
[EMAIL THIS PAGE] [PRINT THIS PAGE] [CLOSE THIS PAGE]

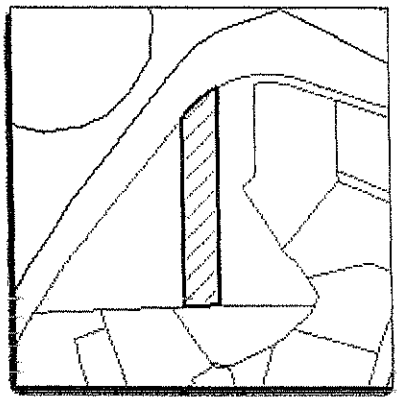
CAREY FARMS
1602 COTTAGEWOOD DR
BRANDON, FL 33510-2811

PIN:	**U-20-29-20-ZZZ-000002-52820.0**
Folio:	**068100-0000**
Prior PIN:	
Prior Folio:	
Tax District:	XH UNINCORPORATED
DOR Code:	6000 PASTURE
Plat Book / Page:	
Neighborhood:	223009 | Heather Lakes Area
Subdivision:	000ZZZ |

VALUE SUMMARY

Building Value	$0
Extra Feature Value	$16,716
Land Value (Market)	$127,073
Land Value (Agriculture)	$390
Just (Market) Value	$143,789
Assessed Value (A10)	$17,106
Exempt Amount	$0
Taxable Value	$17,106

GIS MAP



SALES HISTORY

Off. Record		Date		Type Inst	Qualified or Unqualified	Vacant or Improved	Sales Price
Book	Page	Month	Year				
2104	0384	01	1969		Qualified	Unknown	$18,000
6932	1170	04	1993	FD	Unqualified	Improved	$13,300

LAND LINES

LN	Use Code	Land Use Description	Zone	Front	Depth	Total Land Units	Land Value
1	6110	IMPROVED PASTURE	PD	0.00	0.00	1.56	$390

LEGAL LINES

L N	Legal Description
1	THAT PART OF E 110.53 FT OF SE 1/4 OF SW 1/4
2	S OF I-75 R/W

EXTRA FEATURES

L N	OB/XF Code	Description	Bld	Length	Width	Units
1	0615	MODULAR	0	0	0	1,102.17
2	0700	BRN MET	0	0	0	2,800.00
3	0470	OPN SHD	0	0	0	560.00
4	0700	BRN MET	0	0	0	3,000.00
5	0470	OPN SHD	0	0	0	720.00

TRIM INFORMATION (2007)

Taxing Authority	Base Taxable Value	Additional Exemptions Granted	Taxable Value	Last Year Property Taxes	Proposed Property Taxes	Rollback Property Taxes
General Revenue	$16,551	$0	$16,551	$96.08	$95.08	$100.08
By State Law	$16,551	$0	$16,551	$74.61	$79.18	$77.49
By Local Board	$16,551	$0	$16,551	$40.67	$45.33	$42.24
County MSTU	$16,551	$0	$16,551	$73.61	$72.42	$76.23
County Library	$16,551	$0	$16,551	$10.20	$10.07	$10.60
SWFWMD	$16,551	$0	$16,551	$6.22	$6.40	$6.60
Hills River Basin	$16,551	$0	$16,551	$4.20	$4.22	$4.35
Port Authority	$16,551	$0	$16,551	$3.24	$3.28	$3.38
Children's Board	$16,551	$0	$16,551	$7.37	$7.67	$7.67
Transit Authority	$16,551	$0	$16,551	$7.37	$8.28	$7.67
Environmental Lands	$16,551	$0	$16,551	$0.98	$1.00	$1.00
Parks & Rec	$16,551	$0	$16,551	$0.42	$0.43	$0.43
Totals				**$324.97**	**$333.36**	**$337.74**

	Just Value	Assessed Value	Exemptions	Taxable Value
Last Year	$140,367	$14,736	$0	$14,736
Current Year	$143,234	$16,551	$0	$16,551

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XI

OFF. REC. 6932 PG 1170

FEE SIMPLE DEED

THIS FEE SIMPLE DEED, made the 10th day of November, 1992, by WILLIAM O. CAREY and GERTRUDE E. CAREY, his wife (hereinafter called "Grantors"), to CAREY FARMS, a Florida general partnership (hereinafter called "Grantee"), whose post office address is 1602 Cottagewood Drive, Brandon, Florida 33510.

W I T N E S S E T H:

That the Grantors, for and in consideration of the sum of $10.00 and other good and valuable consideration, the receipt of which is hereby acknowledged, do hereby grant, bargain, sell, and convey unto the Grantee and Grantee's successors and assigns, the following described land in Hillsborough County, Florida:

> See Exhibit A attached hereto and incorporated by reference for the description of the land conveyed herein,
>
> TOGETHER WITH THAT CERTAIN STATUTORY WAY OF NECESSITY DESCRIBED IN THE FINAL JUDGMENT RECORDED IN O.R. BOOK 4769, PAGE 1349, IN THE PUBLIC RECORDS OF HILLSBOROUGH COUNTY, FLORIDA.

THIS PROPERTY IS NOT THE HOMESTEAD OF GRANTORS.

TOGETHER with all the tenements, hereditaments, and appurtenances thereto.

TO HAVE AND TO HOLD the same unto Grantee and Grantee's successors, and assigns in fee simple forever.

This conveyance is made subject to applicable zoning ordinances, matters appearing on any recorded plat of the land, and taxes for the current year.

IN WITNESS WHEREOF, Grantors have hereunto executed this deed the day and year first above written.

Signed, sealed and delivered
in the presence of:

E. Jackson Boggs
Name: E. Jackson Boggs

Debbie L. Baker
Name: Debbie L. Baker

William O. Carey
William O. Carey
1602 Cottagewood Drive
Brandon, Florida 33510

PREPARED BY AND RETURN TO:
E. Jackson Boggs
Fowler, White, et al
Post Office Box 1438
Tampa, Florida 33601

RICHARD AKE
CLERK OF CIRCUIT COURT
HILLSBOROUGH COUNTY

Documentary Tax Pd - F.S. 201.02 $ 93.10
Documentary Tax Pd - F.S. 201.08 $ 0
Intangible Tax Pd - F.S. 199 $ 0
Richard Ake, Clerk Hillsborough County
By. [signature] Deputy Clerk

1993 APR -5 PM 4:22

93075296

Exhibit A

OFF. REC. 6932PG1171-A

The East 110.3 feet of that part of the SE¼ of the SW¼ of Section 20, Township 29 South, Range 20 East, lying South of right of way of State Road 60, in Hillsborough County, Florida.

LESS AND EXCEPT THAT PART OF:

(1) The East 110.3 feet of that part of the SE 1/4 of the SW 1/4 of Section 20, Township 29 South, Range 20 East, lying South of right of way of State Road 60;

(2) The West 1/2 of the East 1/2 of the SE 1/4 of the SW 1/4 of Section 20, Township 29 South, Range 20 East, lying south of Falk River Road and SR 60, according to the Public Records of Hillsborough County, Florida, and the West 221.65 feet of the East 331.95 feet of that part of the SE 1/4 of the SW 1/4 of Section 20, Township 29 South, Range 20 East lying South of SR 60; LESS, from the point of intersection of the East boundary of the West 1/2 of the East 1/2 of the SE 1/4 of the SW 1/4 of Section 20 with the South right of way line of SR 60, run North 65°46' West along said South right of way line a distance of 200.0 feet; run thence South 24°14' West a distance of 200.0 feet; run thence South 65°46' East a distance of 200.0 feet; run thence North 24°14' East a distance of 200.0 feet to the POINT OF BEGINNING;

lying within the boundaries described as follows:

BEGIN on the South line of Section 20, Township 29 South, Range 20 East at a point North 87°50'31" East 21.65 feet from the Southeast corner of the Southwest 1/4 of the Southwest 1/4 thereof, said point being on a curve concave to the Westerly and having a radius of 7,614.44 feet; thence from a Tangent Bearing of North 02°46'21" East run Northerly along said curve 741.49 feet through a central angle of 05°34'52" to the end of said curve; thence North 02°51'29" West 431.87 feet to the beginning of a curve concave to the Southeasterly and having a radius of 404.00 feet; run thence 631.62 feet along said curve through a central angle of 89°33'10" to the end of said curve; thence North 86°41'39" West 526.85 feet; thence North 65°36'29" West 590.44 feet; thence North 24°23'31" East 170.00 feet to the centerline of State Road 60; thence along said centerline South 65°36'29" East 2,929.80 feet; thence leaving said centerline run South 00°03'10" West 377.83 feet to a point on a curve concave to the Southeasterly and having a radius of 335.00 feet; thence from a Tangent Bearing of South 37°30'02" West run Southwesterly 99.98 feet along said curve through a central angle of 17°05'42" to the end of said curve; thence South 54°35'21" West 347.68 feet; thence South 37°23'30" East 268.27 feet to the beginning of a curve concave to the Easterly and having a radius of 2,813.86 feet; thence along said curve 153.31 feet through a central angle of 03°07'13" to the end of this portion of said curve, being a point on the South line of said Section 20; thence South 87°50'31" West 741.92 feet along said South line to the POINT OF BEGINNING.

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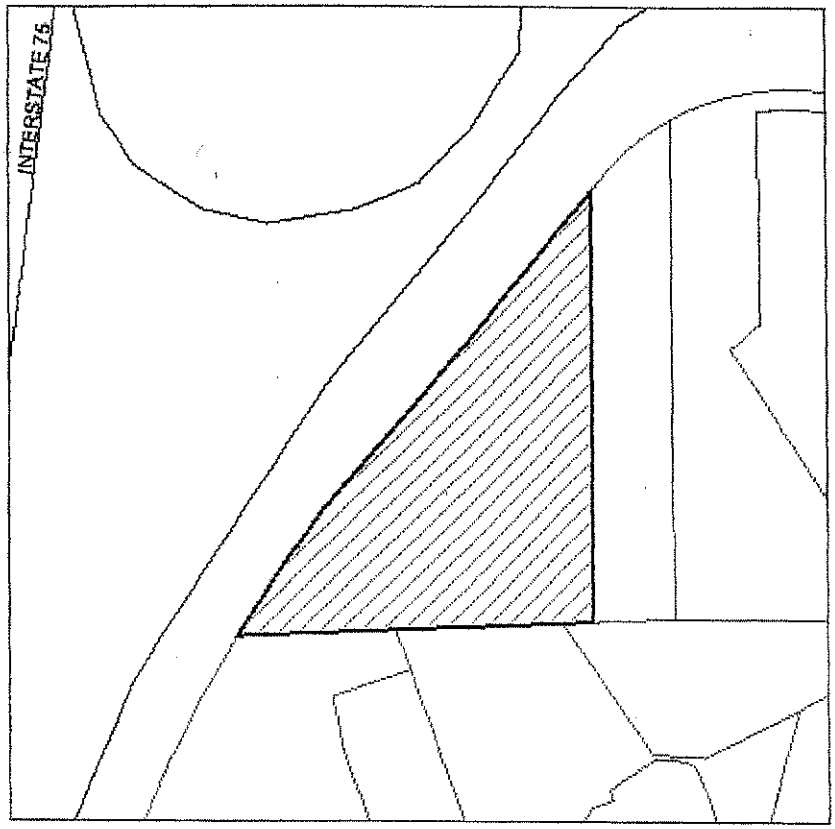
ROB TURNER, C.F.A.
HILLSBOROUGH COUNTY PROPERTY APPRAISER



[VIEW PROPERTY RECORD INFORMATION]

FOLIO:	0681010000
PIN NUMBER:	U-20-29-20-ZZZ-000002-52830.
OWNER 1:	CAREY FARMS
ADDRESS:	332 BRANDON TOWN CENTEI
	UNINCORPORATED
LEGAL DESC:	E 110.53 FT THEREOF
DOR CODE:	6000

VALUE SUMMARY:
BUILDING VALUE:
EXTRA FEATURE VALUE:
LAND VALUE (MARKET):
LAND VALUE (AGRI.):
JUST (MARKET) VALUE:
ASSESSED VALUE (A10):
EXEMPT VALUE:
TAXABLE VALUE:

SALES INFORMATION

4/1/1993

4/1/1993

FOLIO: 0681010000 PIN: U-20-29-20-ZZZ-000002-52830.0 ACREAGE: 3.41993854

Map created on 5/1/2008 11:10:12 AM.

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ROB TURNER
HILLSBOROUGH COUNTY PROPERTY APPRAISER
Search Results

www.hcpafl.org
[EMAIL THIS PAGE] [PRINT THIS PAGE] [CLOSE THIS PAGE]

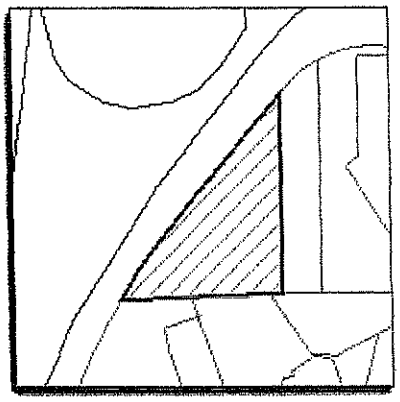
CAREY FARMS
1602 COTTAGEWOOD DR
BRANDON, FL 33510-2811

PIN:	**U-20-29-20-ZZZ-000002-52830.0**
Folio:	**068101-0000**
Prior PIN:	
Prior Folio:	
Tax District:	XH UNINCORPORATED
DOR Code:	6000 PASTURE
Plat Book / Page:	
Neighborhood:	223009 | Heather Lakes Area
Subdivision:	000ZZZ |

VALUE SUMMARY

Building Value	$0
Extra Feature Value	$6,193
Land Value (Market)	$182,088
Land Value (Agriculture)	$782
Just (Market) Value	$188,281
Assessed Value (A10)	$6,975
Exempt Amount	$0
Taxable Value	$6,975

GIS MAP



SALES HISTORY

Off. Record		Date		Type Inst	Qualified or Unqualified	Vacant or Improved	Sales Price
Book	Page	Month	Year				
6932	1175	04	1993	FD	Unqualified	Improved	$13,300
6932	1172	04	1993	FD	Unqualified	Improved	$100

LAND LINES

LN	Use Code	Land Use Description	Zone	Front	Depth	Total Land Units	Land Value
1	6110	IMPROVED PASTURE	PD	0.00	0.00	3.13	$782

LEGAL LINES

L N	Legal Description
1	THAT PT OF SE 1/4 OF SW 1/4 S OF I-75 R/W LESS
2	E 110.53 FT THEREOF

EXTRA FEATURES

L N	OB/XF Code	Description	Bld	Length	Width	Units
1	0470	OPN SHD	0	0	0	8,460.00

TRIM INFORMATION (2007)

Taxing Authority	Base Taxable Value	Additional Exemptions Granted	Taxable Value	Last Year Property Taxes	Proposed Property Taxes	Rollback Property Taxes
General Revenue	$6,670	$0	$6,670	$35.21	$38.32	$40.33
By State Law	$6,670	$0	$6,670	$27.35	$31.91	$31.23
By Local Board	$6,670	$0	$6,670	$14.91	$18.27	$17.02
County MSTU	$6,670	$0	$6,670	$26.98	$29.18	$30.72
County Library	$6,670	$0	$6,670	$3.74	$4.06	$4.27
SWFWMD	$6,670	$0	$6,670	$2.28	$2.58	$2.66
Hills River Basin	$6,670	$0	$6,670	$1.54	$1.70	$1.75
Port Authority	$6,670	$0	$6,670	$1.19	$1.32	$1.36
Children's Board	$6,670	$0	$6,670	$2.70	$3.09	$3.09
Transit Authority	$6,670	$0	$6,670	$2.70	$3.34	$3.09
Environmental Lands	$6,670	$0	$6,670	$0.36	$0.40	$0.40
Parks & Rec	$6,670	$0	$6,670	$0.15	$0.17	$0.17
Totals				**$119.11**	**$134.34**	**$136.09**

	Just Value	Assessed Value	Exemptions	Taxable Value
Last Year	$172,700	$5,401	$0	$5,401
Current Year	$187,976	$6,670	$0	$6,670

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OFF. REC. 6932 PG 1175

3
44

1933 APR -5 PM 4:23

93075298

FEE SIMPLE DEED

THIS FEE SIMPLE DEED, made the 10th day of November, 1992, by WILLIAM O. CAREY (as to a fifty percent (50%) undivided interest) and GERTRUDE E. CAREY, his wife (as to a fifty percent (50%) undivided interest) (hereinafter called "Grantors"), to CAREY FARMS, a Florida general partnership (hereinafter called "Grantees"), whose post office address is 1602 Cottagewood Drive, Brandon, Florida 33510.

W I T N E S S E T H:

That the Grantors, for and in consideration of the sum of $10.00 and other good and valuable consideration, the receipt of which is hereby acknowledged, do hereby grant, bargain, sell, and convey unto the Grantee and Grantee's successors and assigns, the following described land in Hillsborough County, Florida:

> See Exhibit A attached hereto and incorporated by reference for the description of the land conveyed herein.
>
> TOGETHER WITH THAT CERTAIN STATUTORY WAY OF NECESSITY DESCRIBED IN THE FINAL JUDGMENT RECORDED IN O.R. BOOK 4769, PAGE 1349, IN THE PUBLIC RECORDS OF HILLSBOROUGH COUNTY, FLORIDA.

THIS PROPERTY IS NOT THE HOMESTEAD OF GRANTORS.

TOGETHER with all the tenements, hereditaments, and appurtenances thereto.

TO HAVE AND TO HOLD the same unto Grantee and Grantee's successors, and assigns in fee simple forever.

This conveyance is made subject to applicable zoning ordinances, matters appearing on any recorded plat of the land, and taxes for the current year.

IN WITNESS WHEREOF, Grantors have hereunto executed this deed the day and year first above written.

Signed, sealed and delivered
in the presence of:

E. Jackson Boggs
Name: E. Jackson Boggs

Debbie L. Baker
Name: Debbie L. Baker

William O. Carey
William O. Carey
1602 Cottagewood Drive
Brandon, Florida 33510

PREPARED BY AND RETURN TO:
E. Jackson Boggs
Fowler, White, et al
Post Office Box 1438
Tampa, Florida 33601

RICHARD AKE
CLERK OF CIRCUIT COURT
HILLSBOROUGH COUNTY

Documentary Tax Pd - F.S. 201.02 $ 93.10
Documentary Tax Pd - F.S. 201.06 $ -0-
Intangible Tax Pd - F.S. 199 $ -0-
Richard Ake, Clerk Hillsborough County
By. [signature] Deputy Clerk

E. Jackson Boggs

Name: E. Jackson Boggs

Debbie L. Baker

Name: Debbie L. Baker

Gertrude E. Carey

Gertrude E. Carey
1602 Cottagewood Drive
Brandon, Florida 33510

STATE OF FLORIDA

COUNTY OF HILLSBOROUGH

The foregoing instrument was acknowledged before me this 10th day of November, 1992, by WILLIAM O. CAREY, who is personally known to me or who has produced N/A as identification and who did not take an oath.

Deborah L. Baker

Print Name: Deborah L. Baker
(Notary Public)

My Commission Expires:

NOTARY PUBLIC STATE OF FLORIDA
MY COMMISSION EXP JUNE 20,1993
BONDED THRU GENERAL INS. UND.

(AFFIX NOTARY SEAL)

STATE OF FLORIDA

COUNTY OF HILLSBOROUGH

The foregoing instrument was acknowledged before me this 10th day of November, 1992, by GERTRUDE E. CAREY, who is personally known to me or who has produced N/A as identification and who did not take an oath.

Deborah L. Baker

Print Name: Deborah L. Baker
(Notary Public)

My Commission Expires:

NOTARY PUBLIC STATE OF FLORIDA
MY COMMISSION EXP JUNE 20,1993
BONDED THRU GENERAL INS. UND.

(AFFIX NOTARY SEAL)

EJB\1079

THIS IS NOT A CERTIFIED COPY

Exhibit A

That part of the West one-half of the East one-half of the SE¼ of the SW¼ of Section 20, Township 29 South, Range 20 East, lying south of Palm River Road and State Road No. 60, according to the Public Records of Hillsborough County, Florida, and the West 221.06 feet of the East 331.58 feet of that part of the SE¼ of the SW¼ of Section 20 Township 29, South Range 20 East, lying South of State Road No. 60, LESS, from the point of intersection of the East boundary of the W½ of the SE¼ of the SW¼ of Section 20 with the South right of way line of State Road No. 60, run North 45 degrees 46 minutes West along said South right of way line a distance of 200.0 feet; run thence South 24 degrees 14 minutes West a distance of 200.0 feet; run thence South 45 degrees 46 minutes East a distance of 200.0 feet; run thence North 24 degrees 14 minutes East a distance of 200.0 feet to the point of beginning this exception being same property conveyed to Commodore R. Lambert and Elizabeth W. Lambert on March 30, 1934, recorded in Deed Book 1948, page 196, the South right of way line of State Road No. 60 in this exception being the line as existed on date of said deed to the Lamberts.

LESS AND EXCEPT THAT PART OF:

(1) The East 110.3 feet of that part of the SE 1/4 of the SW 1/4 of Section 20, Township 29 South, Range 20 East, lying South of right of way of State Road 60,

(2) The West 1/2 of the East 1/2 of the SE 1/4 of the SW 1/4 of Section 20, Township 29 South, Range 20 East, lying south of Palm River Road and SR 60, according to the Public Records of Hillsborough County, Florida, and the West 221.06 feet of the East 331.58 feet of that part of the SE 1/4 of the SW 1/4 of Section 20, Township 29 South, Range 20 East lying South of SR 60; LESS, from the point of intersection of the East boundary of the West 1/2 of the East 1/2 of the SE 1/4 of the SW 1/4 of Section 20 with the South right of way line of SR 60, run North 65°46' West along said South right of way line a distance of 200.0 feet; run thence South 24°14' West a distance of 200.0 feet; run thence South 65°46' East a distance of 200.0 feet; run thence North 24°14' East a distance of 200.0 feet to the POINT OF BEGINNING;

lying within the boundaries described as follows:

BEGIN on the South line of Section 20, Township 29 South, Range 20 East at a point North 87°50'31" East 11.65 feet from the Southeast corner of the Southwest 1/4 of the Southwest 1/4 thereof, said point being on a curve concave to the Westerly and having a radius of 7,543.44 feet; thence from a Tangent Bearing of North 02°45'21" East run Northerly along said curve 741.49 feet through a central angle of 25°37'50" to the end of said curve; thence North 02°51'29" West 493.97 feet to the beginning of a curve concave to the Southwesterly and having a radius of 408.00 feet; run thence 417.62 feet along said curve through a central angle of 58°56'10" to the end of said curve; thence North 01°47'39" West 628.25 feet; thence North 65°36'29" West 690.44 feet; thence North 24°23'31" East 170.00 feet to the centerline of State Road 60; thence along said centerline South 65°36'29" East 2,929.80 feet; thence leaving said centerline run South 00°08'19" West 377.23 feet to a point on a curve concave to the Southeasterly and having a radius of 336.00 feet; thence from a Tangent Bearing of South 37°34'02" West run Southwesterly, 95.95 feet along said curve through a central angle of 16°21'12" to the end of said curve; thence South 41°12'21" West 357.66 feet; thence South 37°23'30" West 266.37 feet to the beginning of a curve concave to the Easterly and having a radius of 1,815.86 feet; thence along said curve 163.13 feet through a central angle of 05°09'13" to the end of this portion of said curve, being a point on the South line of said Section 20; thence South 87°50'31" West 741.92 feet along said South line to the POINT OF BEGINNING.

APPENDIX B

APPENDIX C

TABLE 1
Treatment Volume Requirements and Provisions
BRANDON HYATT

Pond Name	Drainage Area (Ac)	Required Treatment		Elevations		Surface Area (Ac) at		Provided Retention		Treatable
		Depth	Volume (Ac-Ft)	Bott	Weir	Bott	Weir Control	Depth (Ft)	Volume (Ac-Ft)	Acreage
A	1.19	0.5	0.05	32.00	32.85	0.06	0.06	0.85	0.05	1.24
B	1.05	0.5	0.04	32.00	33.50	0.03	0.03	1.5	0.04	1.05
C	1.42	0.5	0.06	34.00	34.40	0.15	0.15	0.4	0.06	1.42
	3.66		0.15						0.15	3.70

TABLE 1
UNDERDRAIN DRAWDOWN TABULATION SHEET
South Bay Community Church
Based on Darcy's Law for Groundwater Flow, Q=KiA

PROJECT # 5021-01 Brandon Hyatt Pond A 10-Apr-08

ELEV (NAVD)	TOTAL HEAD (ft)	INC. HEAD (ft)	TOTAL VOL. (ft^3)	INC. VOL. (ft^3)	I(max) FLOW LENGTH (ft)	I(min) FLOW LENGTH (ft)	I(avg) FLOW LENGTH (ft)	HYD GRAD =H/I(avg)	FILTER AREA =L*h (ft^2)	DARCY FLOW =kiA (ft^3/hr)	AVG FLOW (ft^3/hr)	INC. TIME (hr)	TOTAL TIME (hr)
32.85	1.85		2244		4.0	2.0	3.0	0.6167	26	87.74			0
		0.10625		280.50							85.22	3.29	
32.74	1.74		1964		4.0	2.0	3.0	0.5813	26	82.70			3.29
		0.10625		280.50							80.18	3.50	
32.64	1.64		1683		4.0	2.0	3.0	0.5458	26	77.66			6.79
		0.10625		280.50							75.14	3.73	
32.53	1.53		1403		4.0	2.0	3.0	0.5104	26	72.62			10.52
		0.10625		280.50							70.10	4.00	
32.43	1.43		1122		4.0	2.0	3.0	0.4750	26	67.58			14.52
		0.10625		280.50							65.06	4.31	
32.32	1.32		842		4.0	2.0	3.0	0.4396	26	62.54			18.84
		0.10625		280.50							60.02	4.67	
32.21	1.21		561		4.0	2.0	3.0	0.4042	26	57.50			23.51
		0.10625		280.50							54.98	5.10	
32.11	1.11		281		4.0	2.0	3.0	0.3688	26	52.46			28.61
		0.10625		280.50							49.94	5.62	
32.00	1.00		0		4.0	2.0	3.0	0.3333	26	47.43			34.23

LENGTH = 15 feet

HYD COND (K) = 5.42 ft/hr

TABLE 1
UNDERDRAIN DRAWDOWN TABULATION SHEET
South Bay Community Church
Based on Darcy's Law for Groundwater Flow, Q=KiA

PROJECT # 5021-01 Brandon Hyatt Pond B 10-Apr-08

ELEV (NAVD)	TOTAL HEAD (ft)	INC. HEAD (ft)	TOTAL VOL. (ft^3)	INC. VOL. (ft^3)	I(max) FLOW LENGTH (ft)	I(min) FLOW LENGTH (ft)	I(avg) FLOW LENGTH (ft)	HYD GRAD =H/I(avg)	FILTER AREA =L*h (ft^2)	DARCY FLOW =kiA (ft^3/hr)	AVG FLOW (ft^3/hr)	INC. TIME (hr)	TOTAL TIME (hr)
33.50	2.50		1901		4.0	2.0	3.0	0.8333	21	94.85			0
		0.1875		237.56							91.29	2.60	
33.31	2.31		1663		4.0	2.0	3.0	0.7708	21	87.74			2.60
		0.1875		237.56							84.18	2.82	
33.13	2.13		1425		4.0	2.0	3.0	0.7083	21	80.62			5.42
		0.1875		237.56							77.07	3.08	
32.94	1.94		1188		4.0	2.0	3.0	0.6458	21	73.51			8.51
		0.1875		237.56							69.95	3.40	
32.75	1.75		950		4.0	2.0	3.0	0.5833	21	66.40			11.90
		0.1875		237.56							62.84	3.78	
32.56	1.56		713		4.0	2.0	3.0	0.5208	21	59.28			15.68
		0.1875		237.56							55.72	4.26	
32.38	1.38		475		4.0	2.0	3.0	0.4583	21	52.17			19.95
		0.1875		237.56							48.61	4.89	
32.19	1.19		238		4.0	2.0	3.0	0.3958	21	45.05			24.83
		0.1875		237.56							41.50	5.72	
32.00	1.00		0		4.0	2.0	3.0	0.3333	21	37.94			30.56

LENGTH = 12 feet

HYD COND (K) = 5.42 ft/hr

TABLE 1
UNDERDRAIN DRAWDOWN TABULATION SHEET
South Bay Community Church
Based on Darcy's Law for Groundwater Flow, Q=KiA

PROJECT # 5021-01 Brandon Hyatt Pond C 10-Apr-08

ELEV (NAVD)	TOTAL HEAD (ft)	INC. HEAD (ft)	TOTAL VOL. (ft^3)	INC. VOL. (ft^3)	I(max) FLOW LENGTH (ft)	I(min) FLOW LENGTH (ft)	I(avg) FLOW LENGTH (ft)	HYD GRAD =H/I(avg)	FILTER AREA =L*h (ft^2)	DARCY FLOW =kiA (ft^3/hr)	AVG FLOW (ft^3/hr)	INC. TIME (hr)	TOTAL TIME (hr)
34.40	1.40		2580		4.0	2.0	3.0	0.4667	35	88.53			0
		0.05		322.50							86.95	3.71	
34.35	1.35		2258		4.0	2.0	3.0	0.4500	35	85.37			3.71
		0.05		322.50							83.78	3.85	
34.30	1.30		1935		4.0	2.0	3.0	0.4333	35	82.20			7.56
		0.05		322.50							80.62	4.00	
34.25	1.25		1613		4.0	2.0	3.0	0.4167	35	79.04			11.56
		0.05		322.50							77.46	4.16	
34.20	1.20		1290		4.0	2.0	3.0	0.4000	35	75.88			15.72
		0.05		322.50							74.30	4.34	
34.15	1.15		968		4.0	2.0	3.0	0.3833	35	72.72			20.06
		0.05		322.50							71.14	4.53	
34.10	1.10		645		4.0	2.0	3.0	0.3667	35	69.56			24.60
		0.05		322.50							67.98	4.74	
34.05	1.05		323		4.0	2.0	3.0	0.3500	35	66.40			29.34
		0.05		322.50							64.81	4.98	
34.00	1.00		0		4.0	2.0	3.0	0.3333	35	63.23			34.32

LENGTH = 20 feet

HYD COND (K) = 5.42 ft/hr

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www.brooks-amaden.com

MEMO

To: File 5021-01 – Brandon Hyatt

From: Nicholas Messina NJM

Subject: Pre-treatment pond impact calculations

Date: 4/15/08

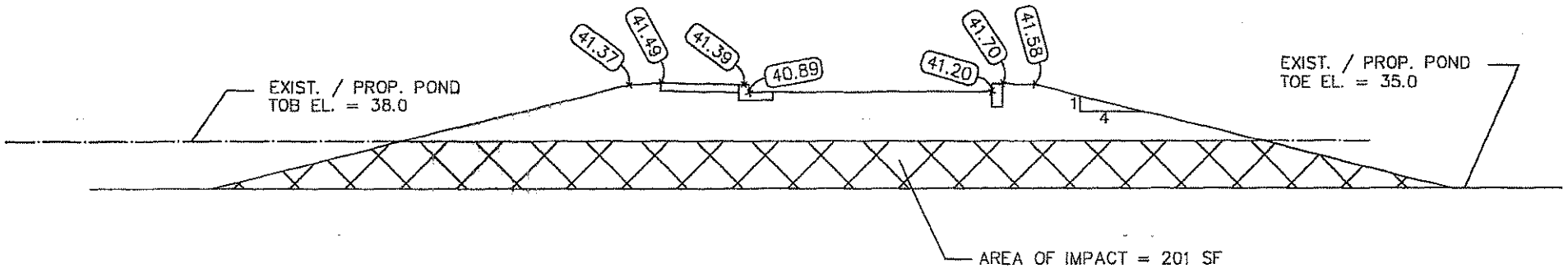
 # Pages: X 3

The proposed single lane access road onto the site from the east will fill a portion of an existing pre-treatment pond. The following details how the volume of impact and corresponding compensating volume were determined.

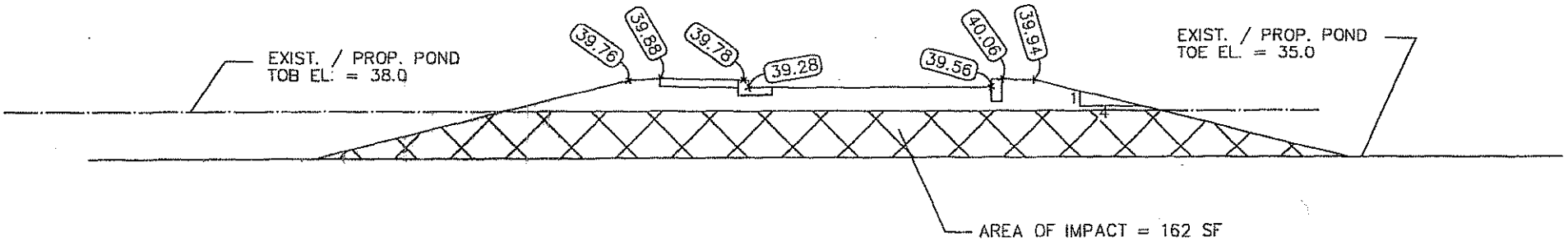
Impact volume- because the roadway profile decreases from east to west, the average end area method was used to determine the impact volume. Because the proposed road will be highest at the east end and side slopes have been held to a maximum of 4:1, the roadway cross section at this end represents the largest impact (201 SF). At the west end of the existing pond the impact cross sectional is reduced to 162 SF based on the lower road profile. The average of these two impact areas is 181.5 SF. When multiplied by the length of the impact (98 LF TOB to TOB), this results in an impact volume of 17,787 CF. Refer to CAD sketch for cross sectional areas

Compensating Volume – By widening the two pond sections to the west a compensating volume will be created. It is proposed to move the existing toe of slope approximately 40 FT to the west creating a 119 SF cross sectional area of cut /compensation. Refer to attached CAD sketch. Multiplying by the lengths of the two pond areas (174 FT total) equates to a compensation volume of 20,706 CF, which exceeds the impact volume.

1" = 10'
Views looking west



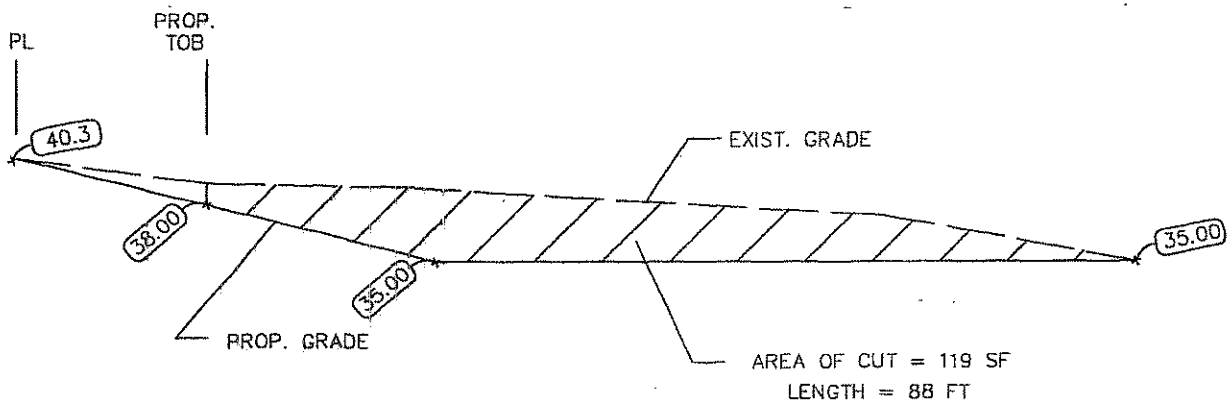
XSECTION AT EAST END OF CROSSING



XSECTION AT WEST END OF CROSSING (EXIST POND)

1" = 10'

view looking North



XSECTION OF CUT ALONG WEST SIDE OF POND

APPENDIX D

TABLE 1
Existing Conditions
Brandon Hyatt

Basin	5-Year Discharge	Allowable
100d	0.34	7.37
200d	1.57	
300d	5.46	
400d	1.30	1.30
	Total	8.67

Project Name: Brandon Hyatt BY: DLD
Project Number: 5021-01
Subject: Existing Basin Curve Numbers/Time of Concentrations

Basin Name: 100d
Basin ID: **100d**

Basin Area: **0.14** Acres

Curve Number:

Land Use Description	Soil Type	CN	Area (Acres)	Percentage (%)	% x CN
Pasture	D	80	0.13	91.96%	73.6
Buildings	D	98	0.01	8.04%	7.9
Roadway	D	98	0.00	0.00%	0.0
Wetland	D	98	0.00	0.00%	0.0
			0.14	100.00%	
Weighted CN:					**81.4**

Time of Concentration:

A. Overland Flow Segment (kinematic wave eqn.)

L (feet)	N	S (ft/ft)	Trial I (in/hr)	Computed I
100	0.24	0.049	10	10.0

Computed Tc (minutes): 6.2

B. Shallow Concentrated Flow Segment

L (feet)	S (ft/ft)	V (fps)	Tc (minutes)
135	0.019	2.20	1.0

C. Remaining Segment

L (feet)	V (fps)	Tc (minutes)
0	1.00	0.0

D. **TOTAL Tc (minutes)** 7.2

Use 10 minutes

Notes:

1. Soil Types from Table 15 "Soil And Water Features" in SCS Soil Survey
2. Curve Numbers from Tables 2-2a, 2-2b, and/or 2-2c in SCS TR-55 Second Ed. (June 1986)
3. Kinematic wave equation: T = 0.93((L^0.6 * N^0.6)/(i^0.4 * S^0.3))
4. Intensity computed using FDOT Regression Equation coefficients for:
   I = A + B*lnX + C*lnX^2 + D*lnX^3
   FDOT Zone: 6 25 - yr/24 - hr frequency storm
   A = 16.15961 B = -3.48135
   C = -0.0016 D = 0.02677
   X is the time of concentration. Appropriate values for X are 8 to 180 minutes.
5. Shallow Concentrated Flow based on TR-55 Fig. 3-1 for unpaved surfaces.
   Curve defined in Appendix F as V = 16.1345 * S^0.5

Project Name: Brandon Hyatt BY: DLD
Project Number: 5021-01
Subject: Existing Basin Curve Numbers/Time of Concentrations

Basin Name: 200d
Basin ID: **200d**

Basin Area: **0.61** Acres

Curve Number:

Land Use Description	Soil Type	CN	Area (Acres)	Percentage (%)	% x CN
Pasture	D	80	0.56	91.17%	72.9
Buildings	D	98	0.05	8.83%	8.7
Roadway	D	98	0.00	0.00%	0.0
Wetland	D	98	0.00	0.00%	0.0
			0.61	100.00%	
Weighted CN:					**81.6**

Time of Concentration:

A. Overland Flow Segment (kinematic wave eqn.)

L (feet)	N	S (ft/ft)	Trial I (in/hr)	Computed I
100	0.24	0.064	10.3	10.3

Computed Tc (minutes): 5.6

B. Shallow Concentrated Flow Segment

L (feet)	S (ft/ft)	V (fps)	Tc (minutes)
190	0.023	2.43	1.3

C. Remaining Segment

L (feet)	V (fps)	Tc (minutes)
0	1.00	0.0

D. ~~**TOTAL Tc (minutes)**~~ ~~6.9~~

Use 10 minutes

Notes:

1. Soil Types from Table 15 "Soil And Water Features" in SCS Soil Survey
2. Curve Numbers from Tables 2-2a, 2-2b, and/or 2-2c in SCS TR-55 Second Ed. (June 1986)
3. Kinematic wave equation: T = 0.93((L^0.6 * N^0.6)/(I^0.4 * S^0.3))
4. Intensity computed using FDOT Regression Equation coefficients for:
   I = A + B*lnX + C*lnX^2 + D*lnX^3
   FDOT Zone: 6 25 - yr/24 - hr frequency storm
   A = 16.15961 B = -3.48135
   C = -0.0016 D = 0.02677
   X is the time of concentration. Appropriate values for X are 8 to 180 minutes.
5. Shallow Concentrated Flow based on TR-55 Fig. 3-1 for unpaved surfaces.
   Curve defined in Appendix F as V = 16.1345 * S^0.5

Project Name: Brandon Hyatt BY: DLD
Project Number: 5021-01
Subject: Existing Basin Curve Numbers/Time of Concentrations

Basin Name: 300d
Basin ID: **300d**

Basin Area: **2.36** Acres

Curve Number:

Land Use Description	Soil Type	CN	Area (Acres)	Percentage (%)	% x CN
Pasture	D	80	2.21	93.62%	74.9
Buildings	D	98	0.15	6.38%	6.3
Roadway	D	98	0.00	0.00%	0.0
Wetland	D	98	0.00	0.00%	0.0
			2.36	100.00%	
Weighted CN:					**81.1**

Time of Concentration:

A. Overland Flow Segment (kinematic wave eqn.)

L (feet)	N	S (ft/ft)	Trial I (in/hr)	Computed I
100	0.24	0.064	10.3	10.3

Computed Tc (minutes): 5.6

B. Shallow Concentrated Flow Segment

L (feet)	S (ft/ft)	V (fps)	Tc (minutes)
468	0.007	1.40	5.6

C. Remaining Segment

L (feet)	V (fps)	Tc (minutes)
0	1.00	0.0

D. **TOTAL Tc (minutes)** **11.2**

Notes:

1. Soil Types from Table 15 "Soil And Water Features" in SCS Soil Survey
2. Curve Numbers from Tables 2-2a, 2-2b, and/or 2-2c in SCS TR-55 Second Ed. (June 1986)
3. Kinematic wave equation: T = 0.93((L^0.6 * N^0.6)/(I^0.4 * S^0.3))
4. Intensity computed using FDOT Regression Equation coefficients for:
   I = A + B*lnX + C*lnX^2 + D*lnX^3
   FDOT Zone: 6 25 - yr/24 - hr frequency storm
   A = 16.15961 B = -3.48135
   C = -0.0916 D = 0.02677
   X is the time of concentration. Appropriate values for X are 8 to 180 minutes.
5. Shallow Concentrated Flow based on TR-55 Fig. 3-1 for unpaved surfaces.
   Curve defined in Appendix F as V = 16.1345 * S^0.5

Project Name: Brandon Hyatt BY: DLD
Project Number: 5021-01
Subject: Existing Basin Curve Numbers/Time of Concentrations

Basin Name: 400d
Basin ID: **400d**

Basin Area: **0.55** Acres

Curve Number:

Land Use Description	Soil Type	CN	Area (Acres)	Percentage (%)	% x CN
Pasture	D	80	0.55	99.65%	79.7
Buildings	D	98	0.00	0.35%	0.3
Roadway	D	98	0.00	0.00%	0.0
Wetland	D	98	0.00	0.00%	0.0
			0.55	100.00%	
Weighted CN:					**80.1**

Time of Concentration:

A. Overland Flow Segment (kinematic wave eqn.)

L (feet)	N	S (ft/ft)	Trial I (in/hr)	Computed I
100	0.24	0.03	9.4	9.4

Computed Tc (minutes): 7.3

B. Shallow Concentrated Flow Segment

L (feet)	S (ft/ft)	V (fps)	Tc (minutes)
31	0.016	2.05	0.3

C. Remaining Segment

L (feet)	V (fps)	Tc (minutes)
0	1.00	0.0

D. ~~TOTAL Tc (minutes)~~ ~~7.6~~

Use 10 minutes

Notes:

1. Soil Types from Table 15 "Soil And Water Features" in SCS Soil Survey
2. Curve Numbers from Tables 2-2a, 2-2b, and/or 2-2c in SCS TR-55 Second Ed. (June 1986)
3. Kinematic wave equation: T = 0.93((L^0.6 * N^0.6)/(I^0.4 * S^0.3))
4. Intensity computed using FDOT Regression Equation coefficients for:
   I = A + B*lnX + C*lnX^2 + D*lnX^3
   FDOT Zone: 6 25 - yr/24 - hr frequency storm
   A = 16.15961 B = -3.48135
   C = -0.0016 D = 0.02677
   X is the time of concentration. Appropriate values for X are 8 to 180 minutes.
5. Shallow Concentrated Flow based on TR-55 Fig. 3-1 for unpaved surfaces.
   Curve defined in Appendix F as V = 16.1345 * S^0.5

Basins

Name: 100d | Node: 100d | Status: Onsite
Group: BASE | Type: SCS Unit Hydrograph

Unit Hydrograph:	Uh256	Peaking Factor:	256.0
Rainfall File:	Flmod	Storm Duration(hrs):	24.00
Rainfall Amount(in):	5.500	Time of Conc(min):	10.00
Area(ac):	0.140	Time Shift(hrs):	0.00
Curve Number:	81.40	Max Allowable Q(cfs):	999999.000
DCIA(%):	0.00		

Name: 200d | Node: 200d | Status: Onsite
Group: BASE | Type: SCS Unit Hydrograph

Unit Hydrograph:	Uh256	Peaking Factor:	256.0
Rainfall File:	Flmod	Storm Duration(hrs):	24.00
Rainfall Amount(in):	5.500	Time of Conc(min):	10.00
Area(ac):	0.640	Time Shift(hrs):	0.00
Curve Number:	81.50	Max Allowable Q(cfs):	999999.000
DCIA(%):	0.00		

Name: 300d | Node: 300d | Status: Onsite
Group: BASE | Type: SCS Unit Hydrograph

Unit Hydrograph:	Uh256	Peaking Factor:	256.0
Rainfall File:	Flmod	Storm Duration(hrs):	24.00
Rainfall Amount(in):	5.500	Time of Conc(min):	11.20
Area(ac):	2.360	Time Shift(hrs):	0.00
Curve Number:	81.10	Max Allowable Q(cfs):	999999.000
DCIA(%):	0.00		

Name: 400d | Node: 400d | Status: Onsite
Group: BASE | Type: SCS Unit Hydrograph

Unit Hydrograph:	Uh256	Peaking Factor:	256.0
Rainfall File:	Flmod	Storm Duration(hrs):	24.00
Rainfall Amount(in):	5.500	Time of Conc(min):	10.00
Area(ac):	0.550	Time Shift(hrs):	0.00
Curve Number:	80.10	Max Allowable Q(cfs):	999999.000
DCIA(%):	0.00		

Nodes

Cross Sections

Operating Tables

Pipes

Channels

Drop Strcutures

Weirs

Bridges

==========

==========
==== Breaches ====
==========

==========
==== Rating Curves ====
==========

==========
==== Hydrology Simulations ====
==========

Name: Existing
Filename: P:\5021-01\icpr\Existing.R32

Override Defaults: No

Time(hrs)	Print Inc(min)
48.000	5.00

==========
==== Routing Simulations ====
==========

```
            Basin Name: 100d
            Group Name: BASE
            Simulation: Existing
             Node Name: 100d
            Basin Type: SCS Unit Hydrograph

       Unit Hydrograph: Uh256
         Peaking Fator: 256.0
  Spec Time Inc (min): 1.33
  Comp Time Inc (min): 1.33
         Rainfall File: Flmod
 Rainfall Amount (in): 5.500
 Storm Duration (hrs): 24.00
               Status: Onsite
   Time of Conc (min): 10.00
     Time Shift (hrs): 0.00
            Area (ac): 0.140
 Vol of Unit Hyd (in): 1.000
        Curve Number: 81.400
            DCIA (%): 0.000

       Time Max (hrs): 12.04
       Flow Max (cfs): 0.342
  Runoff Volume (in): 3.469
 Runoff Volume (ft3): 1763.108
```

```
            Basin Name: 200d
            Group Name: BASE
            Simulation: Existing
             Node Name: 200d
            Basin Type: SCS Unit Hydrograph

       Unit Hydrograph: Uh256
         Peaking Fator: 256.0
  Spec Time Inc (min): 1.33
  Comp Time Inc (min): 1.33
         Rainfall File: Flmod
 Rainfall Amount (in): 5.500
 Storm Duration (hrs): 24.00
               Status: Onsite
   Time of Conc (min): 10.00
     Time Shift (hrs): 0.00
            Area (ac): 0.640
 Vol of Unit Hyd (in): 1.000
        Curve Number: 81.500
            DCIA (%): 0.000

       Time Max (hrs): 12.04
       Flow Max (cfs): 1.570
  Runoff Volume (in): 3.479
 Runoff Volume (ft3): 8082.861
```

```
            Basin Name: 300d
            Group Name: BASE
            Simulation: Existing
             Node Name: 300d
            Basin Type: SCS Unit Hydrograph

       Unit Hydrograph: Uh256
         Peaking Fator: 256.0
  Spec Time Inc (min): 1.49
  Comp Time Inc (min): 1.49
         Rainfall File: Flmod
 Rainfall Amount (in): 5.500
 Storm Duration (hrs): 24.00
               Status: Onsite
   Time of Conc (min): 11.20
     Time Shift (hrs): 0.00
            Area (ac): 2.360
 Vol of Unit Hyd (in): 1.000
        Curve Number: 81.100
            DCIA (%): 0.000

       Time Max (hrs): 12.07
       Flow Max (cfs): 5.458
  Runoff Volume (in): 3.439
 Runoff Volume (ft3): 29464.714
```

```
            Basin Name: 400d
            Group Name: BASE
            Simulation: Existing
             Node Name: 400d
            Basin Type: SCS Unit Hydrograph

       Unit Hydrograph: Uh256
         Peaking Fator: 256.0
  Spec Time Inc (min): 1.33
  Comp Time Inc (min): 1.33
         Rainfall File: Flmod
```

```
   Rainfall Amount (in): 5.500
   Storm Duration (hrs): 24.00
                 Status: Onsite
     Time of Conc (min): 10.00
      Time Shift (hrs): 0.00
              Area (ac): 0.550
  Vol of Unit Hyd (in): 1.000
          Curve Number: 80.100
              DCIA (%): 0.000

        Time Max (hrs): 12.04
        Flow Max (cfs): 1.298
    Runoff Volume (in): 3.342
   Runoff Volume (ft3): 6672.156
```

APPENDIX E

TABLE 1

Proposed Conditions - NAVD 1988

Brandon Hyatt

Basin	25-Year Discharge	Allowable
A	2.94	7.37
B	3.62	
C	1.23	1.30
	Total	8.67

Junction	100-Year Stage
A	35.28
B	35.37
C	37.19

Datum Conversion: NGVD 1929 - 0.86' = NAVD 1988

Project Name: Brandon Hyatt BY: DLD
Project Number: 5021-01
Subject: Proposed Basin Curve Numbers/Time of Concentrations

Basin Name: DryNorth Pond A
Basin ID: **DryNorth**

Basin Area: **1.19** Acres

Curve Number:

Land Use Description	Soil Type	CN	Area (Acres)	Percentage (%)	% x CN
Open Space	D	80	0.00	0.00%	0.0
Impervious	D	98	1.13	94.76%	92.9
Pond	D	98	0.06	5.24%	5.1
Wetland	D	98	0.00	0.00%	0.0
			1.19	100.00%	
Weighted CN:					**98.0**

Time of Concentration:

A. Overland Flow Segment (kinematic wave eqn.)

L (feet)	N	S (ft/ft)	Trial I (in/hr)	Computed I
na	0.24	#VALUE!	9.4	#VALUE!

Computed Tc (minutes): #VALUE!

B. Shallow Concentrated Flow Segment

L (feet)	S (ft/ft)	V (fps)	Tc (minutes)
na	#VALUE!	#VALUE!	#VALUE!

C. Remaining Segment

L (feet)	V (fps)	Tc (minutes)
0	1.00	0.0

D. **TOTAL Tc (minutes)** **#VALUE!**

Use 15 minutes

Notes:

1. Soil Types from Table 15 "Soil And Water Features" in SCS Soil Survey
2. Curve Numbers from Tables 2-2a, 2-2b, and/or 2-2c in SCS TR-55 Second Ed. (June 1986)
3. Kinematic wave equation: T = 0.93((L^0.6 * N^0.6)/(I^0.4 * S^0.3))
4. Intensity computed using FDOT Regression Equation coefficients for:
   I = A + B*lnX + C*lnX^2 + D*lnX^3
   FDOT Zone: 6 25 - yr/24 - hr frequency storm
   A = 16.15961 B = -3.48135
   C = -0.0016 D = 0.02677
   X is the time of concentration. Appropriate values for X are 8 to 180 minutes.
5. Shallow Concentrated Flow based on TR-55 Fig. 3-1 for unpaved surfaces.
   Curve defined in Appendix F as V = 16.1345 * S^0.5

Project Name: Brandon Hyatt BY: DLD
Project Number: 5021-01
Subject: Proposed Basin Curve Numbers/Time of Concentrations

Basin Name: DryWest Pond B
Basin ID: **DryWest**

Basin Area: **1.05** Acres

Curve Number:

Land Use Description	Soil Type	CN	Area (Acres)	Percentage (%)	% x CN
Open Space	D	80	0.00	0.00%	0.0
Impervious	D	98	1.02	97.14%	95.2
Pond	D	98	0.03	2.86%	2.8
Wetland	D	98	0.00	0.00%	0.0
			1.05	100.00%	
Weighted CN:					**98.0**

Time of Concentration:

A. Overland Flow Segment (kinematic wave eqn.)

L (feet)	N	S (ft/ft)	Trial I (in/hr)	Computed I
na	0.24	#VALUE!	9.4	#VALUE!

Computed Tc (minutes): #VALUE!

B. Shallow Concentrated Flow Segment

L (feet)	S (ft/ft)	V (fps)	Tc (minutes)
na	#VALUE!	#VALUE!	#VALUE!

C. Remaining Segment

L (feet)	V (fps)	Tc (minutes)
0	1.00	0.0

D. **~~TOTAL~~ Tc (minutes)** **#VALUE!**

Use 15 minutes

Notes:

1. Soil Types from Table 15 "Soil And Water Features" in SCS Soil Survey
2. Curve Numbers from Tables 2-2a, 2-2b, and/or 2-2c in SCS TR-55 Second Ed. (June 1986)
3. Kinematic wave equation: T = 0.93((L^0.6 * N^0.6)/(I^0.4 * S^0.3))
4. Intensity computed using FDOT Regression Equation coefficients for:
   I = A + B*lnX + C*lnX^2 + D*lnX^3
   FDOT Zone: 6 25 - yr/24 - hr frequency storm
   A = 16.15961 B = -3.48135
   C = -0.0016 D = 0.02677
   X is the time of concentration. Appropriate values for X are 8 to 180 minutes.
5. Shallow Concentrated Flow based on TR-55 Fig. 3-1 for unpaved surfaces.
   Curve defined in Appendix F as V = 16.1345 * S^0.5

Project Name: Brandon Hyatt BY: DLD
Project Number: 5021-01
Subject: Proposed Basin Curve Numbers/Time of Concentrations

Basin Name: DryEast Pond C
Basin ID: **DryEast**

Basin Area: **1.42** Acres

Curve Number:

Land Use Description	Soil Type	CN	Area (Acres)	Percentage (%)	% x CN
Open Space	D	80	0.08	5.63%	4.5
Impervious	D	98	1.19	83.80%	82.1
Pond	D	98	0.15	10.56%	10.4
Wetland	D	98	0.00	0.00%	0.0
			1.42	100.00%	
Weighted CN:					**97.0**

Time of Concentration:

A. Overland Flow Segment (kinematic wave eqn.)

L (feet)	N	S (ft/ft)	Trial I (in/hr)	Computed I
na	0.24	#VALUE!	20.9	#VALUE!

Computed Tc (minutes): #VALUE!

B. Shallow Concentrated Flow Segment

L (feet)	S (ft/ft)	V (fps)	Tc (minutes)
na	#VALUE!	#VALUE!	#VALUE!

C. Remaining Segment

L (feet)	V (fps)	Tc (minutes)
0	1.00	0.0

D. **TOTAL Tc (minutes)** **#VALUE!**

Use 15 minutes

Notes:

1. Soil Types from Table 15 "Soil And Water Features" in SCS Soil Survey
2. Curve Numbers from Tables 2-2a, 2-2b, and/or 2-2c in SCS TR-55 Second Ed. (June 1986)
3. Kinematic wave equation: T = 0.93((L^0.6 * N^0.6)/(I^0.4 * S^0.3))
4. Intensity computed using FDOT Regression Equation coefficients for:
   I = A + B*lnX + C*lnX^2 + D*lnX^3
   FDOT Zone: 6 25 - yr/24 - hr frequency storm
   A = 16.15961 B = -3.48135
   C = -0.0016 D = 0.02677
   X is the time of concentration. Appropriate values for X are 8 to 180 minutes.
5. Shallow Concentrated Flow based on TR-55 Fig. 3-1 for unpaved surfaces.
   Curve defined in Appendix F as V = 16.1345 * S^0.5

==== Basins ====

Name: DryEast
Group: BASE
Node: C
Type: SCS Unit Hydrograph
Status: Onsite

Unit Hydrograph: Uh256
Rainfall File: Flmod
Rainfall Amount(in): 8.000
Area(ac): 1.420
Curve Number: 96.40
DCIA(%): 0.00
Peaking Factor: 256.0
Storm Duration(hrs): 24.00
Time of Conc(min): 15.00
Time Shift(hrs): 0.00
Max Allowable Q(cfs): 999999.000

Name: DryNorth
Group: BASE
Node: A
Type: SCS Unit Hydrograph
Status: Onsite

Unit Hydrograph: Uh256
Rainfall File: Flmod
Rainfall Amount(in): 8.000
Area(ac): 1.190
Curve Number: 98.00
DCIA(%): 0.00
Peaking Factor: 256.0
Storm Duration(hrs): 24.00
Time of Conc(min): 15.00
Time Shift(hrs): 0.00
Max Allowable Q(cfs): 999999.000

Name: DryWest
Group: BASE
Node: B
Type: SCS Unit Hydrograph
Status: Onsite

Unit Hydrograph: Uh256
Rainfall File: Flmod
Rainfall Amount(in): 8.000
Area(ac): 1.050
Curve Number: 98.00
DCIA(%): 0.00
Peaking Factor: 256.0
Storm Duration(hrs): 24.00
Time of Conc(min): 15.00
Time Shift(hrs): 0.00
Max Allowable Q(cfs): 999999.000

==== Nodes ====

Name: A
Group: BASE
Type: Stage/Area
Base Flow(cfs): 0.000
Init Stage(ft): 32.850
Warn Stage(ft): 38.000

Stage(ft)	Area(ac)
32.000	0.0600
38.000	0.0600

Name: B
Group: BASE
Type: Stage/Area
Base Flow(cfs): 0.000
Init Stage(ft): 33.500
Warn Stage(ft): 38.000

Stage(ft)	Area(ac)
32.000	0.0300
38.000	0.0300

Name: C
Group: BASE
Type: Stage/Area
Base Flow(cfs): 0.000
Init Stage(ft): 34.400
Warn Stage(ft): 38.000

Stage(ft)	Area(ac)
34.000	0.1500
38.000	0.1500

Name: Outfall
Group: BASE
Type: Time/Stage
Base Flow(cfs): 0.000
Init Stage(ft): 32.000
Warn Stage(ft): 38.000

Time(hrs)	Stage(ft)
0.00	32.000
48.00	32.000

==== Cross Sections ====

==== Operating Tables ====

==== Pipes ====

==== Channels ====

==== Drop Strcutures ====

Name: DryEastOut From Node: C Length(ft): 35.00
Group: BASE To Node: Outfall Count: 1

	UPSTREAM	DOWNSTREAM
Geometry:	Circular	Circular
Span(in):	15.00	15.00
Rise(in):	15.00	15.00
Invert(ft):	31.000	30.500
Manning's N:	0.013000	0.013000
Top Clip(in):	0.000	0.000
Bot Clip(in):	0.000	0.000

Friction Equation: Average Conveyance
Solution Algorithm: Automatic
Flow: Both
Entrance Loss Coef: 0.500
Exit Loss Coef: 1.000
Outlet Ctrl Spec: Use dc or tw
Inlet Ctrl Spec: Use dn
Solution Incs: 10

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

*** Weir 1 of 2 for Drop Structure DryEastOut ***

TABLE

Count: 1
Type: Vertical: Fread
Flow: Both
Geometry: Circular

Span(in): 5.50
Rise(in): 5.50

Bottom Clip(in): 0.000
Top Clip(in): 0.000
Weir Disc Coef: 3.200
Orifice Disc Coef: 0.600

Invert(ft): 34.400
Control Elev(ft): 34.400

*** Weir 2 of 2 for Drop Structure DryEastOut ***

TABLE

Count: 1
Type: Horizontal
Flow: Both
Geometry: Rectangular

Span(in): 36.00
Rise(in): 48.00

Bottom Clip(in): 0.000
Top Clip(in): 0.000
Weir Disc Coef: 3.200
Orifice Disc Coef: 0.600

Invert(ft): 37.030
Control Elev(ft): 37.030

Name: Drynorthout From Node: A Length(ft): 250.00
Group: BASE To Node: Outfall Count: 1

	UPSTREAM	DOWNSTREAM
Geometry:	Circular	Circular
Span(in):	18.00	18.00
Rise(in):	18.00	18.00
Invert(ft):	30.400	29.900
Manning's N:	0.013000	0.013000
Top Clip(in):	0.000	0.000
Bot Clip(in):	0.000	0.000

Friction Equation: Average Conveyance
Solution Algorithm: Automatic
Flow: Both
Entrance Loss Coef: 0.000
Exit Loss Coef: 0.000
Outlet Ctrl Spec: Use dc or tw
Inlet Ctrl Spec: Use dn
Solution Incs: 10

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

*** Weir 1 of 2 for Drop Structure Drynorthout ***

TABLE

Count: 1
Type: Vertical: Fread
Flow: Both
Geometry: Circular

Span(in): 9.00
Rise(in): 9.00

Bottom Clip(in): 0.000
Top Clip(in): 0.000
Weir Disc Coef: 3.200
Orifice Disc Coef: 0.600

Invert(ft): 32.850
Control Elev(ft): 32.850

*** Weir 2 of 2 for Drop Structure Drynorthout ***

TABLE

Count:	1	Bottom Clip(in):	0.000
Type:	Horizontal	Top Clip(in):	0.000
Flow:	Both	Weir Disc Coef:	3.200
Geometry:	Rectangular	Orifice Disc Coef:	0.600
Span(in):	36.00	Invert(ft):	35.140
Rise(in):	48.00	Control Elev(ft):	35.140

Name:	Drywestout	From Node:	B
Group:	BASE	To Node:	Outfall

Length(ft): 30.00
Count: 1

	UPSTREAM	DOWNSTREAM
Geometry:	Circular	Circular
Span(in):	18.00	18.00
Rise(in):	18.00	18.00
Invert(ft):	29.000	28.500
Manning's N:	0.013000	0.013000
Top Clip(in):	0.000	0.000
Bot Clip(in):	0.000	0.000

Friction Equation: Average Conveyance
Solution Algorithm: Automatic
Flow: Both
Entrance Loss Coef: 0.000
Exit Loss Coef: 0.000
Outlet Ctrl Spec: Use dc or tw
Inlet Ctrl Spec: Use dn
Solution Incs: 10

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

*** Weir 1 of 2 for Drop Structure Drywestout ***

TABLE

Count:	1	Bottom Clip(in):	0.000
Type:	Vertical: Fread	Top Clip(in):	0.000
Flow:	Both	Weir Disc Coef:	3.200
Geometry:	Circular	Orifice Disc Coef:	0.600
Span(in):	11.00	Invert(ft):	33.500
Rise(in):	11.00	Control Elev(ft):	33.500

*** Weir 2 of 2 for Drop Structure Drywestout ***

TABLE

Count:	1	Bottom Clip(in):	0.000
Type:	Horizontal	Top Clip(in):	0.000
Flow:	Both	Weir Disc Coef:	3.200
Geometry:	Rectangular	Orifice Disc Coef:	0.600
Span(in):	36.00	Invert(ft):	35.260
Rise(in):	48.00	Control Elev(ft):	35.260

==== Weirs ====

==== Bridges ====

==== Breaches ====

==== Rating Curves ====

==== Hydrology Simulations ====

Name: pr100
Filename: P:\5021-01\icpr\pr100.R32

Override Defaults: Yes
Storm Duration(hrs): 24.00
Rainfall File: Flmod
Rainfall Amount(in): 10.00

Time(hrs)	Print Inc(min)
48.000	5.00

Name: Pr25
Filename: P:\5021-01\icpr\Proposed.R32

Override Defaults: No

Time(hrs)	Print Inc(min)

48.000 5.00

==== Routing Simulations ====

Name: prop100 Hydrology Sim: pr100
Filename: P:\5021-01\icpr\prop100.I32

Execute: Yes Restart: No Patch: No
Alternative: No

Max Delta Z(ft): 1.00 Delta Z Factor: 0.00500
Time Step Optimizer: 10.000
Start Time(hrs): 0.000 End Time(hrs): 48.00
Min Calc Time(sec): 0.5000 Max Calc Time(sec): 60.0000
Boundary Stages: Boundary Flows:

Time(hrs)	Print Inc(min)
48.000	5.000

Group	Run
BASE	Yes

Name: prop25 Hydrology Sim: Pr25
Filename: P:\5021-01\icpr\prop25.I32

Execute: Yes Restart: No Patch: No
Alternative: No

Max Delta Z(ft): 1.00 Delta Z Factor: 0.00500
Time Step Optimizer: 10.000
Start Time(hrs): 0.000 End Time(hrs): 48.00
Min Calc Time(sec): 0.5000 Max Calc Time(sec): 60.0000
Boundary Stages: Boundary Flows:

Time(hrs)	Print Inc(min)
48.000	5.000

Group	Run
BASE	Yes

```
            Basin Name: DryEast
            Group Name: BASE
            Simulation: pr100
             Node Name: C
            Basin Type: SCS Unit Hydrograph

      Unit Hydrograph: Uh256
        Peaking Fator: 256.0
  Spec Time Inc (min): 2.00
  Comp Time Inc (min): 2.00
        Rainfall File: Flmod
 Rainfall Amount (in): 10.000
 Storm Duration (hrs): 24.00
               Status: Onsite
   Time of Conc (min): 15.00
     Time Shift (hrs): 0.00
            Area (ac): 1.420
 Vol of Unit Hyd (in): 1.000
         Curve Number: 96.400
             DCIA (%): 0.000

       Time Max (hrs): 12.07
      Flow Max (cfs): 7.232
  Runoff Volume (in): 9.562
 Runoff Volume (ft3): 49289.247
```

```
            Basin Name: DryNorth
            Group Name: BASE
            Simulation: pr100
             Node Name: A
            Basin Type: SCS Unit Hydrograph

      Unit Hydrograph: Uh256
        Peaking Fator: 256.0
  Spec Time Inc (min): 2.00
  Comp Time Inc (min): 2.00
        Rainfall File: Flmod
 Rainfall Amount (in): 10.000
 Storm Duration (hrs): 24.00
               Status: Onsite
   Time of Conc (min): 15.00
     Time Shift (hrs): 0.00
            Area (ac): 1.190
 Vol of Unit Hyd (in): 1.000
         Curve Number: 98.000
             DCIA (%): 0.000

       Time Max (hrs): 12.07
      Flow Max (cfs): 6.086
  Runoff Volume (in): 9.756
 Runoff Volume (ft3): 42142.621
```

```
            Basin Name: DryWest
            Group Name: BASE
            Simulation: pr100
             Node Name: B
            Basin Type: SCS Unit Hydrograph

      Unit Hydrograph: Uh256
        Peaking Fator: 256.0
  Spec Time Inc (min): 2.00
  Comp Time Inc (min): 2.00
        Rainfall File: Flmod
 Rainfall Amount (in): 10.000
 Storm Duration (hrs): 24.00
               Status: Onsite
   Time of Conc (min): 15.00
     Time Shift (hrs): 0.00
            Area (ac): 1.050
 Vol of Unit Hyd (in): 1.000
         Curve Number: 98.000
             DCIA (%): 0.000

       Time Max (hrs): 12.07
      Flow Max (cfs): 5.370
  Runoff Volume (in): 9.756
 Runoff Volume (ft3): 37184.666
```

```
            Basin Name: DryEast
            Group Name: BASE
            Simulation: Pr25
             Node Name: C
            Basin Type: SCS Unit Hydrograph

      Unit Hydrograph: Uh256
        Peaking Fator: 256.0
  Spec Time Inc (min): 2.00
  Comp Time Inc (min): 2.00
        Rainfall File: Flmod
```

```
   Rainfall Amount (in): 8.000
   Storm Duration (hrs): 24.00
                 Status: Onsite
     Time of Conc (min): 15.00
       Time Shift (hrs): 0.00
              Area (ac): 1.420
   Vol of Unit Hyd (in): 1.000
          Curve Number: 96.400
              DCIA (%): 0.000

         Time Max (hrs): 12.07
        Flow Max (cfs): 5.768
    Runoff Volume (in): 7.566
   Runoff Volume (ft3): 39000.334
```

```
             Basin Name: DryNorth
             Group Name: BASE
             Simulation: Pr25
              Node Name: A
             Basin Type: SCS Unit Hydrograph

         Unit Hydrograph: Uh256
           Peaking Fator: 256.0
    Spec Time Inc (min): 2.00
    Comp Time Inc (min): 2.00
           Rainfall File: Flmod
   Rainfall Amount (in): 8.000
   Storm Duration (hrs): 24.00
                 Status: Onsite
     Time of Conc (min): 15.00
       Time Shift (hrs): 0.00
              Area (ac): 1.190
   Vol of Unit Hyd (in): 1.000
          Curve Number: 98.000
              DCIA (%): 0.000

         Time Max (hrs): 12.07
        Flow Max (cfs): 4.864
    Runoff Volume (in): 7.758
   Runoff Volume (ft3): 33510.465
```

```
             Basin Name: DryWest
             Group Name: BASE
             Simulation: Pr25
              Node Name: B
             Basin Type: SCS Unit Hydrograph

         Unit Hydrograph: Uh256
           Peaking Fator: 256.0
    Spec Time Inc (min): 2.00
    Comp Time Inc (min): 2.00
           Rainfall File: Flmod
   Rainfall Amount (in): 8.000
   Storm Duration (hrs): 24.00
                 Status: Onsite
     Time of Conc (min): 15.00
       Time Shift (hrs): 0.00
              Area (ac): 1.050
   Vol of Unit Hyd (in): 1.000
          Curve Number: 98.000
              DCIA (%): 0.000

         Time Max (hrs): 12.07
        Flow Max (cfs): 4.292
    Runoff Volume (in): 7.758
   Runoff Volume (ft3): 29568.057
```

Name	Group	Simulation	Max Time Stage hrs	Max Stage ft	Warning Stage ft	Max Delta Stage ft	Max Surf Area ft2	Max Time Inflow hrs	Max Inflow cfs	Max Time Outflow hrs	Max Outflow cfs
A	BASE	prop100	12.24	35.275	38.000	0.0050	2614	12.08	6.083	12.24	5.273
B	BASE	prop100	12.10	35.365	38.000	-0.0050	1307	12.08	5.368	12.10	5.283
C	BASE	prop100	12.54	37.187	38.000	0.0049	6534	12.08	7.229	12.54	4.048
Outfall	BASE	prop100	0.00	32.000	38.000	0.0000	0	12.49	11.379	0.00	0.000
A	BASE	prop25	12.49	35.141	38.000	0.0050	2614	12.08	4.861	12.49	2.943
B	BASE	prop25	12.26	35.260	38.000	0.0050	1307	12.08	4.289	12.26	3.623
C	BASE	prop25	13.14	37.026	38.000	0.0040	6534	12.08	5.765	13.14	1.229
Outfall	BASE	prop25	0.00	32.000	38.000	0.0000	0	12.36	7.526	0.00	0.000

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Name	Group	Simulation	Max Time Flow hrs	Max Flow cfs	Max Delta Q cfs	Max Time US Stage hrs	Max US Stage ft	Max Time DS Stage hrs	Max DS Stage ft
DryEastOut	BASE	prop100	12.54	4.048	0.053	12.54	37.187	0.00	32.000
Drynorthout	BASE	prop100	12.24	5.273	0.046	12.24	35.275	0.00	32.000
Drywestout	BASE	prop100	12.10	5.283	0.044	12.10	35.365	0.00	32.000
DryEastOut	BASE	prop25	13.14	1.229	-0.003	13.14	37.026	0.00	32.000
Drynorthout	BASE	prop25	12.49	2.943	0.013	12.49	35.141	0.00	32.000
Drywestout	BASE	prop25	12.26	3.623	0.015	12.26	35.260	0.00	32.000

APPENDIX F

Brandon Hyatt

Project # 5021-01
March 28, 2008

OPERATION AND MAINTENANCE GUIDELINES

The work specified in this statement consists of the operation and maintenance activities required such as to insure adequate performance of the system and its continued safe operation.

The maintenance and operation entity should perform the following maintenance and operation procedures.

1. Discharge structures/control devices should be maintained operational by eliminating clogging of the baffles, grates, etc., caused by trash, debris and sediment. The inspection for proper operation and maintenance of these devices should be conducted quarterly. Additional monitoring and maintenance should be conducted after severe rainfall events.

2. Internal stormwater system inlets and manholes should be maintained operational by eliminating clogging of the slots, grates, interior pipes, etc. caused by sediment, vegetation and trash. The inspection for proper operation and maintenance of these devices should be conducted quarterly. Additional monitoring and maintenance should be conducted after severe rainfall events.

3. Detention areas should be maintained operational by removing sediments and trash which can hinder their function. The inspection of this area should be conducted quarterly. Additional monitoring and maintenance should be conducted after severe rainfall events.

4. Any eroded areas that are noticed during routine maintenance should be filled, as soon as discovered, with similar soils and grassed by sodding (staked) or seeding and having mulching (cut in) depending on the season.

5. Effluent filtration (man-made underdrains) systems should be maintained operational through the implementation of a periodic monitoring and maintenance program. The inspection for proper operation and maintenance of these systems should be conducted quarterly. Additional monitoring and maintenance should be conducted after severe rainfall events. The underdrains should be backflushed every two years. If the underdrain fails to drawdown the treatment volume in 36 hours after being backflushed, then the filter media should be removed and replaced in accordance with the approved plans and specifications. Spent filter material may be considered hazardous and should be disposed off-site at a facility capable of handling such material.