

FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION

Division of Environmental Assessment and Restoration,
Bureau of Watershed Restoration

SOUTHWEST DISTRICT • TAMPA BAY BASIN

TMDL Report

**Dissolved Oxygen and Nutrient
TMDL for Double Branch (1513)**

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Websites

Florida Department of Environmental Protection, Bureau of Watershed Management

Total Maximum Daily Load (TMDL) Program

<http://www.dep.state.fl.us/water/tmdl/index.htm>

Identification of Impaired Surface Waters Rule

<https://www.flrules.org/gateway/chapterhome.asp?chapter=62-303>

STORET Program

<http://www.dep.state.fl.us/water/storet/index.htm>

2008 305(b) Report

http://www.dep.state.fl.us/water/tmdl/docs/2008_Integrated_Report.pdf

Criteria for Surface Water Quality Classifications

<http://www.dep.state.fl.us/water/wqssp/classes.htm>

Basin Status Reports

http://www.dep.state.fl.us/water/tmdl/stat_rep.htm

Water Quality Assessment Reports

http://www.dep.state.fl.us/water/tmdl/stat_rep.htm

U.S. Environmental Protection Agency

Region 4: Total Maximum Daily Loads in Florida

<http://www.epa.gov/region4/water/tmdl/florida/>

National STORET Program

<http://www.epa.gov/storet/>

Chapter 1: INTRODUCTION

1.1 Purpose of Report

This report presents the Total Maximum Daily Load (TMDL) for dissolved oxygen (DO) for Double Branch (WBID 1513) located in the Tampa Bay Basin – Coastal Old Tampa Bay Planning Unit (**Figure 1.1**). This estuarine stream was verified impaired for DO, and was included on the Verified List of impaired waters for the Tampa Bay Basin that was adopted by Secretarial Order in June 3, 2008. The TMDL establishes the allowable loadings to the Double Branch (WBID 1513) watershed that would restore the waterbody so that it meets its applicable water quality criteria for DO.

1.2 Identification of Waterbody

Double Branch (Creek) is located in Northwest Hillsborough County Florida, with a small portion of the watershed in eastern Pinellas County. The City of Oldsmar borders the watershed line in the east and the city of Tampa in the south. The Double Branch watershed drains approximately 25 square miles of land. The northern section of the watershed contains a mix of undeveloped and Urban Land use and includes: Glass Lake, Hixon Lake, Marlee Lake, Lake Rogers and Lake Raleigh. Double Branch (Creek) is approximately 9.4 miles in length and its mouth flows into Old Tampa Bay. The Creek has a west and an East branch which converges approximately 1.3 miles north of Old Memorial Highway. The east branch diverges north and has two forks; the west branch also diverges north. The distance from the beginning of the northern and southern systems to their confluence is approximately 6.5 miles and 3.2 miles respectively. The outfall of the confluence is through culverts under Hillsborough Avenue (**Figure 1.2**), into the estuary and thence to Tampa Bay.

Additional information about the river's hydrology and geology are available in the Basin Status Report for the Tampa Bay Basin (Florida Department of Environmental Protection 2006).

1.3 Background

This report was developed as part of the Department's watershed management approach for restoring and protecting state waters and addressing TMDL Program requirements. The watershed approach, which is implemented using a cyclical management process that rotates through the state's 52 river basins over a 5-year cycle, provides a framework for implementing the TMDL Program-related requirements of the 1972 federal Clean Water Act and the 1999 Florida Watershed Restoration Act (FWRA) (Chapter 99-223, Laws of Florida).

For assessment purposes, the Department has divided the Tampa Bay Basin into water assessment polygons with a unique **waterbody identification (WBID)** number for each watershed or stream reach. Double Branch is identified as WBID 1513 (**Figure 1.2**).

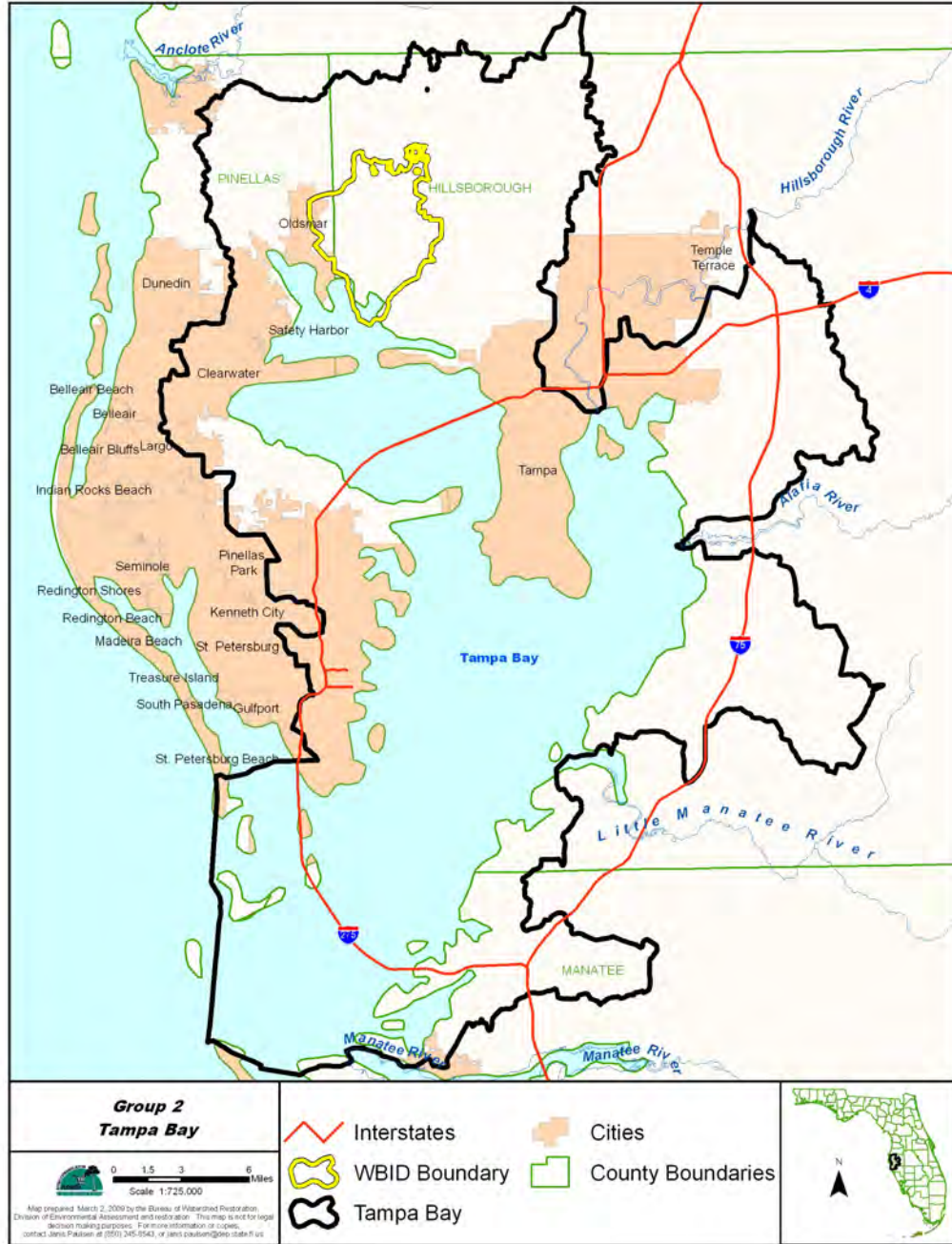


Figure 1.1. Location of Double Branch in Hillsborough County and Major Geopolitical Features in the Area

A TMDL represents the maximum amount of a given pollutant that a waterbody can assimilate and still meet water quality standards, including its applicable water quality criteria and its designated uses. TMDLs are developed for waterbodies that are verified as not meeting their water quality standards. They provide important water quality restoration goals that will guide restoration activities.

This TMDL Report will be followed by the development and implementation of a Basin Management Action Plan, or BMAP, designed to reduce the amount of Nutrients that caused the verified impairment of Double Branch (Creek) (WBID 1513). These activities will depend heavily on the active participation of the Southwest Florida Water Management District (SWFWMD), Hillsborough County's Department of Environmental Management, local governments, businesses, and other stakeholders. The Department will work with these organizations and individuals to undertake or continue reductions in the discharge of pollutants and achieve the established TMDLs for impaired waterbodies.

Chapter 2: DESCRIPTION OF WATER QUALITY PROBLEM

2.1 Statutory Requirements and Rulemaking History

Section 303(d) of the federal Clean Water Act requires states to submit to the U.S. Environmental Protection Agency (EPA) lists of surface waters that do not meet applicable water quality standards (impaired waters) and establish a TMDL for each pollutant causing impairment of listed waters on a schedule. The Department has developed such lists, commonly referred to as 303(d) lists, since 1992. The list of impaired waters in each basin, referred to as the Verified List, is also required by the FWRA (Subsection 403.067[4], Florida Statutes [F.S.]); the state's 303(d) list is amended annually to include basin updates.

Florida's 1998 303(d) list included 47 waterbodies in the Tampa Bay Basin. However, the FWRA (Section 403.067, F.S.) stated that all previous Florida 303(d) lists were for planning purposes only and directed the Department to develop, and adopt by rule, a new science-based methodology to identify impaired waters. After a long rulemaking process, the Environmental Regulation Commission adopted the new methodology as Rule 62-303, Florida Administrative Code (F.A.C.) (Identification of Impaired Surface Waters Rule, or IWR), in April 2001; the rule was modified in 2006 and 2007.

2.2 Information on Verified Impairment

The Department used the IWR to assess water quality impairments in the Double Branch (WBID 1513) watershed and verified the impairments during the second cycle of the TMDL program (**Table 2.1**). **Table 2.2** summarizes the DO data collected during the verification period (January 1, 2000, through June 30, 2007). The projected year for the [1998 303(d) listed] Dissolved Oxygen TMDL for Double Branch (WBID 1513) was 2008, but the Settlement Agreement between EPA and Earthjustice, which drives the TMDL development schedule for waters on the 1998 303(d) list, allows an additional nine months to complete the TMDLs. As such, this TMDL must be adopted and submitted to EPA by September 30, 2009.

The verified impairments were based on data collected by Pinellas County and the DEP's Southwest District, WBID location and STORET stations are shown in **Figure 5.1**. **Figure 2.1** displays the median monthly of DO data collected during the verified period (January 1, 2000 – June 30, 2007) for Double Branch (WBID 1513).

Table 2.1. Verified Impairments for Double Branch (WBID 1513)

WBID	Waterbody Segment	Waterbody Type	Waterbody Class	1998 303(d) Parameters of Concern	Parameter Causing Impairment	Priority for TMDL Development
1513	Double Branch	Stream	3M	Dissolved Oxygen**	Nutrients (TN)	Low

**Note – WBID 1513 (Double Branch) was included on the 1998 303(d) List for Dissolved Oxygen with a TMDL priority of Low and due date of 2008.

Table 2.2. Summary of Dissolved Oxygen Data for Double Branch (WBID 1513), (January 1, 2000–June 30, 2007)

WBID	Total Number of Samples	IWR-required number of exceedances for the Verified List	Number of observed exceedances	Number of seasons data were collected	Mean	Median	Min	Max
1513	161	22	82	4	4.0	3.74	0.1	11.5

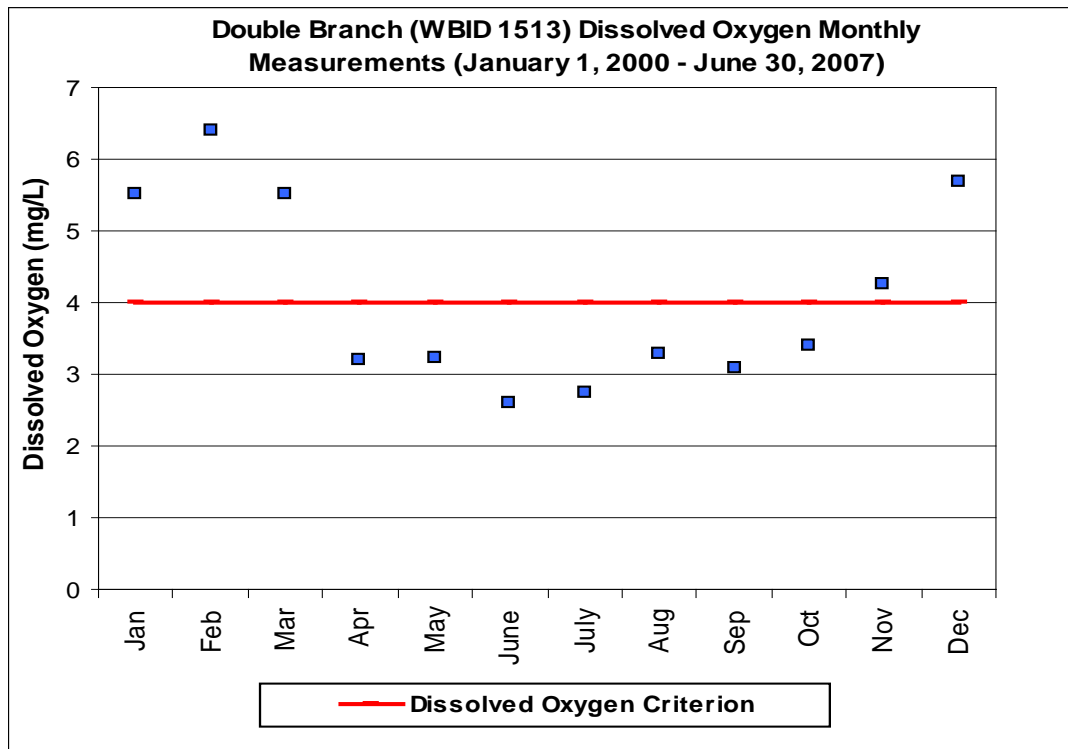


Figure 2.1. Dissolved Oxygen Measurements for Double Branch, WBID 1513 (January 2000 – June 2007)

Chapter 3. DESCRIPTION OF APPLICABLE WATER QUALITY STANDARDS AND TARGETS

3.1 Classification of the Waterbody and Criteria Applicable to the TMDL

Florida's surface waters are protected for five designated use classifications, as follows:

- Class I Potable water supplies**
- Class II Shellfish propagation or harvesting**
- Class III Recreation, propagation, and maintenance of a healthy, well balanced population of fish and wildlife**
- Class IV Agricultural water supplies**
- Class V Navigation, utility, and industrial use (there are no state water currently in this class)**

Double Branch (WBID 1513) is a Class III waterbody, with a designated use of recreation, propagation, and the maintenance of a healthy, well-balanced population of fish and wildlife. The criterion applicable to this TMDL is the Class III criterion for low DO and nutrients.

3.2 Applicable Water Quality Standards and Numeric Water Quality Target

3.2.1 Dissolved Oxygen Criteria

The Class III marine criteria for DO as established by Rule 62-302,530(30), F.A.C., states the following: DO shall not average less than 5.0 mg/L in a 24-hour period and shall not be less than 4 mg/L, and that normal daily and seasonal fluctuations above these levels shall be maintained.

Florida's nutrient criterion is narrative only, i.e., nutrient concentrations of a body of water shall not be altered so as to cause imbalance in natural populations of aquatic flora or fauna. Accordingly, a nutrient-related target was needed to represent levels at which an imbalance in flora or fauna is expected to occur. While the IWR provides a threshold for nutrient impairment for estuaries based on annual average chlorophyll a levels, these thresholds are not standards and need not be used as the nutrient-related water quality target for TMDLs. It should be recognized that the IWR thresholds were developed using statewide average conditions, the IWR (Section 62-303.450, F.A.C.) specifically allows the use of alternative site-specific thresholds that more accurately reflect conditions beyond which an imbalance in flora or fauna occurs in the waterbody.

3.2.2 Identification of Causative Pollutants

After verification of the low DO in Double Branch (WBID 1513), the Department identified the causative pollutants by investigating those parameters typically responsible for depressed DO. These include nutrients (nitrogen and phosphorus) and BOD. One method of identifying causative pollutants is to use statewide screening level concentrations set at the 70th percentile of all STORET data across the state from 1970 to 1987. This approach is useful if there are no significant regional differences in what is defined as a waterbody meeting its intended

designated uses. The Department’s statewide screening level for streams is 2.0 mg/L for BOD5, 1.6 mg/L for TN, and 0.22 mg/L for TP. But the Department has noted that there are significantly lower nutrient levels leading to impairment in South Florida than the statewide screening levels indicated. Other required considerations include the restrictions or nutrient targets of the receiving waters of the surface waters being analyzed. In the case of those waters in the old Tampa Bay Planning area, there are Chlorophyll-A Targets that must be met. For Tampa Bay these targets are as stated in **Table 3.1**.

Table 3.1 Tampa Bay Estuary Program Targets

Tampa Bay Segments	Tampa Bay Estuary Program Targets
Lower Tampa Bay	5.1 ug/L
Middle Tampa Bay	8.5 ug/L
Old Tampa Bay	9.3 ug/L
Hillsborough Bay	15 ug/L

The Chlorophyll-a target relevant to Double Branch (WBID 1513) is that for Old Tampa Bay (9.3 ug/L). The Tampa Bay Estuary Program’s Old Tampa Bay Target is used to set the Total Nitrogen target for Double Branch (WBID 1513). This estuary target must be that total nitrogen concentration consistent with achieving a 9.3 ug/L estuary target. To determine this value, the Chlorophyll (a) concentrations of the bay WBIDs for Verified Period samples were matched to Total Nitrogen in those Bay WBIDs. The Total Nitrogen levels for periods when the Chla were below 9.3 ug/L could thus be determined as the Target Total Nitrogen concentrations for Double Branch. **Table 3.2** shows the Chla concentrations and the corresponding Total Nitrogen Concentrations for Double Branch.

Table 3.2 Double Branch TN and Chlorophyll-A

YEAR	Double Branch	
	Chl-a	TN
2000	6.4	1.31
2001	5.8	1.18
2002	4.9	1.09
2003	6.5	1.04
2004	5.7	1.04
2005	5.2	1.1
2006	4.8	1.07

Figure 3.1 is a graph of the regression equation of the Chla-TN relationships for Double Branch. The R2 value (0.15) of the TN-Chla relationship for Double Branch (WBID 1513), although relatively low, is in the range of TN-CHLA relationships for other estuaries in the Tampa Bay area. The low R2 is not reflective of no relationship between the variables, but that there are other variables are also dictating the levels of Chl-a.

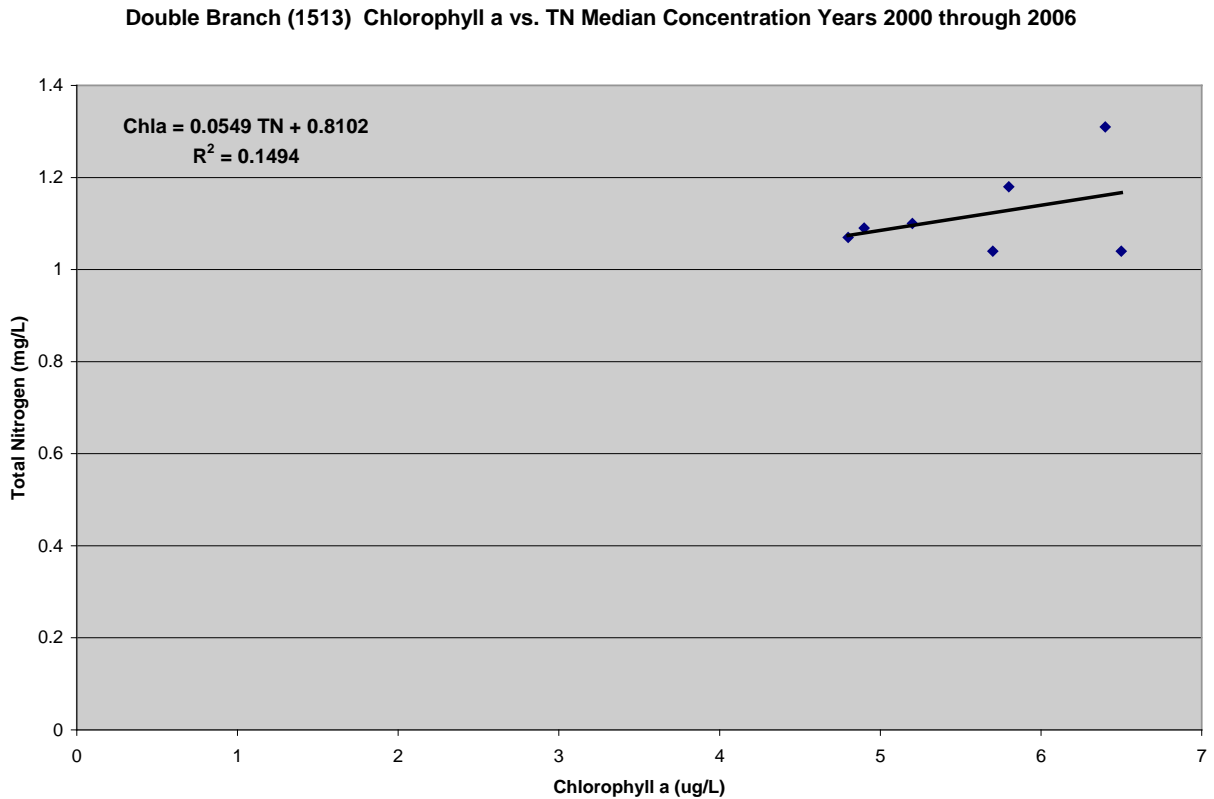


Figure 3.1 Chlorophyll a vs. TN, Double Branch

Solving the Double Branch TN-Chla regression equation for 9.3 ug/L (Old Tampa Bay Target) provides a TN equal to 1.32 mg/L. Although this assessment may demonstrate that a 1.32 mg/L concentration is protective of the Old Tampa Bay 9.3 ug/L Chla criteria, it does not demonstrate that it is protective of the DO Criteria of 4.0 mg/L.

To determine a nutrient level protective of a dissolved oxygen concentration of not below 4 mg/L, with a mean of at least 5.0 mg/L, a reference approach was pursued. The concentrations of TN, DO, and Chlorophyll a were assessed for sample stations in WBIDs found not to be impaired for DO or Nutrients and summarized in **Table 3.3**.

Table 3.3 Statistical Station Summaries of “Not Impaired” and “Impaired” Tampa Bay and Tampa Bay Tributary Sample Stations

Codes: TB = Tampa Bay (Group 1) TBT = Tampa Bay Tribs (Group 2) NI = WBID Impaired for DO nor Nutr(chl-a) IM=WBID Impaired for DO & Nutr(chl-a)		Sample Station Average Annual Median Concentration (Average = sum of yearly medians from table to left divided by # of years)				
		Total Nitrogen (mg/L)	Total Phosphorus (mg/L)	BOD - 5 Day (mg/L)	Chlorophyll-a (ug/L)	Dissolved Oxygen (mg/L)
Freshwater Streams (3F)	TB NI	0.97	0.202	1.63	2.53	7.53
	TBT NI	1.57	0.950	1.19	1.33	6.81
	TB IM	1.12	0.157	2.44	6.46	3.59
	TBT IM	1.53	0.512	1.85	15.91	4.58
Freshwater Lakes (3F)	TB NI	0.83	0.024	2.50	3.24	6.79
	TBT NI					
	TB IM	1.81	0.238		46.75	4.87
	TBT IM	2.59	0.344	6.33	136.85	10.57
Freshwater Class 1	TB NI					
	TBT Stream NI	0.90	0.308	1.99	4.96	6.81
	TBT Lake NI	0.93	0.263	2.31		7.10
	TB IM					
	TBT IM	1.06	0.248	2.59		5.51
Marine 3M	TB NI	0.62	0.181	1.50	7.58	6.11
	TBT NI	0.88	0.224	2.32		6.39
	TB IM	1.29	0.218	2.51	7.73	4.87
	TBT IM	0.97	0.243	1.32	8.41	4.80
Marine 2	TB NI	0.52	0.114	1.22	4.82	6.35
	TBT NI					
	TB either DO or Nutr. IM	0.61	0.107	1.58	6.80	6.53
	TBT IM					

Note: NI = Not Impaired for Dissolved Oxygen and not Impaired for Nutrients by FDEP IWR Assessment.

Table 3.3 shows that for “Not Impaired” WBIDs in marine estuary Tampa Bay WBIDs have an average median sample station TN concentration of 0.62 mg/L, the annual median Dissolved Oxygen concentration is 6.11 mg/L, and a mean Chlorophyll a concentration of 7.58 mg/L. In the nearby Tampa Bay Tributaries Group, the median sample station D.O. for non Impaired WBIDs is 0.88 mg/L, and although there were not enough Chlorophyll a samples to obtain a median corresponding concentration, the Dissolved Oxygen median for these WBIDs is 6.39 mg/L, also well above the 4.0 mg/L Florida criteria. Thus, the TN target selected is the average of these two sets of ‘Not Impaired’ WBIDs, or 0.75 mg/L. A target of 0.75 mg/L should be both protective of the Old Tampa Bay Chlorophyll-a limit, be protective of the dissolved oxygen criteria, and meet reasonable expectations of attainability when compared to standards of local WBIDs impaired neither for DO nor Nutrients. The present nutrient and BOD levels in Double Branch (WBID 1513) are shown in **Table 3.4**.

Table 3.4. Verified Period Summary of TN, TP, and B.O.D. Median Concentrations in Double Branch (WBID 1513)

IWR Verified Period Summary (2000 - 2007)						
WBID	Total Nitrogen		Total Phosphorus		5 Day Bod	
	Sample Count	Concent. mg/L	Sample Count	Concent. Mg/L	Sample Count	Concent. mg/L
Double Branch (WBID 1513)	196	1.08	205	0.1	203	1.2

Chapter 4: ASSESSMENT OF SOURCES

4.1 Types of Sources

An important part of the TMDL analysis is the identification of pollutant source categories, source subcategories, or individual sources of low DO in the watershed and the amount of pollutant loading contributed by each of these sources. Sources are broadly classified as either “point sources” or “nonpoint sources.” Historically, the term “point sources” has meant discharges to surface waters that typically have a continuous flow via a discernable, confined, and discrete conveyance, such as a pipe. Domestic and industrial wastewater treatment facilities (WWTFs) are examples of traditional point sources. In contrast, the term “nonpoint sources” was used to describe intermittent, rainfall-driven, diffuse sources of pollution associated with everyday human activities, including runoff from urban land uses, agriculture, silviculture, and mining; discharges from failing septic systems; and atmospheric deposition.

However, the 1987 amendments to the Clean Water Act redefined certain nonpoint sources of pollution as point sources subject to regulation under the EPA’s National Pollutant Discharge Elimination System (NPDES) Program. These nonpoint sources included certain urban stormwater discharges, including those from local government master drainage systems, construction sites over five acres, and a wide variety of industries (see **Appendix B** for background information on the federal and state stormwater programs).

To be consistent with Clean Water Act definitions, the term “point source” is used to describe traditional point sources (such as domestic and industrial wastewater discharges) and stormwater systems requiring an NPDES stormwater permit when allocating pollutant load reductions required by a TMDL. However, the methodologies used to estimate nonpoint source loads do not distinguish between NPDES stormwater discharges and non-NPDES stormwater discharges, and as such, this source assessment section does not make any distinction between the two types of stormwater.

4.2 Potential Sources of BOD and Low DO in the Double Branch Watershed

4.2.1 Point Sources

Estimating Point Source Loads

There are two permitted wastewater facilities located in the Double Branch (WBID 1513) watershed. One of these facilities is the Hillsborough County Northwest Regional RMF, a domestic wastewater treatment facility, and the other is CEMEX Construction Materials Florida located on the boundary with WBID 1546, and is a Cement Batch Processing Plant (**Table 4.1**). Both of these facilities are NPDES permitted facilities. The facility locations are shown in **Figure 4.1**. TN load Permit limits Table for Hillsborough County Northwest Regional RMF are shown in **Table 4.2**. The facility is permitted to provide up to 5 MGD 12MADF of reclaimed water to the Master Reuse System. The average rate for reuse has been about 50%. The 10.5 MGD permitted reuse for the Master Reuse System is approximately 50% of the permitted capacity. The NWRWRF is permitted to direct up to 0.6 MGD 12MADF of reclaimed water to the RMF, R002, as an industrial reuse system. The NWRWRF, also, has a 5 MGD AADF permitted surface discharge point to Channel A (D001), a Class III surface water body that flows to Rocky Creek and then to Tampa Bay.

Table 4.1. Permitted Waste Facilities in Double Branch, WBID 1513

Permitted Waste Facilities
Hillsborough County Northwest Regional RMF. FL0041670 TYPE:Domestic Waste Status:Active
NPDES:Y Design Capacity: 5 MGD
CEMEX Construction Materials Florida LLC-Oldsmar CBP Type:CBP (Cement Batch Processing). NPDES:Y Status:Active

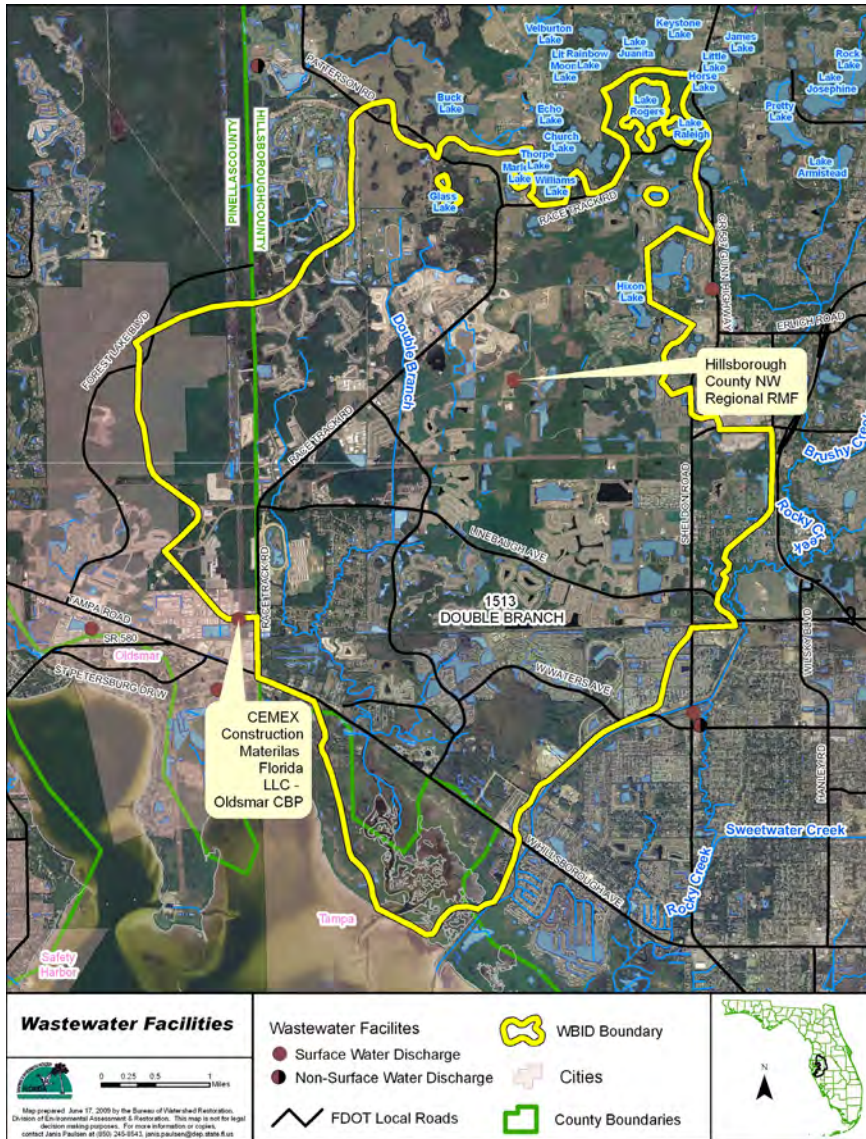


Figure 4.1 Double Branch (WBID 1513) Wastewater Facilities

Table 4.2. TN and Flow Permit Limits for Hillsborough County WWTP.

Facility	NPDES Permit	Discharge Point	Permitted Flow (MGD)	Actual Average Flow (MGD)	TN Effluent Permit Limit, mg/L (Annual Av.)	Maximum Annual TN Load (LBs/Year)
Hillsborough County Northwest Regional RMF	FL0041670	28481 SURFACE WATER DISCHARGE TO CHANNEL 'A' TO ROCKY CREEK TO OLD TAMPA BAY (D001)	5	5	3mg/L	45,662

Municipal Separate Storm Sewer System Permittees

Within Double Branch, there are two Phase I municipal separate storm sewer system (MS4) permits; FLS000005 (Pinellas County and co-permittees) and FLS000006 (Hillsborough County and Co Permittees). The responsible co-permittees in FLS000005 are Pinellas County and the City of Oldsmar.

4.2.2 Land Uses and Nonpoint Sources

In the Double Branch watershed, which covers 16,827 acres, a number of land uses affect (Figure 4.2) water quality through nonpoint source runoff. The most significant nonpoint sources include runoff and erosion from developed areas, small-scale construction, residential and commercial fertilizer use, pets, residential septic tank failure, or poorly designed septic tanks. The watershed has a limited amount of agriculture, with only 8.6% agriculture and 2.6% rangeland.

Land Uses

Land use categories in the Double Branch watershed were aggregated using the simplified Level 1 codes (Table 4.3). By far the largest Level 1 land use is urban and built-up (39.4 percent). When looking at Level 2, which is a more detailed categorization of land use (Table 4.4), urban and built-up land uses comprise (from highest to lowest) high-density residential (15.1 percent), low-density residential (5.8 percent), and medium density residential (5.7%). After urban and built-up, the second largest land use category is wetlands.

Table 4.3. Level 1 Land Uses in Double Branch, WBID 1513

Landuse Code and Description (WBID 1513)	Acres	% Total
1000: Urban and Built up	6,632.7	39.4%
6000: Wetland	4,514.3	26.8%
4000: Upland Forests	1,709.1	10.2%
2000: Agriculture	1,443.0	8.6%
5000: Water	1,376.3	8.2%
8000: Transportation, Communication, & Utilities	660.9	3.9%
3000: Rangeland	445.7	2.6%
7000: Barren Land	45.4	0.3%
Total	16,827.4	100.0%

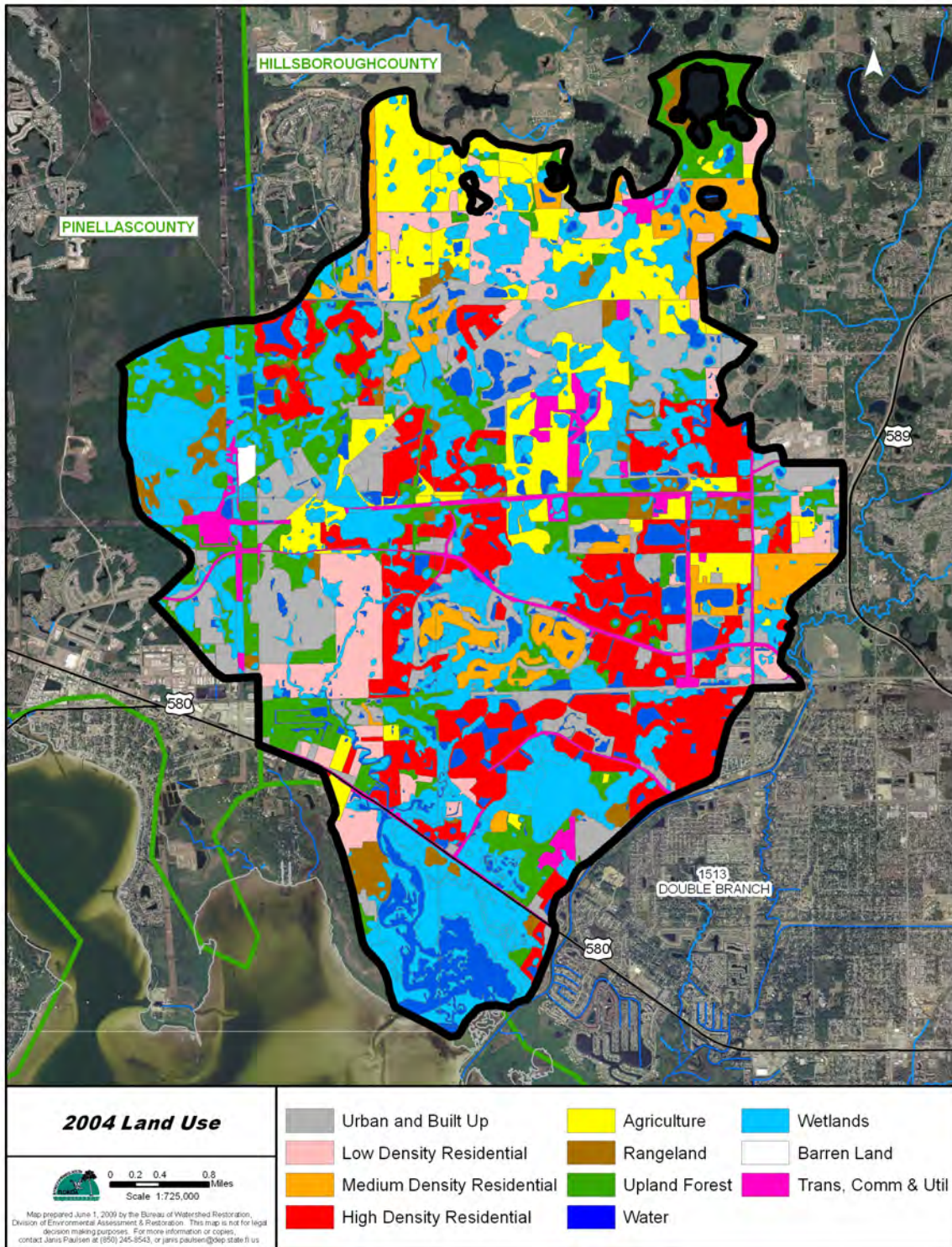


Figure 4.2 Double Branch (WBID 1513) Land Use.

Table 4.4 Level 2 Land Use Categories in the Double Branch, WBID 1513

Landuse Description (WBID 1513)	Acres	% Total
1300: Residential, High Density	2,547.3	15.1%
6100: Wetland hardwood forests	1,362.5	8.1%
6300: Wetland Forest Mixed	1,195.4	7.1%
6400: Vegetated Nonforested Wetlands	1,001.4	6.0%
4100: Upland Coniferous	973.2	5.8%
1100: Residential, Low Density	972.4	5.8%
1200: Residential, Medium Density	954.1	5.7%
6200: Wetland Coniferous Forests	930.0	5.5%
5300: Reservoirs	929.4	5.5%
1800: Recreation	761.2	4.5%
4300: Upland Mixed Forest	731.9	4.3%
2600: Other Open Lands	673.3	4.0%
1900: Openland	640.7	3.8%
2100: Cropland and Pastureland	505.1	3.0%
8300: Utilities	389.5	2.3%
3200: Shrub and Brushland	383.0	2.3%
5400: Bays and Estuaries	374.7	2.2%
1400: Commercial	323.7	1.9%
1500: Industrial	234.2	1.4%
2500: Specialty Farms	230.7	1.4%
8100: Transportation	228.2	1.4%
1700: Institutional	199.2	1.2%
5200: Lakes	72.1	0.4%
3300: Mixed Rangeland	62.7	0.4%
7400: Disturbed land	45.4	0.3%
8200: Communication	43.2	0.3%
6600: Salt Flats	20.9	0.1%
2400: Nurseries and Vineyards	20.6	0.1%
2200: Treecrops	13.2	0.1%
6500: Non Vegetated Wetlands	4.1	0.0%
4400: Tree Plantations	4.0	0.0%
Total	16,827.4	100.0%

The runoff from the Double Branch watershed is based on impervious area (Harper, 2003; Duncan, 1995), as shown in **Table 4.5**. The nutrient contributions are determined by combining the runoff information for each land use with the corresponding event mean concentration (EMC) (**Table 4.6**). These tables show that the top three land use potential contributors of TN are commercial, medium-density residential, and industrial, in order of decreasing contribution.

Table 4.5. Double branch Land Use Categories and Corresponding Runoff, 2000-07

Land Use	Area (acres)	Percent Impervious	Impervious Runoff Coeff.	Pervious Runoff Coeff.	Avg Precip. "/yr	Runoff (Acre-feet)	Runoff Million Gallons
A. Forest/Rural Open	3556.72	27.0%	0.95	0.159	50.12	5,529.5	1,801.8
B. Urban Open	706.29	0.4%	0.95	0.041	50.12	133.7	43.6
C. Agriculture/Pasture	1442.99	1.1%	0.95	0.317	50.12	1,953.3	636.5
D. Low Density/Residential	972.37	5.3%	0.95	0.150	50.12	782.8	255.1
E. Medium Density/Residential	954.06	24.8%	0.95	0.088	50.12	1,202.3	391.8
F. High Density/Residential	2547.34	7.3%	0.95	0.120	50.12	1,924.5	627.1
G. Commercial	522.91	10.5%	0.95	0.120	50.12	453.3	147.7
H. Industrial	234.19	7.7%	0.95	0.120	50.12	179.8	58.6
I. Highways	0.00	2.6%	0.95	0.542	50.12	0.0	0.0
J. Wetland	4514.28	9.4%	0.95	0.230	50.12	5,618.1	1,830.7
K. Water	1376.27	3.8%	0.95	0.000	50.12	205.0	66.8
Other ²	0.00	0.0%	0.95	0.000	50.12	0.0	0.0
Total	16827.40					17,982.39	5,859.6

Note: Based on effective rainfall of 55.95 inches per year. All impervious R.O. coefficients are 0.95.

Table 4.6. Double Branch Land Use Categories and Corresponding EMC Contributions Based on 2000-07 Rainfall

Land Use	TN Concentration (mg/L)	TP Concentration (mg/L)	TN load (lbs)	TP load (lbs)	Expressed as % of Total TN Watershed Load	Expressed as % of Total TP Watershed Load
Forest/Rural Open	1.09	0.046	16,390.2	691.7	22.6	7.8
Urban Open	1.12	0.18	407.3	65.5	0.6	0.7
Agricultural	2.32	0.344	12,323.5	1,827.3	17.0	20.5
Low density residential	1.64	0.191	3,491.3	406.6	4.8	4.6
Medium density residential	2.18	0.335	7,127.3	1,095.3	9.8	12.3
High density residential	2.42	0.49	12,664.6	2,564.3	17.5	28.8
Highways	2.42	0.49	2,982.8	604.0	4.1	6.8
Water	2.42	0.49	1,183.0	239.5	1.6	2.7
Rangeland	2.23	0.27	0.0	0.0	0.0	0.0
J. Wetland	1.01	0.09	15,430.5	1,375.0	21.3	15.4
K. Water	1.01	0.09	563.1	50.2	0.8	0.6
Total	0.00	0.00	72,563.7	8,919.3	100.0	100.0

Chapter 5: DETERMINATION OF ASSIMILATIVE CAPACITY

5.1 Determination of Loading Capacity

The goal of this TMDL analysis is to reduce the anthropogenic TN loads to conditions comparable to those found in surrounding, unimpaired watersheds. The methodology used is a percent reduction approach between the existing condition concentration and the region-based reference concentration.

5.2 Data Used in the Determination of the TMDL

Several stations located in the Double Branch (WBID 1513) have DO and TN observations. Data providers include the Department, Pinellas and Hillsborough Counties, and SWFWMD, which maintains a routine sampling site. **Tables 5.1a** and **5.1b** summarize the available data for the sampling stations from which most of the water quality data was derived. **Figure 5.1** shows the locations of the sample sites.

Table 5.1a. Major sites for Data Collection in WBID 1513 (TN, DO, and Chl-a) and Station List for the Double Branch (WBID 1513)

Station ID	Station Name	Total Nitrogen Summary			D.O.			Chlorophyll a		
		Count	Median	75 Percentile	Count	Median	75 Percentile	Count	Median	75 Percentile
21FLHILL101	Double Branch Creek at SR 580 bridge	78	1.0755	1.23	81	3.43	4.64	20	3.15	5.225
21FLHILL156	Double Branch Creek at Twin Branch Acres Rd.	19	1.13	1.39	21	4.27	5.66	20	3.45	7.625
21FLHILL157	Double Branch Creek at Stable Gate Lane	19	1.059	1.18	21	3.75	5.42	20	2.6	3.4
21FLHILL158	Double Branch Creek at Countryway Blvd.	19	1.22	1.34	21	4.8	5.78	20	3.45	10.55
21FLTPA 280131008237838	TP 423 - Double Branch	7	1.104	1.28	7	3.53	6.06			
21FLTPA 280147008238030	TP 424 - Double Branch	7	1.125	1.46	7	3.57	4.74			
21FLGW 7651	SWB-SL-1052 HIXON LAKE	1	1.605	1.61						

Note: Total number of samples includes data for all parameters assessed in verified period.

Table 5.1b Major sites for Data Collection in WBID 1513 (Color, Sp Conductance, and TP) for the Double Branch (WBID 1513)

Station ID	Color			Spec. Conductance			Total Phosphorus			Lat	Long	TN/TP Ratio
	Count	Median	75 Percentile	Count	Median	75 Percentile	Count	Median	75 Percentile			
21FLHILL101	86	58.45	112.975	123	15280	26800	90	0.11	0.148	28.02	-82.63	9.777273
21FLHILL156	21	111.3	139.4	27	736	2167	30	0.103	0.12925	28.04	-82.64	10.97087
21FLHILL157	21	73.6	118.8	21	453	690	30	0.0755	0.10375	28.04	-82.64	14.02649
21FLHILL158	21	72.3	109.5	21	438	535	30	0.0975	0.128	28.03	-82.62	12.51282
21FLTPA 280131008237838				7	18570	30271.5	7	0.16	0.195	28.03	-82.63	6.9
21FLTPA 280147008238030				7	7290	26659	7	0.14	0.21	28.03	-82.63	8.035714
21FLGW 7651	1	200	200	1	280	280				28.08	-82.59	

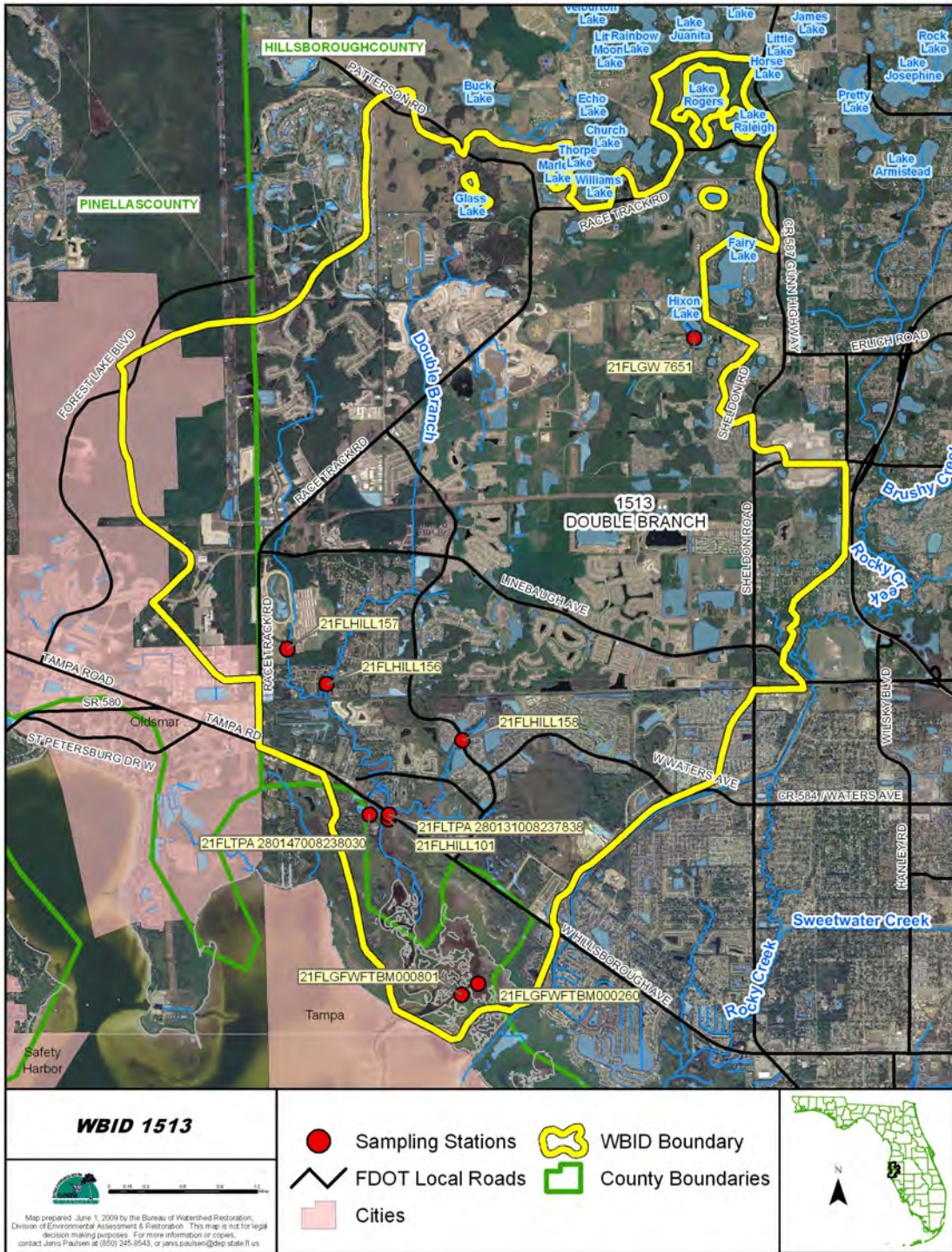


Figure 5.1. Double Branch Watershed (WBID 1513) major Sample Stations

The approach to calculating DO and nutrient TMDLs depends on the number of water quality samples and the availability of other required datasets. The existing loads here are calculated using the nonpoint source spreadsheet and the TMDL is expressed as a percent reduction to meet a pollutant concentration target based on natural or reference conditions (EPA, 2000). The assumption is that BOD and nutrients (primarily TN and TP) are the major controllable factors for DO. To return DO concentrations to a “naturally” expected condition, unimpaired by pollutants, nutrient loadings also need to be returned to near natural loading conditions.

DO can also be affected or lowered by in-stream modifications such as dredging and channelization. These processes slow down water velocity, reduce reaeration, and increase the settling of solids, thus increasing sediment oxygen demand (SOD) and lowering DO concentrations. Further analyses and monitoring must be completed to develop an appropriate, site-specific DO criterion.

The approach used here was to obtain a percent reduction by assessing the data within the basin, resulting in the most conservative estimated reduction that will restore Double Branch (WBID 1513). The most conservative and reasonable target has been determined to be the annual median TN concentration from sample stations in WBIDS that have been assessed by FDEP to be not impaired for Nutrients and Not Impaired for DO. This concentration has been determined to be 0.75 mg/L.

5.3 TMDL Development Process

The percentage reduction was calculated using the following equation, applied to the highest annual median concentration observed in a major sample station during the Verified Period:

$$\frac{[(\text{Max. Median TN Concentration}) - (\text{Ref. water quality target})]}{(\text{Max. Median TN Concentration})} \times 100$$

Max Median TN Concentration = Maximum annual median TN Sample station concentration observed throughout VP

Table 5.2 shows the results of the equation applied to Double Branch.

Chapter 6: DETERMINATION OF THE TMDL

6.1 Expression and Allocation of the TMDL

The objective of a TMDL is to provide a basis for allocating acceptable loads among all of the known pollutant sources in a watershed so that appropriate control measures can be implemented and water quality standards achieved. A TMDL is expressed as the sum of all point source loads (wasteload allocations, or WLAs), nonpoint source loads (load allocations, or LAs), and an appropriate margin of safety (MOS), which takes into account any uncertainty concerning the relationship between effluent limitations and water quality:

$$\text{TMDL} = \sum \text{WLAs} + \sum \text{LAs} + \text{MOS}$$

As discussed earlier, the WLA is broken out into separate subcategories for wastewater discharges and stormwater discharges regulated under the NPDES Program:

$$\text{TMDL} \cong \sum \text{WLAs}_{\text{wastewater}} + \sum \text{WLAs}_{\text{NPDES Stormwater}} + \sum \text{LAs} + \text{MOS}$$

It should be noted that the various components of the revised TMDL equation may not sum up to the value of the TMDL because (a) the WLA for NPDES stormwater is typically based on the percent reduction needed for nonpoint sources and is also accounted for within the LA, and (b) TMDL components can be expressed in different terms (for example, the WLA for stormwater is typically expressed as a percent reduction, and the WLA for wastewater is typically expressed as mass per day).

WLAs for stormwater discharges are typically expressed as “percent reduction” because it is very difficult to quantify the loads from MS4s (given the numerous discharge points) and to distinguish loads from MS4s from other nonpoint sources (given the nature of stormwater transport). The permitting of stormwater discharges also differs from the permitting of most wastewater point sources. Because stormwater discharges cannot be centrally collected, monitored, and treated, they are not subject to the same types of effluent limitations as wastewater facilities, and instead are required to meet a performance standard of providing treatment to the “maximum extent practical” through the implementation of best management practices (BMPs).

This approach is consistent with federal regulations (40 CFR § 130.2[i]), which state that TMDLs can be expressed in terms of mass per time (e.g., pounds per day), toxicity, or **other appropriate measure**. The TMDL for the [Double Branch?] (WBID [wbid number(s)]) is expressed in terms of a percent reduction in TN to protect the DO concentration (**Table 6.1**).

Table 6.1. TMDL Components and Current Loadings for the Double Branch, WBID 1513

WBID	Parameter	TMDL (mg/L)	WLA		LA (% reduction)	MOS
			Wastewater (mg/L)	NPDES Stormwater (% reduction)		
Double Branch (WBID 1513)	TN	0.75	N/A	42.75%	42.75%	Implicit

N/A – Not applicable.

6.2 Wasteload Allocation

6.2.1 NPDES Wastewater Discharges

There are two permitted wastewater facilities located in the Double Branch (WBID 1513) watershed. One of these facilities is the Hillsborough County Northwest Regional RMF, a domestic wastewater treatment facility, and the other is CEMEX Construction Materials Florida located on the boundary with WBID 1546, and is a Cement Batch Processing Plant (**Table 4.1**). Both of these facilities are NPDES permitted facilities. Neither Plant discharges to Double Branch, whereas Hillborough Northwest Regional RMF utilizes a high percentage for reuse, but is permitted to discharge the effluent to Tampa Bay via Channel A and Rocky Creek which is east of the WBID. Thus, no allocation for discharge into Double Branch is necessary for wastewater discharges.

6.2.2 NPDES Stormwater Discharges

The Double Branch WLAs for stormwater discharges with an two MS4 permits (1)Pinellas County and 2) co-permittees and Hillsborough County and co-permittees) is a 53% percent reduction in TN load. It should be noted that any MS4 permittee is only responsible for reducing the anthropogenic loads associated with stormwater outfalls that it owns or otherwise has responsible control over, and it is not responsible for reducing other nonpoint source loads in its jurisdiction. Within Double Branch, there are two Phase I municipal separate storm sewer system (MS4) permits; FLS000005 (Pinellas County and co-permittees) and FLS000006 (Hillsborough County and Co Permittees).. The responsible co-permittees in FLS000005 are Pinellas County and the City of Oldsmar. The responsible co-permittee in FLS000006 is Hillsborough County.

6.3 Load Allocation

The LA is the nonpoint source component of the load, which, combined with WLA stormwater discharges, is responsible for 100 percent of the current load as well as the percentage load reduction. The TMDL is a 42.75 percent reduction of TN, all of which is allocated to the categories of LA and WLA stormwater.

6.4 Margin of Safety

Consistent with the recommendations of the Allocation Technical Advisory Committee (Department, 2001), an implicit MOS was used in the development of this TMDL. An implicit MOS was provided by the conservative decisions associated with a number of modeling assumptions, the development of site-specific alternative water quality targets, and the development of assimilative capacity. An implicit MOS was used by targeting a loading based on reference waterbodies.

Chapter 7: TMDL IMPLEMENTATION

TMDL Implementation

Following the adoption of this TMDL by rule, the Department will determine the best course of action regarding its implementation. Depending upon the pollutant(s) causing the waterbody impairment and the significance of the waterbody, the Department will select the best course of action leading to the development of a plan to restore the waterbody. **Often** this will be accomplished cooperatively with stakeholders by creating a Basin Management Action Plan, referred to as the BMAP. Basin Management Action Plans are the primary mechanism through which TMDLs are implemented in Florida [see Subsection 403.067(7) F.S.]. A single BMAP may provide the conceptual plan for the restoration of one or many impaired waterbodies.

If the Department determines a BMAP is needed to support the implementation of this TMDL, a BMAP will be developed through a transparent stakeholder-driven process intended to result in a plan that is cost-effective, technically feasible, and meets the restoration needs of the applicable waterbodies. Once adopted by order of the Department Secretary, BMAPs are enforceable through wastewater and municipal stormwater permits for point sources and through BMP implementation for nonpoint sources. Among other components, BMAPs typically include:

- Water quality goals (based directly on the TMDL);
- Refined source identification;
- Load reduction requirements for stakeholders (quantitative detailed allocations, if technically feasible);
- A description of the load reduction activities to be undertaken, including structural projects, nonstructural BMPs, and public education and outreach;
- A description of further research, data collection, or source identification needed in order to achieve the TMDL;
- Timetables for implementation;
- Implementation funding mechanisms;
- An evaluation of future increases in pollutant loading due to population growth;
- Implementation milestones, project tracking, water quality monitoring, and adaptive management procedures; and
- Stakeholder statements of commitment (typically a local government resolution).

BMAPs are updated through annual meetings and may be officially revised every five years. Completed BMAPs in the state have improved communication and cooperation among local stakeholders and state agencies, improved internal communication within local governments, applied high-quality science and local information in managing water resources, clarified obligations of wastewater point source, MS4 and non-MS4 stakeholders in TMDL implementation, enhanced transparency in DEP decision-making, and built strong relationships between DEP and local stakeholders that have benefited other program areas.

However, in some basins, and for some parameters, particularly those with fecal coliform impairments, the development of a BMAP using the process described above will not be the most efficient way to restore a waterbody, such that it meets its' designated uses. Why? Because fecal coliform impairments result from the cumulative effects of a multitude of potential sources, both natural and anthropogenic. Addressing these problems requires good old fashioned detective work that is best done by those in the area. There are a multitude of assessment tools that are available to assist local governments and interested stakeholders in this detective work. The tools range from the simple – such as Walk the WBIDs and GIS mapping - to the complex such as Bacteria Source Tracking. Department staff will provide technical assistance, guidance, and oversight of local efforts to identify and minimize fecal coliform sources of pollution. Based on work in the Lower St Johns River tributaries and the Hillsborough River basin, the Department and local stakeholders have developed a logical process and tools to serve as a foundation for this detective work. In the near future, the Department will be releasing these tools to assist local stakeholders with the development of local implementation plans to address fecal coliform impairments. In such cases, the Department will **rely on these local initiatives** as a more cost-effective and simplified approach to identify the actions needed to put in place a roadmap for restoration activities, while still meeting the requirements of Chapter 403.067(7), F.S.

References

Duncan, H. 1995. *Urban stormwater pollutant concentrations and loads, Chapter 3*. Australian Runoff Quality Institution of Engineers, Australia's National Committee on Water Engineering.

Florida Administrative Code. *Rule 62-302, Surface water quality standards*.

———. *Rule 62-303, Identification of impaired surface waters*.

Florida Department of Environmental Protection. February 1, 2001. *A report to the Governor and the Legislature on the allocation of total maximum daily loads in Florida*. Tallahassee, Florida: Bureau of Watershed Management, Division of Water Resource Management.

Harper, H. 2003. *Evaluation of alternative stormwater regulations for southwest Florida: Draft final report* (Table 26: Summary of literature-based runoff concentrations for selected land use categories in southwest Florida). Water Enhancement & Restoration Coalition, Inc.

U.S. Environmental Protection Agency. 2000. *Ambient water quality criteria recommendations: Information supporting the development of state and tribal nutrient criteria for rivers and streams in Nutrient Ecoregion III*. EPA 822-B-00-016. Washington, D.C.

Appendices

Appendix A: Sample Stations and Median Concentration Data

Table A.1. Freshwater Sample Stations in the Southwest Coast Planning Unit Used in the TN-DO Correlation

WBID	Station	Latitude	Longitude	DO Median	TN Median	Observations
3278G	21FLSFWMBC12	26.00883	-81.45811	5.44	0.240	59
3278G	21FLSFWMBC18	25.91867	-81.39096	3	0.610	60
3278G	21FLSFWMBC19	25.92696	-81.41765	3.13	0.810	59
3278G	21FLSFWMBC21	25.96047	-81.50022	4.24	0.800	59
3278G	21FLSFWMCHKMATE	26.14361	-81.38929	1.71	0.830	15
3278H	21FLFTM 28030070FTM	26.29331	-81.52947	6.8	0.695	3
3278H	21FLSFWMFAKA858	26.29288	-81.52964	4.96	0.750	56
3278I	21FLSFWMBC10	26.10314	-81.05234	6.82	0.370	57
3278I	21FLSFWMBC20	25.96104	-81.51664	4.11	0.650	59
3278I	21FLSFWMBC7	25.99276	-81.52181	7.525	0.435	58
3278I	21FLSFWMBC8	25.99330	-81.49038	7.18	0.365	60
3278I	21FLSFWMBC9	26.15317	-81.55526	5.1	0.500	57
3278I	21FLSFWMFAKA	25.96051	-81.50951	6.755	0.380	58
3278V	21FLSFWMBC22	26.05711	-81.68396	6.18	0.640	57

Appendix B: Background Information on Federal and State Stormwater Programs

In 1982, Florida became the first state in the country to implement statewide regulations to address the issue of nonpoint source pollution by requiring new development and redevelopment to treat stormwater before it is discharged. The Stormwater Rule, as authorized in Chapter 403, F.S., was established as a technology-based program that relies on the implementation of BMPs that are designed to achieve a specific level of treatment (i.e., performance standards) as set forth in Rule 62-40, F.A.C.

The rule requires the state's water management districts to establish stormwater pollutant load reduction goals (PLRGs) and adopt them as part of a Surface Water Improvement and Management (SWIM) plan, other watershed plan, or rule. Stormwater PLRGs are a major component of the load allocation part of a TMDL. To date, stormwater PLRGs have been established for Tampa Bay, Lake Thonotosassa, the Winter Haven Chain of Lakes, the Everglades, Lake Okeechobee, and Lake Apopka. No PLRG had been developed for Newnans Lake at the time this analysis was conducted.

In 1987, the U.S. Congress established Section 402(p) as part of the federal Clean Water Act Reauthorization. This section of the law amended the scope of the federal NPDES stormwater permitting program to designate certain stormwater discharges as "point sources" of pollution. These stormwater discharges include certain discharges that are associated with industrial activities designated by specific standard industrial classification (SIC) codes, construction sites disturbing 5 or more acres of land, and master drainage systems of local governments with a population above 100,000, which are better known as MS4s. However, because the master drainage systems of most local governments in Florida are interconnected, the EPA has implemented Phase 1 of the MS4 permitting program on a countywide basis, which brings in all cities (incorporated areas), Chapter 298 urban water control districts, and Florida Department of Transportation (FDOT) throughout the 15 counties meeting the population criteria.

An important difference between the federal and state stormwater permitting programs is that the federal program covers both new and existing discharges, while the state program focuses on new discharges. Additionally, Phase 2 of the NPDES Program will expand the need for these permits to construction sites between 1 and 5 acres, and to local governments with as few as 10,000 people. The revised rules require that these additional activities obtain permits by 2003. While these urban stormwater discharges are now technically referred to as "point sources" for the purpose of regulation, they are still diffuse sources of pollution that cannot be easily collected and treated by a central treatment facility, as are other point sources of pollution, such as domestic and industrial wastewater discharges. The Department recently accepted delegation from the EPA for the stormwater part of the NPDES Program. It should be noted that most MS4 permits issued in Florida include a reopener clause that allows permit revisions to implement TMDLs once they are formally adopted by rule.



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