Hatchett Creek
Basin Master Plan Update
Venice County Model (E_vcm)

Book 1 of 2

Basin Summary

July 2001

Hatchett Creek Basin Master Plan
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SECTION 1. INTRODUCTION

1.01 Purpose

The Hatchett Creek Basin Master Plan (BMP) was prepared to (1) characterize the existing hydrologic/hydraulic network; (2) identify existing Flood Protection Level of Service (FPLOS) deficiencies; (3) summarize existing (baseline) pollutant loads; and (4) delineate the existing 100-year/24-hour floodplain to guide future planning and development.

1.02 Abbreviations

BMP	- Basin Master Plan
BMPU	- Basin Master Plan Update
CHNEP	- Charlotte Harbor National Estuary Program
CIP	- Capital Improvements Program
DRI	- Development of Regional Impact
EMC	- Event Mean Concentration
FAC	- Florida Administrative Code
FDEP	- Florida Department of Environmental Protection
FDOT	- Florida Department of Transportation
FEMA	- Federal Emergency Management Agency
FPLOS	- Flood Protection Level of Service
ICW	- Intrercoastal Waterway
LOS	- Level of Service
NPDES	- National Pollutant Discharge Elimination System
SWFWMD	- Southwest Florida Water Management District
TMDL	- Total Maximum Daily Load
WMM	- Watershed Management Model
WQLOS	- Water Quality Level of Service

1.03 Description of Study Area

The Hatchett Creek drainage basin is located in central coastal Sarasota County as shown on Exhibit 1. The U.S. 41 Bypass runs along the western boundary of the basin, Center Road defines the south basin line, Jacaranda Boulevard runs through the eastern portion of the basin and Venice East Boulevard runs through and along the northern portion of the basin. The basin is approximately 3,333 acres in size and encompasses portions of both unincorporated Sarasota County and the City of Venice. It is bordered by the Curry Creek basin to the north, Roberts Bay to the west, the Myakka River watershed to the east and the Alligator Creek basin to the south.

Major residential communities within the unincorporated portion of the basin include Kent Acres, Mission Lakes, Venice Isles, Sandalwood Mobile Home Park (MHP), Pelican Pointe, the Venice Center Development of Regional Impact area, and Chestnut Creek. Communities located in the City of Venice include the southern portion of Bay

Indies MHP, North Edgewood, Pineland Gardens, Crown Point, East Venice, and Ridgewood. A small area of rural lands still exists in the extreme northeast portion of the basin. An aerial map of the basin is shown on Exhibit 2.

The Hatchett Creek drainage system consists of a main channel and three lateral ditch systems; the northwest, southwest, and eastern branches. The main Hatchett Creek channel serves the west-central and mid-central regions of the basin, beginning at the northwest corner of Chestnut Creek and continuing west to Roberts Bay. The northwest lateral drains two major shopping centers on U.S. 41 Bypass, industrial areas along Albee Farm Road and the southern portion of Bay Indies MHP. In addition to Mission Lakes Condominium and a County park, the southwest lateral drains a commercial area (i.e., Oakwood Business Center) along U.S. 41 Bypass, Venice Isles and Sandalwood MHP. The southwest region also has outfalls to the Intercoastal Waterway through the commercial area. The eastern branch serves the Venice Center DRI, the Venice Health Park, and the Venice Pines Shopping Center.

The Hatchett Creek Basin ultimately discharges into Roberts Bay. According to Chapter 62-302.600 of the Florida Administrative Code (FAC) and County Ordinance 72-37, Hatchett Creek is categorized as Class III surface waters. This designation is assigned to "waters used for recreation, propagation and maintenance of a healthy, well-balanced population of fish and wildlife".

SECTION 2. BACKGROUND

2.01 Historic Perspective

Historic Hatchett Creek extends from Roberts Bay to what now forms the western boundary of the Pelican Pointe Development. Subsequent drainage works extended and deepened this creek including the creation of several lateral canals to improve drainage for agriculture development and mosquito control.

2.02 Historic Flooding

Public input following the severe rainfall events that occurred between June 1992 and late 1997 identified problem areas in the basin. A public meeting was held on November 13, 1997 as part of an interim study performed by Gee & Jenson. Respondents to the meeting questionnaire expressed concerns regarding drainage problems associated with the lack of routine maintenance and the siltation of the creek bottom. Residents living in Chestnut Creek, Bay Indies MHP, Eastgate, Venice Isles, and Sandalwood MHP complained of significant street flooding.

Areas that have historically been susceptible to flooding typically correspond to soils defined as either depressional or frequently flooded by the Sarasota County Soils Survey. Most development that has occurred in the Hatchett Creek Basin has occurred outside of these historical low-lying areas.

2.03 Prior Studies

The Hatchett Creek basin has been the subject of two previous watershed studies. A list and brief description of each of the previous studies is provided below:

1. August 1991 – Hatchett Creek Watershed Study
   This study was privately initiated and prepared by Kimley-Horn and Associates, Inc. as an appeal to an earlier FEMA study performed by Gee & Jenson, Inc. and to address Development Order conditions relating to the Master Stormwater Management Plan for Pelican Pointe DRI (formerly known as the Hatchett Creek DRI). This study considered the entire basin in detail and utilized the Advanced Interconnected Pond Routing (AdICPR) software developed by Streamline Technologies. Sarasota County, the Southwest Florida Regional Planning Council and the Southwest Florida Water Management District have approved this study and currently use it as the basis for development review. Additionally, the Federal Emergency Management Agency (FEMA) adopted this study in September of 1992. The results of this study are reflected on the current FEMA maps. Applicable information from this study was incorporated into this update.

2. March 1998 – Curry/Hatchett Creek Basin Master Plan, Interim Report
   In 1996, Sarasota County authorized Gee & Jenson, Engineer- Architects-Planners, Inc. to prepare Curry/Hatchett Creek Basin Master Plan, a report detailing the existing conditions in the basin and identifying areas with level of service deficiencies. This

study utilized the Army Corps of Engineers Hec-1 and Unet computer models for storm event simulations. Gee & Jensen converted applicable modeling information from the Kimley-Horn study and converted it to the necessary format. Additional information was obtained from as-built construction plans. Applicable information from the Gee & Jensen study has been incorporated into this update, including Gee & Jensen's findings on existing water quality level of service.

SECTION 3. EXISTING CONDITIONS ASSESSMENT

3.01 Flood Protection Level of Service Objectives

The flood protection level of service (FPLOS) objectives applied to the Hatchett Creek Basin are based upon those adopted by the Sarasota County Comprehensive Plan. Table 3.01 presents the FPLOS standards for Sarasota County.

Table 3.01
Acceptable Flooding Depths
Flood Plain Level of Service Criteria

	Rainfall Event Return Period			
	5-year	**10-year**	**25-year**	**100-year**
Structure	None	None	None	None
Roadways:				
Evacuation Route	None	None	None	None
Arterial	None	None	None	6 inches
Collector	None	None	6 inches	9 inches
Neighborhood	None	6 inches	9 inches	12 inches

To quantify the existing FPLOS deficiencies in the Hatchett Creek Basin, a detailed hydrodynamic computer model was developed to predict flood elevations throughout the watershed. Versions 2.11 and 2.2 of the Advanced Interconnected Pond Routing (AdICPR) software were used to model the watershed. For a complete discussion of the modeling methodology, please refer to the *Phillippi Creek Basin Master Plan Update.* Previous studies of Hatchett Creek were reviewed and applicable information was incorporated into the updated model. The recently completed phased improvements to both Pelican Pointe and Venice Center developments, Albee Farm Road improvements, Venice Commons Shopping Center, various church facilities along Center Road and further refinement of the Chestnut Creek development were identified in detail and incorporated into the analysis as an existing condition. Additional detail was also added to the channel section through the Venice Avenue Commercial Subdivision as new facilities had developed adjacent to the channel banks. Copies of the computer input as well as the node-reach diagram are available in digital format upon request from the Stormwater Utility. The node-reach diagram is also attached as Exhibit 4.

The computed flood elevations were used to delineate the horizontal limits of the 100-year floodplain on Southwest Florida Water Management District (SWFWMD) 1-foot contour interval aerial maps. Structures and roadways that fell within the horizontal limits of the floodplain were inventoried as potential FPLOS deficiencies. Roadway FPLOS deficiencies were determined by comparing roadway elevations from SWFWMD aerials, construction plans, or field surveys, to the computed flood levels. Finished floor elevations of structures horizontally located in the 100-year floodplain were field surveyed to verify which constituted FPLOS deficiencies.

3.01.1 Flood Protection Level of Service

EXHIBIT 3 identifies the horizontal limits of the 100-year floodplain and the existing FPLOS deficiencies. Separate FPLOS deficiency tables, included below, have been prepared for unincorporated Sarasota County (Tables 3.01.1, 3.01.3,and 3.01.5) and the City of Venice (Tables 3.01.2, 3.01.4, and 3.01.6).

The results of the existing condition assessment indicate that three structure FPLOS deficiencies exist in the Hatchett Creek Basin. One of these structures lies within the unincorporated area of Sarasota County, in the Venice Isles subdivision, and two are vacant commercial structures within the City of Venice. Lists of the structure FPLOS deficiencies are shown in Tables 3.01.1 and 3.01.2.

Table 3.01.1
Structure Flood Protection Level of Service Deficiencies
Unincorporated Sarasota County

Structure Location	Structure Type	Finished Floor Elevation	Node No.	Flood Stage 10-Year	Flood Stage 25-Year	Flood Stage 100-Year
626 Cervina Drive S.	Mobile Home	12.92	11490	10.87	11.43	**13.02**
Shaded flood stages indicate structure flood depths exceeding LOS criteria						

Table 3.01.2
Structure Flood Protection Level of Service Deficiencies
City of Venice

Structure Location	Structure Type	Finished Floor Elevation	Node No.	Flood Stage 10-Year	Flood Stage 25-Year	Flood Stage 100-Year
115 U.S. Hwy 41 Bypass N.	Commercial (vacant)	7.84	11183	7.14	7.32	**7.91**
115 U.S. Hwy 41 Bypass N.	Commercial (vacant)	7.72	11183	7.14	7.32	**7.91**
Shaded flood stages indicate structure flood depths exceeding LOS criteria						

Several roadway facilities and local street segments are also susceptible to flooding in excess of the FPLOS criteria. Public street FPLOS deficiencies are shown in Tables 3.01.3 and 3.01.4. Portions of evacuation routes on Venice Avenue, Pinebrook Road, and Jacaranda Boulevard experience flooding in excess of LOS criteria in 10, 25, and 100-year storm events. Two streets in the Chestnut Creek subdivision and one street in the Venice East subdivision are also FPLOS deficiencies. In the City of Venice, streets in the Edgewood and Eastgate subdivisions have FPLOS deficiencies.

Tables 3.01.5 and 3.01.6 detail the private street FPLOS deficiencies. The majority of flooding on privates streets is contained within Sandalwood MHP (County) and

Bay Indies MHP (City of Venice). In addition, there area FPLOS deficiencies on a street in Venice Isles, and in the Venice Commons Shopping Center.

Table 3.01.3
Public Street Flood Protection Level of Service Deficiencies
Unincorporated Sarasota County

Public Street Location	Road Class	Edge of Pavement Elevation	Node No.	Flood Stage 10-Year	Flood Stage 25-Year	Flood Stage 100-Year
Groveland Avenue	Local	9.25	11230	9.37	9.72	**10.26**
Pinebrook Road Ext.	Evacuation	15.30	11280	**15.36**	**15.69**	**16.14**
Jacaranda Boulevard	Evacuation	13.80	11858	13.54	13.55	**13.95**
Pendleton Circle	Local	12.47	11916	12.07	12.65	**13.78**
Woodingham Trail	Local	12.50	11952	12.83	13.19	**13.58**
Shaded flood stages indicate street flood depths exceeding LOS criteria						

Table 3.01.4
Public Street Flood Protection Level of Service Deficiencies
City of Venice

Public Street Location	Road Class	Edge of Pavement Elevation	Node No.	Flood Stage 10-Year	Flood Stage 25-Year	Flood Stage 100-Year
Venice Avenue	Evacuation	7.65	11206	**7.96**	**8.26**	**8.64**
Cypress Avenue	Local	6.95	11206	**7.96**	**8.26**	**8.64**
Eastgate Avenue	Local	8.55	11220	8.76	9.06	**9.69**
Shaded flood stages indicate street flood depths exceeding LOS criteria						

Table 3.01.5
Private Street Flood Protection Level of Service Deficiencies
Unincorporated Sarasota County

Private Street Location	Road Class	Edge of Pavement Elevation	Node No.	Flood Stage 10-Year	Flood Stage 25-Year	Flood Stage 100-Year
Via Veneto	Local	12.10	11495	12.05	12.37	**13.23**
Boxwood Drive	Local	13.70	11520	**15.19**	**15.24**	**15.32**
Longwood Drive	Local	13.30	11520	**15.19**	**15.24**	**15.32**
Longwood Drive	Local	13.70	11520	**15.19**	**15.24**	**15.32**
N. Sandpiper	Local	13.40	11520	**15.19**	**15.24**	**15.32**
N. Spindrift	Local	13.50	11520	**15.19**	**15.24**	**15.32**
Spruce Drive	Local	13.50	11520	**15.19**	**15.24**	**15.32**
Walnut Circle	Local	13.70	11520	**15.19**	**15.24**	**15.32**
Shaded flood stages indicate street flood depths exceeding LOS criteria						

Table 3.01.6
Private Street Flood Protection Level of Service Deficiencies
City of Venice

Private Street Location	Road Class	Edge of Pavement Elevation	Node No.	Flood Stage 10-Year	Flood Stage 25-Year	Flood Stage 100-Year
Freeport Avenue	Local	12.60	11165	12.91	**13.40**	**13.78**
Guadeloupe Avenue	Local	12.60	11165	12.91	**13.40**	**13.78**
Haiti Avenue	Local	12.70	11165	12.91	13.40	**13.78**
Lucaya Avenue	Local	12.35	11165	**12.91**	**13.40**	**13.78**
Montego Avenue	Local	12.20	11165	**12.91**	**13.40**	**13.78**
Venice Commons	Local	15.30	11283	15.87	**16.17**	**16.56**
Shaded flood stages indicate street flood depths exceeding LOS criteria						

3.02 Water Quality Level of Service Objectives

The Charlotte Harbor National Estuary Program (CHNEP) will be establishing Pollutant Load Reduction Goals (PLRGs) for Roberts Bay. These PLRGs will presumably be for the entire Roberts Bay watershed. Annual Pollutant Loads were estimated for the Hatchett Creek by Gee & Jenson Engineers-Architects-Planners, Inc., as part of their interim Basin Master Plan Report. Gee & Jenson used the Watershed Management Model (WMM) developed by Camp Dresser & McKee (CDM) as part of the Sarasota County National Pollutant Discharge Elimination System (NPDES) program for stormwater discharges. The model uses a spreadsheet format to estimate annual non-point source loads from direct runoff based upon runoff volumes and event mean concentrations (EMCs). The EMC is defined as the total pollutant discharged during the storm divided by the total runoff volume.

3.02.1 Water Quality Level of Service

A summary of the model output for the conventional non-point source pollutants, nutrients, and metals for existing conditions is listed in Table 3.02.1. The gross pollutant load reflects the total estimated amount of pollutant load that is generated in the basin. Net annual pollutant load, as presented in Table 3.02.1, is defined as the amount of estimated pollutant discharged into the final receiving waterbody. Net load calculations take into account the mitigating effect of existing stormwater treatment facilities and wetlands.

The non-point source pollutant load calculations are based strictly on land use configuration and the estimates have not been calibrated with actual sampling data.

Table 3.02.1
Total Annual Pollutant Loads for Existing Conditions

Parameter	Gross Load (lbs./year)	Pollutant Removal (lbs./year)	Pollutant Removal (%)	Net Load (lbs./year)
Biochemical Oxygen Demand	145,043	21,062	15	123,981
Chemical Oxygen Demand	1,023,099	253,645	25	769,454
Total Suspended Solids	2,144,154	652,440	30	1,491,714
Total Dissolved Solids	1,689,158	0	0	1,689,158
Total Phosphorus	4,862	1,167	24	3,695
Total Dissolved Phosphorus	1,645	646	39	999
Total Kjeldahl Nitrogen	26,439	3,906	15	22,533
NO2 + NO3 Nitrogen	12,986	5,421	42	7,565
Total Lead	1,876	870	46	1,006
Total Copper	431	163	38	268
Total Zinc	2,758	768	28	1,990
Total Cadmium	20	5	25	15

In addition, any new development within the drainage basin is required to include stormwater treatment facilities to mitigate potential increases in pollutant loads as required by the Land Development Regulations. Any future capital improvement project to address FPLOS deficiencies will consider incorporating stormwater treatment components into its design.

SECTION 4. CONCLUSIONS AND RECOMMENDATIONS

4.01 Delineation of Existing Floodplain

As part of the Hatchett Creek BMP, the limits of the 100-year riverine floodplain have been identified and mapped, and are shown on Exhibit 3. Adoption of the Hatchett Creek BMP will assure that the floodplain area will be recognized and that the floodplain functions will be preserved when new development proposals are considered. In addition, the detailed stormwater model developed as part of the BMP provides a valuable tool to evaluate the effects of proposed land use changes.

It is recommended that the Hatchett Creek model update be utilized as a basis of review to evaluate proposed development and drainage modifications so that potential adverse increases in off-site flood stages are adequately mitigated. In addition, it is recommended that finished floor elevations be set a minimum of 2 feet above the 100-year flood elevations computed by the Hatchett Creek flood study update, if such elevations are higher than the base flood elevations contained on the current Flood Insurance Rate Maps.

4.02 Preliminary Investigation of Existing FPLOS Deficiencies

As indicated in Section 3, there are three structure FPLOS, six public street, and thirteen private street FPLOS deficiencies in the Hatchett Creek Basin involving evacuation routes, arterials, and local road segments.

Two structures, three public streets (Venice Avenue, Cypress Avenue and Eastgate Avenue) and five private streets are FPLOS deficiencies in the City of Venice. The Hatchett Creek BMP has been submitted to and discussed with the City of Venice Engineer. The City of Venice has its own stormwater utility and will review concerns in the city as appropriate.

In unincorporated Sarasota County, one structure, three public streets, and eight private streets have been identified as FPLOS deficiencies. The Hatchett Creek BMP recommends the following action to address FPLOS deficiencies:

Less than 2 inches of water may stand in the right turn lane from Jacaranda Boulevard to Center Road during the 100-year event. As Jacaranda Boulevard is an evacuation route, it is a FPLOS deficient road. However, a cost-effective solution may not be viable for this minimal amount of standing water.

Two FPLOS deficient streets in the Chestnut Creek subdivision, Pendleton Circle and Woodingham Trail, can be alleviated by maintenance to the channel between Jacaranda and the Chestnut Creek subdivision. Before 2001, the channel was not maintained. Staff has coordinated with Drainage Operations to ensure the annual maintenance of the channel.

The structure FPLOS deficiency is a mobile home in the Venice Isles MHP. The structure is susceptible to flooding during the 100-year event with one tenth of a foot of water standing in

the structure. A project would not be cost effective in this situation. The owner has been notified and a recommendation made that the structure should be elevated.

In addition to the three public street FPLOS deficiencies, there are eight private streets identified as FPLOS deficiencies in unincorporated Sarasota County. Seven private streets are located in the Sandlewood Mobile Home Park and one private street is located in the Venice Isles Mobile Home Park.

4.03 Future Development/Regional Stormwater Facilities

Although the Basin Master Plan has identified existing FPLOS deficiencies, it also affords the opportunity to plan for the future. The Sarasota County Land Development Regulations encourage the use of regional stormwater facilities. However, at this time Sarasota County has no formal process to develop or to provide incentives for regional stormwater facilities. In the meantime, such a proposal would need to be privately initiated.

4.04 Long Term Maintenance

Easement acquisition should be pursued in order to provide consistent maintenance and reduction of erosion.