

Final
2016 Progress Report for the
Hillsborough River
Basin Management Action Plan

Division of Environmental Assessment and Restoration
Florida Department of Environmental Protection

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Acknowledgments

This progress report was prepared as part of a statewide watershed management approach to restore and protect Florida's water quality. It was prepared by the Florida Department of Environmental Protection (DEP) with participation from the Hillsborough River Basin stakeholders identified below in **Table 1**.

Table 1. Hillsborough River Basin stakeholders

Type of Entity	Name
Responsible Stakeholders	Agricultural Producers City of Plant City City of Tampa City of Temple Terrace City of Lakeland Hillsborough County Pasco County Polk County
Responsible Agencies	Florida Department of Agriculture and Consumer Services Florida Department of Environmental Protection Florida Department of Health Florida Department of Transportation Southwest Florida Water Management District
Other Interested Stakeholders	Citizens Tampa Bay Estuary Program University of Florida–Institute of Food and Agricultural Sciences

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List of Acronyms and Abbreviations

BMAP	Basin Management Action Plan
BMP	Best Management Practice
cfu	Colony-Forming Unit
CIPP	Cured in Place Pipe
COL	City of Lakeland
COPC	City of Plant City
COT	City of Tampa
DEP	Florida Department of Environmental Protection
<i>E. coli</i>	<i>Escherichia coli</i>
ERC	Environmental Regulation Commission
EPA	U.S. Environmental Protection Agency
EHD	Environmental Health Database
EPCHC	Environmental Protection Commission of Hillsborough County
F.A.C.	Florida Administrative Code
FIB	Fecal Indicator Bacteria
FDACS	Florida Department of Agriculture and Consumer Services
FDOH	Florida Department of Health
FDOT	Florida Department of Transportation
FLWMI	FDOH Florida Water Management Inventory
F.S.	Florida Statutes
GIS	Geographic Information System
gpd	Gallons Per Day
HCHD	Hillsborough County Health Department
HRTAT	Hillsborough River and Tributaries Assessment Team
IDDE	Illicit Discharge Detection and Elimination
I&I	Inflow and Infiltration
IWR	Impaired Surface Waters Rule
mL	Milliliter
MGM	Monthly Geometric Mean
NOI	Notice of Intent
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conservation Service
OAWP	Office of Agricultural Water Policy
OSTDS	Onsite Sewage and Treatment Disposal System
SCADA	Supervisory Control and Data Acquisition
SSO	Sanitary Sewer Overflow
STORET	Storage and Retrieval (Database)
SWFWMD	Southwest Florida Water Management District
TBEP	Tampa Bay Estuary Program
TMDL	Total Maximum Daily Load
TPTV	Ten Percent Threshold Value

UF–IFAS	University of Florida–Institute of Food and Agricultural Sciences
USDA	U.S. Department of Agriculture
WBID	Waterbody Identification
WRF	Water Reclamation Facility
WWTF	Wastewater Treatment Facility

Section 1: Introduction and Background

This annual Progress Report summarizes recent activities associated with the seventh year of the [Hillsborough River Basin Management Action Plan](#) (BMAP) that was adopted in October 2009. **Section 2** describes the projects and activities implemented by stakeholders during the reporting period (November 1, 2015, through October 31, 2016) as well as planned projects for the next reporting period (November 1, 2016, through October 31, 2017). **Section 3** is an evaluation of water quality data for the monitoring period (September 30, 2015 to June 30, 2016). **Appendix A** contains important web addresses that are embedded throughout the report. The tables in **Appendix B** identify stakeholder projects and activities that were completed, continued (i.e., ongoing), or planned during the reporting period. **Appendix C** contains a Florida Department of Health (FDOH) septic system summary for the Hillsborough River BMAP area. **Appendix D** contains a list and a map of the BMAP monitoring stations.

In portions of the Hillsborough River Basin, fecal coliform bacteria were identified as the primary pollutant causing impairment. In 2004, the Florida Department of Environmental Protection (DEP) adopted total maximum daily loads (TMDLs)¹ for six of the verified impaired waterbodies in the Hillsborough River Basin: Blackwater Creek (WBID² 1482), New River (WBID 1442), Spartman Branch (WBID 1561), Baker Creek (WBID 1522C), Flint Creek (WBID 1522A), and Lower Hillsborough River (WBID 1443E). The [TMDLs](#) that define the required fecal coliform reductions needed for each segment or tributary are available online.

DEP adopted the Hillsborough River BMAP to implement these fecal coliform TMDLs. **Figure 1** depicts the BMAP geographic boundaries. The second iteration (five-year period) of the BMAP went into effect in 2015. Through the original 2009 BMAP and the Phase 2 update document, DEP is tracking ongoing and additional efforts to assess current and future strategies.

¹ TMDLs are water quality targets for specific pollutants established for impaired waterbodies that do not meet designated uses based on Florida water quality standards.

² DEP uses the acronym "WBID," derived from the words "waterbody identification," to identify watersheds of tributaries, lakes, estuaries, beaches, and segments of large rivers. The state is divided into approximately 6,600 WBIDs for the purpose of watershed management.

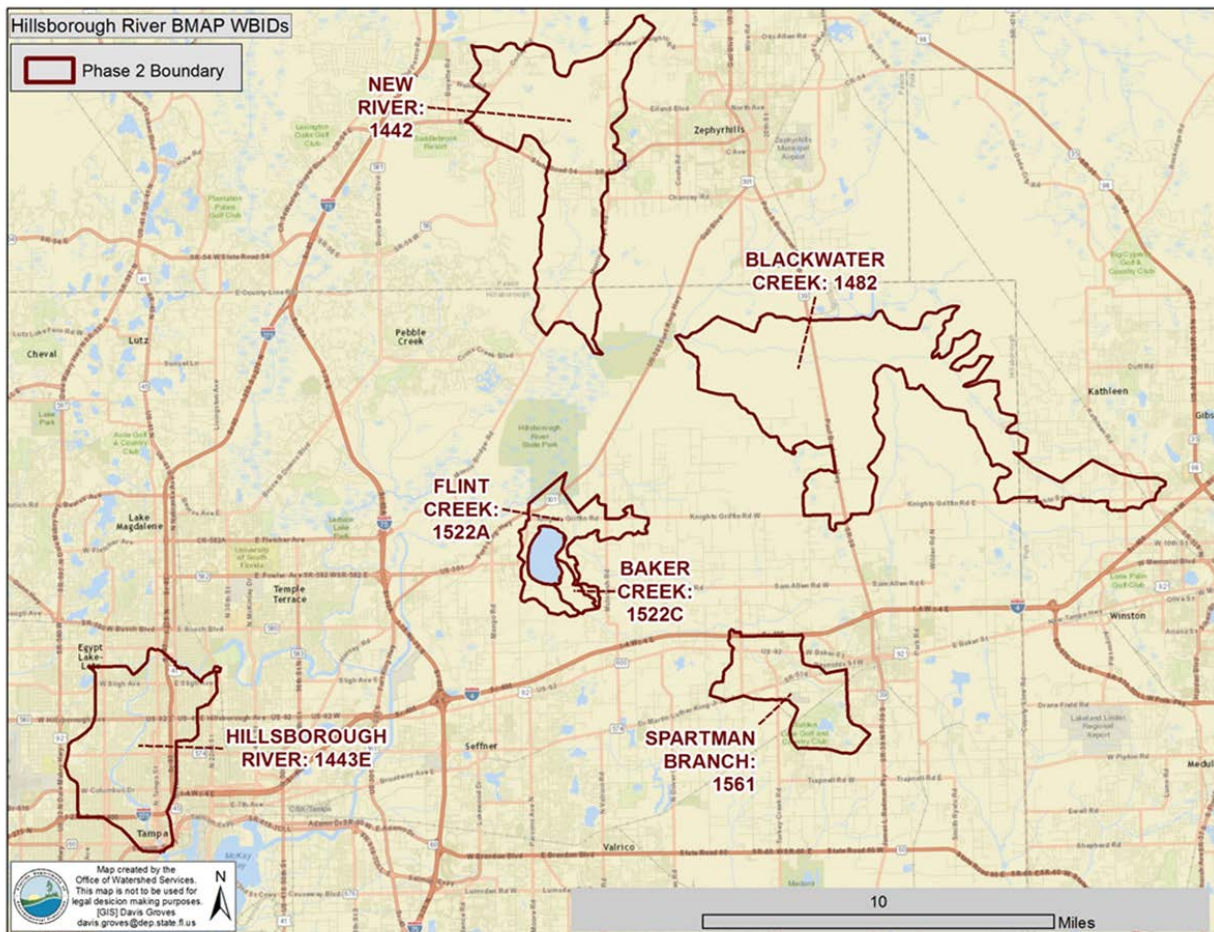


Figure 1. Hillsborough River BMAP area boundary

Section 2: Activities During the Reporting Period

Stakeholders are implementing ongoing maintenance programs and planned projects. DEP and stakeholders continue to work together to identify the sources of fecal indicator bacteria through field investigations and monitoring of source indicator parameters.

Appendix B contains detailed tables of BMAP projects and activities that were completed, continued, or planned during the reporting period. The highlights of activities during the reporting period, organized by stakeholder, are provided below.

2.1 City of Lakeland (COL)

The COL Lakes and Stormwater Division continues to promote public awareness through its ongoing public education and outreach program. In 2016, the division launched its newest campaign, the Toby's Water Warriors Program, designed to engage the city's youth in protecting surface waters and waterways. The city continues to receive positive feedback on the campaign and is making strides with residents in promoting the protection of stormwater and lakes/streams.

2.2 City of Plant City (COPC)

COPC continues to inspect all of its industrial complexes annually and more often where there is a higher level of activity with the potential for stormwater impacts. COPC continues to monitor its sanitary sewer lift stations so that staff are immediately aware of any conditions that may cause a sanitary sewer overflow (SSO). This monitoring reduces the potential releases of pathogens to the environment.

2.3 City of Tampa (COT)

COT has a comprehensive lift station monitoring and notification program to reduce SSOs. The City Council approved funding for five stormwater- and wastewater-related capital improvement projects in 2016. **Appendix B** describes these projects.

2.4 Hillsborough County

In addition to an extensive countywide monitoring network, the county continued quarterly sampling in the Baker Creek watershed as part of the nutrient source tracking project cooperatively funded by the Southwest Florida Water Management District (SWFWMD). As part of this sampling, the county discovered three potential fecal indicator bacteria (FIB) sources: one septic system was referred to FDOH and two agricultural operations were referred to the Florida Department of Agriculture and Consumer Services (FDACS). The failing septic system was remedied and the potential bacteria source eliminated.

2.5 Pasco County

Pasco County provided technical assistance to FDACS on contacting, educating, and enrolling horse farms in the New River area and responded to citizen concerns regarding flooding/water

quality issues. The county has a grant application pending with the Tampa Bay Estuary Program (TBEP) seeking \$4,200 to produce 3,000 calendars to educate citizens on stormwater.

2.6 Polk County

Polk County has an extensive countywide tributary monitoring program that includes the upstream reaches of Blackwater Creek. The county continues to collaborate with other stakeholders on potential issues and solutions based on the lessons learned in other waterbodies.

2.7 FDACS

2.7.1 Best Management Practice (BMP) Enrollment

All agricultural producers that are nonpoint sources in the Hillsborough River BMAP area are statutorily required either to implement FDACS-adopted BMPs or to conduct water quality monitoring prescribed by DEP or the SWFWMD that demonstrates compliance with water quality standards (Paragraph 403.067(7)[b], Florida Statutes [F.S.]). If these agricultural producers do not either implement BMPs or conduct monitoring that demonstrates compliance with water quality standards, they may be subject to enforcement by DEP or the SWFWMD. Under Paragraph 403.067(7)(c), F.S., the implementation of FDACS-adopted, DEP-verified BMPs in accordance with FDACS rules provides a presumption of compliance with state water quality standards.

BMPs are individual or combined practices determined through research, field testing, and expert review to be the most effective and practicable means for improving water quality, taking into account economic and technological considerations. The primary regulatory authority for establishing agricultural BMPs is divided between the FDACS Florida Forest Service (silviculture BMP program), Division of Aquaculture (Aquaculture Certification Program), and Office of Agricultural Water Policy (OAWP) (for all other agricultural BMP programs).

OAWP BMPs fall into two categories: structural and management. Structural BMPs involve the installation of structures or changes to the land, usually are costlier, and often require cost-share to be economically feasible. They include water control structures, fencing, and tailwater recovery systems, among other things. Management BMPs, such as nutrient and irrigation management, comprise the majority of these practices and often are not readily observable. Nutrient management addresses fertilizer type, amount, placement, and application timing, and includes practices such as soil and tissue testing to determine crop nutrient needs, application methods, and setbacks from water resources. Irrigation management is the maintenance, scheduling, and overall efficiency rating of irrigation systems.

As of September 30, 2016, 12,542 acres of the Hillsborough River Basin were covered by 45 agricultural BMP notices of intent (NOIs) issued by FDACS OAWP (**Figure 2**). To estimate the actual agricultural acreage in the Hillsborough River Basin covered by the FDACS BMPs,

FDACS used the 2009 SWFWMD agricultural land uses. Per this land use, 6,341 agricultural acres are enrolled in the FDACS BMP Program. This figure equates to 44 % enrollment of agricultural acreage based on the 2009 SWFWMD land use in the Hillsborough River Basin covered by the FDACS BMP Program. **Table 2** lists the 2009 SWFWMD agricultural land uses within the Hillsborough River BMAP area and the acreages covered by each land use. **Table 3** lists the BMPs, the acreage covered by NOIs, and the agricultural acres enrolled in each BMP program.

Table 2. Agricultural acreage in the Hillsborough River Basin as of September 30, 2016

¹ FDACS staff-adjusted acreage for purposes of enrollment based on a review of more recent aerial imagery in the basin and local staff observations.
N/A= Not applicable.

2009 SWFWMD Land Use	2009 Acres	FDACS-Adjusted Acres ¹
Cropland, Pastureland, Rangeland	12,634.96	12,634.96
Row Crops	493.73	493.73
Tree Crops	681.88	681.88
Nurseries and Vineyards	512.25	512.25
Specialty Farms	9.77	9.77
Feeding Operations	59.59	59.59
Other Open Lands – Rural	818.35	N/A
Total	15,211	14,392

Table 3. BMP enrollment for the Hillsborough River Basin as of September 30, 2016

Related FDACS BMP Programs	Acreage Enrolled	Related NOIs	2009 SWFWMD Land Use Acres with NOIs
Cow/Calf, Vegetable and Agronomic Crops (Hay)	11,379.15	10	5,559.65
Vegetable/and Agronomic Crops	999.50	23	682.56
Specialty Fruit and Nut, Citrus	41.21	4	8.29
Nurseries	112.34	7	82.52
Equine	10.27	1	7.80
Total	12,542	45	6,341

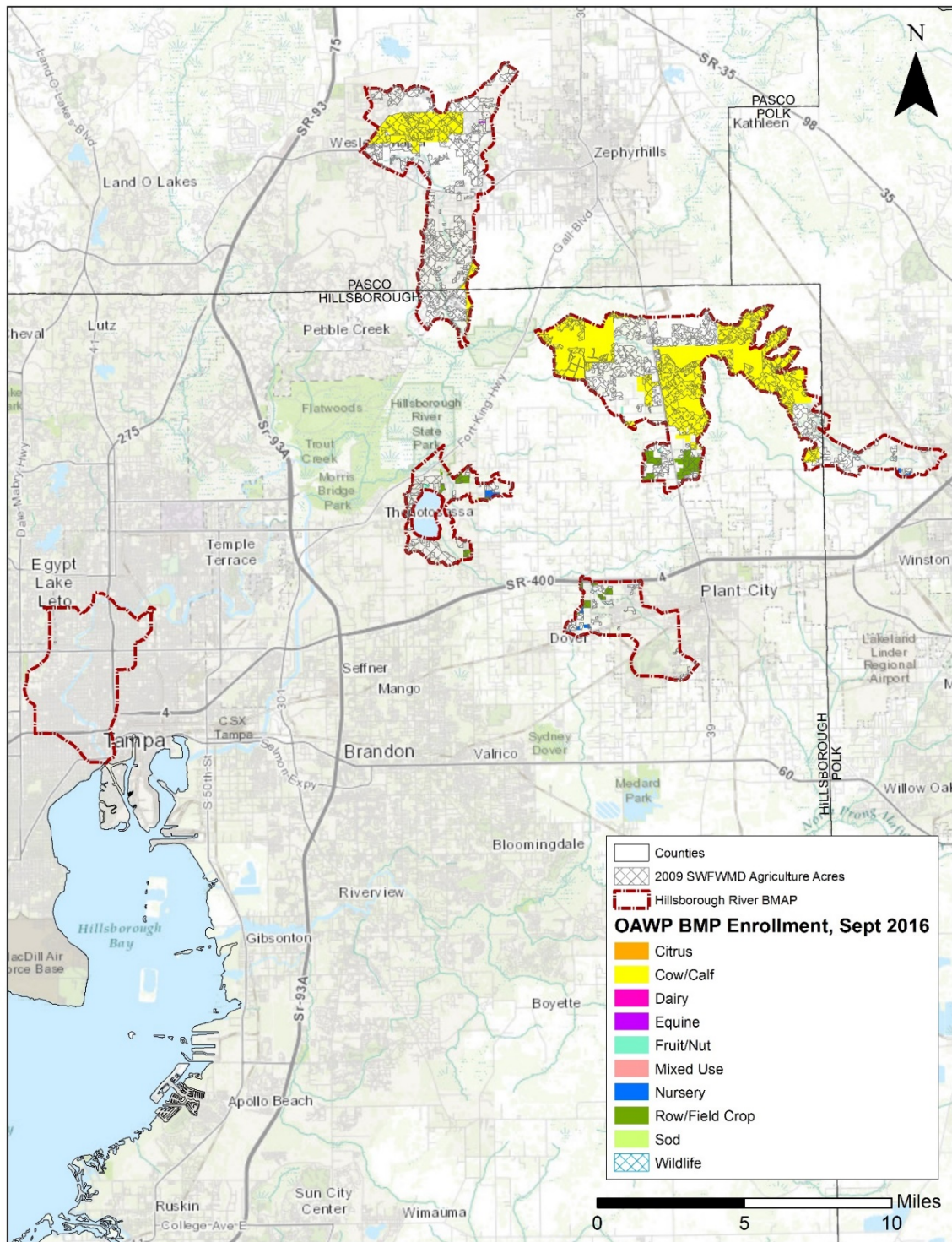


Figure 2. Agricultural acreage and BMP enrollment in the Hillsborough River Basin, September 2016

2.7.2 Cost-Share Projects and Outreach

During the reporting period, FDACS commenced 10 new cost-share projects within the Hillsborough River BMAP area, at a total cost of \$173,045. FDACS administered these projects to enhance water quality and water conservation. The projects included the following:

- \$10,606 was expended on watering stations in two different cow/calf operations. Watering stations draw cattle out of creeks and ponds, protecting water resources.
- A variable rate technology sprayer and a hoop sprayer were cost-shared for \$54,230 on 2 other properties. These systems help minimize fertilizer and foliar nutrient application and nutrient runoff.
- An acid injection system, which helps a producer regulate soil pH to ensure that plants use more available nutrients, was cost-shared for \$15,250.
- A tailwater pond, which helps reduce groundwater withdrawals, was cost-shared for \$48,000.
- Another water savings project, totaling \$20,462, consisted of conversion from overhead irrigation to drip irrigation on a blueberry farm.
- Other projects included a denitrification system, drain tile, and the creation of an equine wash area, cost-shared for \$24,497.

Multiple outreach events were completed during the reporting period. Highlights include the following:

- In November 2015 and July 2016, FDACS gave presentations on the importance of BMP implementation and cost-share availability through FDACS at strawberry grower meetings in Dover, Florida. The combined attendance at these meetings was approximately 110 people.
- In December 2015, FDACS gave similar presentations to the Agriculture Economics Development Committee of Hillsborough County.
- In May 2016, 38 producers from around the state convened in Balm, Florida, for the University of Florida–Institute of Food and Agricultural Sciences (UF–IFAS) Horticulture Field Day, where they learned about irrigation research and water conservation BMPs.
- Given that Hillsborough County is home to many equine farms, FDACS hosted meetings in January and April 2016 at the Triple B Riding Club to educate over 60

equine producers on how BMPs benefit their operations and the overall water quality improvements that result from BMP implementation.

- Other BMP equine workshops, presentations, and educational booths were held throughout Pasco and Hillsborough Counties. For example, in September 2016, presentations were given to the Hillsborough Soil and Water Conservation District working group and the U.S. Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) working group in Dover, Florida. Approximately 25 attendees participated and learned about the importance of BMPs and the BMP enrollment program.

2.8 FDOH

In 2016, FDOH completed a comprehensive septic system inventory in Hillsborough County. **Appendix C** summarizes the FDOH inventory for the Hillsborough River BMAP area.

2.9 Florida Department of Transportation (FDOT)

FDOT continues to support bacteria source identification and elimination as the need arises in response to complaints about illicit activities on its properties. The agency continues to require illicit discharge detection and elimination (IDDE) training for all staff and contractors working in its rights-of-way.

2.10 SWFWMD

The SWFWMD continues to support watershed restoration by cooperatively funding projects with local stakeholders that result in nutrient reduction. Many stormwater treatment projects can reduce FIB loads in addition to nutrients.

2.11 TBEP

The TBEP continues to manage a comprehensive public education campaign that educates citizens in the Tampa Bay Estuary watershed, including the Hillsborough River BMAP area, on how their actions affect stormwater, which can transport pollutants to Tampa Bay.

Section 3: Water Quality Evaluation

3.1 Revised FIB Criteria

In 2015, the Environmental Regulation Commission (ERC) approved proposed revisions to Florida's water quality standards that included revised bacteria criteria. DEP adopted the U.S. Environmental Protection Agency (EPA) criteria for *Escherichia coli* (*E. coli*) bacteria in Class I and III fresh water, and *Enterococci* in Class III marine water, to replace the existing criteria for fecal coliform bacteria. These new bacterial fecal indicators are based on the same recreational bather illness rate as the fecal coliform criteria, but they correlate better with bather illness than fecal coliforms and are thus more protective. Class II fecal coliform criteria are retained, since the federal and state shellfish harvesting programs continue to use this indicator.

The new criteria include a monthly geometric mean (MGM) and a ten percent threshold value (TPTV). The MGM is based on a minimum of either 5 samples (Class I) or 10 samples (Class III) taken over a 30-day period. Because of sample size, the criteria applicable to the BMAP are TPTV. TPTV is an upper value not to be exceeded in 10 % or more of the samples during an assessment period. *E. coli* will be used to assess fresh waters and the MGM is 126 colony-forming units (cfu)/100 milliliters (mL) and the TPTV is 410 cfu/100 mL. *Enterococci* will be used to assess Class III marine waters and the MGM is 35 cfu/100 mL and the TPTV is 130 cfu/100 mL. The waterbodies addressed in this BMAP are Class III freshwater streams, with the exception of the Lower Hillsborough River, which is a Class III marine water.

While the criteria were approved for adoption by the ERC in December 2015 and went into effect for state purposes on February 17, 2016, they will need EPA approval before they go into effect for Clean Water Act purposes (impaired waters assessments and National Pollutant Discharge Elimination System [NPDES] permits). For more information about the criteria, contact [Ken Weaver](#) of the DEP Standards Development Section.

To transition to the new state FIB criteria, the BMAP efforts will continue to implement the fecal coliform TMDLs while integrating sampling for *E. coli* and *Enterococci* so that the waterbodies can be assessed using the new water quality standards during the next assessment cycle. The *E. coli* and/or *Enterococci* data will be used to guide future restoration efforts. In the meantime, high-magnitude fecal coliform exceedances remain a good tool to direct field investigations and management strategies.

3.2 Water Quality Monitoring

The Hillsborough River BMAP monitoring plan supports the implementation of the BMAP by providing water quality data and other information that can be used to document status and track trends in fecal coliform levels and other microbial water quality conditions in the six BMAP WBIDs. The information collected through the monitoring plan is used to evaluate progress toward achieving BMAP objectives, to demonstrate progress toward meeting the TMDLs, to facilitate comparisons of water quality in the BMAP watershed before and after the implementation of BMPs, and to provide information to help guide the selection of future BMPs.

The monitoring plan consists of ambient water quality sampling at 10 core stations and approximately 20 supplemental stations. The stations are sampled quarterly, with some sampled more frequently for other programs. The stations are monitored by the Environmental Protection Commission of Hillsborough County, Polk County, and Pasco County. These entities upload their data to the DEP Storage and Retrieval ([STORET](#)) Database regularly, at least twice a year. Monitoring stations may be moved to different locations, but participants will carry out the same level of effort so that the impairments in the basin can be identified and addressed.

3.3 Fecal Coliform Reductions Since BMAP Adoption

DEP determines progress towards meeting the FIB criterion for the six BMAP waterbodies by assessing the frequency with which the criterion for each tributary is exceeded. This approach mirrors the Impaired Surface Waters Rule (IWR) methodology in Chapter 62-303, Florida Administrative Code (F.A.C.). The prior Class III IWR criterion was set so that if more than 10 % of the data exceeded 400 cfu/100mL during each verified period, the water was verified as impaired. As *E. coli* and *Enterococci* data become available, the frequency of exceedance of the new state criterion will be used in conjunction with the frequency of exceedance of the old state criterion for BMAP progress assessments. This approach will allow a smooth transition and provide the ability to assess progress as datasets of the new FIB parameters grow.

This section includes data from the BMAP monitoring network and other stations that together make up the IWR monitoring network. **Table 4** lists each WBID's total number of fecal coliform samples, total number of exceedances, minimum number of exceedances to be considered impaired, and the percent exceedance for the current 7.5-year data period. In order to compare progress each year until the next assessment (Cycle 4), a rolling 7.5-year data period is evaluated. Each year, the oldest 12 months of data are dropped from the data period reviewed the previous year, and the most recent 12 months of data are added to the dataset.

Column 5 in **Table 4** shows the minimum number of exceedances needed to place a waterbody on the Verified List with at least a 90 % confidence level. The minimum number of exceedances is compared with the number of exceedances to determine if the IWR criterion is being met. The last column in the table shows each WBID's percent exceedance, which is based on the number of exceedances (Column 4) relative to the total number of data points (Column 3) for the most recent 7.5-year dataset. The tributaries are listed in order of lowest to highest percent exceedance.

Table 5 shows the percent exceedance for each IWR verified period (Cycles 1–3) and the current rolling 7.5-year period. A comparison of the data periods shows that the percent exceedance gradually decreased in Lower Hillsborough River, Baker Creek, New River, and Spartman Branch since the Cycle 2 assessment period. The most recent data period (Column 6) shows a considerable decrease in percent exceedance for Flint Creek and a slight increase in percent exceedance for Blackwater Creek.

Table 4. Current frequency of exceedance¹Subsection 62-303.420(2), F.A.C., Tables 1 and 3.²The current 7.5-year dataset is from January 1, 2009, through June 30, 2016.

WBID	Waterbody Name	Total Number of FIB Data Points	Number of Exceedances	Minimum Number of Exceedances to be Considered Impaired¹	% Exceedance for Current 7.5-Year Rolling Period²
1443E	Lower Hillsborough River	340	44	42	13
1561	Spartman Branch	35	5	7	14
1522C	Baker Creek	74	12	12	16
1522A	Flint Creek	178	32	24	18
1482	Blackwater Creek	98	19	15	19
1442	New River	39	11	7	28

Table 5. Frequency of exceedance comparison¹ Data period is January 1, 1996–June 30, 2003.² Data period is January 1, 2001–June 30, 2008.³ Data period is January 1, 2007–June 30, 2014.⁴ Data period is January 1, 2009–June 30, 2016.

WBID	Waterbody Name	% Exceedance Cycle 1¹	% Exceedance Cycle 2²	% Exceedance Cycle 3³	% Exceedance for the Current 7.5-Year Rolling Period⁴
1443E	Lower Hillsborough River	18	22	16	13
1561	Spartman Branch	29	27	23	14
1522C	Baker Creek	16	33	18	16
1522A	Flint Creek	23	25	38	18
1482	Blackwater Creek	18	25	16	19
1442	New River	43	43	27	28

3.4 Water Quality Data Plots

The following data plots depict the fecal coliform data at each BMAP monitoring station in each BMAP WBID and how they compare with the prior state water quality criterion of 400 cfu/100mL, which is represented by the horizontal red line in each of the data plots. BMAP progress assessments, as presented above, are based on the number of exceedances relative to the total number of samples in each WBID during a 7.5-year period, based on the IWR assessment methodology.

This section only includes data from the BMAP monitoring network stations that may be a subset of the IWR monitoring network used for determining impairment. The BMAP station data plots, shown below, help decision makers gain a basic understanding of water quality in the BMAP watersheds, provide a visual way to detect increases or decreases in the magnitude of the monitoring results, and assist in determining seasonal influences on water quality.

3.4.1 Blackwater Creek

As shown in **Figure 3**, in Blackwater Creek from 2003 through June 30, 2016, periodic spikes over the state criterion of 400 cfu/100mL were observed at Station 21FLHILL143, located in the lower portion of the main artery of Blackwater Creek. This artery experiences frequent flushing and flows continuously most of the year, while flows slow during the dry season. The frequency of exceedance of the state criterion at Station 21FLPOLKBLACKWATER CRK2 remains high. The median value for 2016 (through June 30, 2016) at Station 21FLHILL143 was 50 cfu/100mL, while at Station 21FLPOLKBLACKWATER CRK2, the median value was 6,210 cfu/100mL.

Station 21FLPOLKBLACKWATER CRK2 is in an upper reach of Blackwater Creek that does not receive enough rainfall to keep this site flowing year-round. Therefore, in some months, the location is not sampled. However, the sediment in the broad floodplain of this heavily canopied segment of the creek stays moist most of the year. During rainfall events, disturbances of this moist sediment may, in part, cause spikes in fecal coliform levels as natural bacteria from sediment are released into the water column. Polk County has begun taking *E. coli* samples at this station that will be described in the next annual report. County staff have investigated nearby areas for potential illicit connections to the natural system. No illicit connections were found recently.

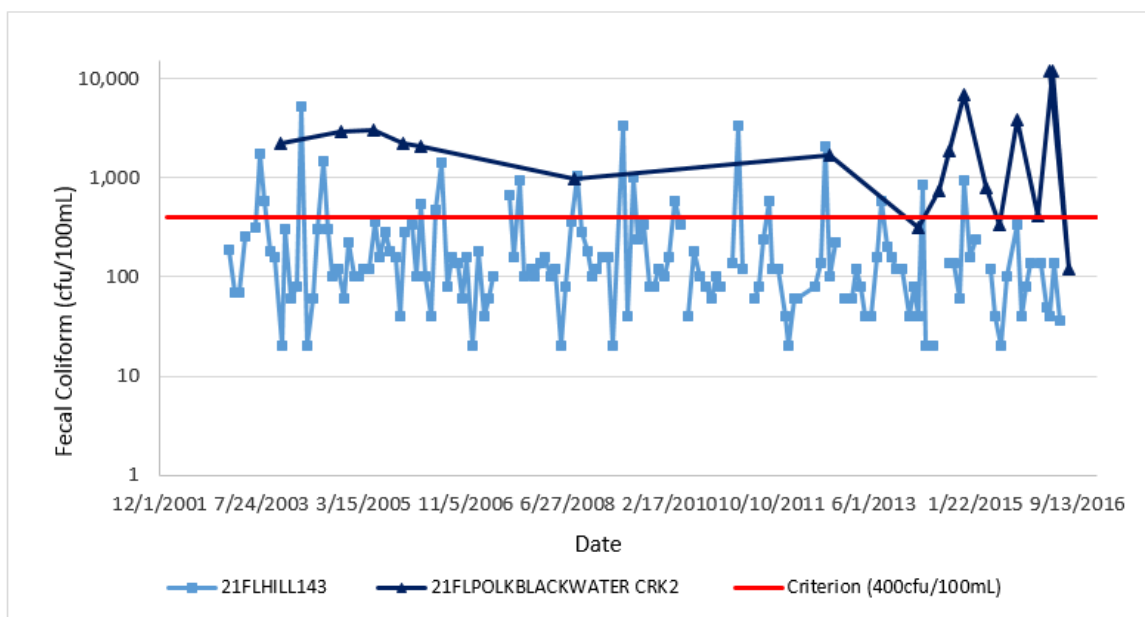


Figure 3. 2003–16 fecal coliform counts in Blackwater Creek

3.4.2 New River

New River flow is intermittent, and therefore puddles of stagnant water in the river are not sampled when it is not flowing. Station 21FLPASC PASCO SITE 15 is north and upstream of the county line between Hillsborough and Pasco Counties. Staff of both counties are working collaboratively to determine if there are sources of bacteria between the 2 stations that may be

elevating the levels at Station 21FLHILL523. **Figure 4** shows the intermittent spikes above the prior state criterion of 400 cfu/100mL that occurred between 2005 and June 30, 2016. Investigations will continue to ensure that no illicit connections are contributing to the impairment. The sources are unknown at this time. As a precautionary effort, FDACS and UF-IFAS are focusing BMP educational efforts in this area to inform local producers and livestock owners of the bacteria impairment and how their actions can protect the river's water quality.

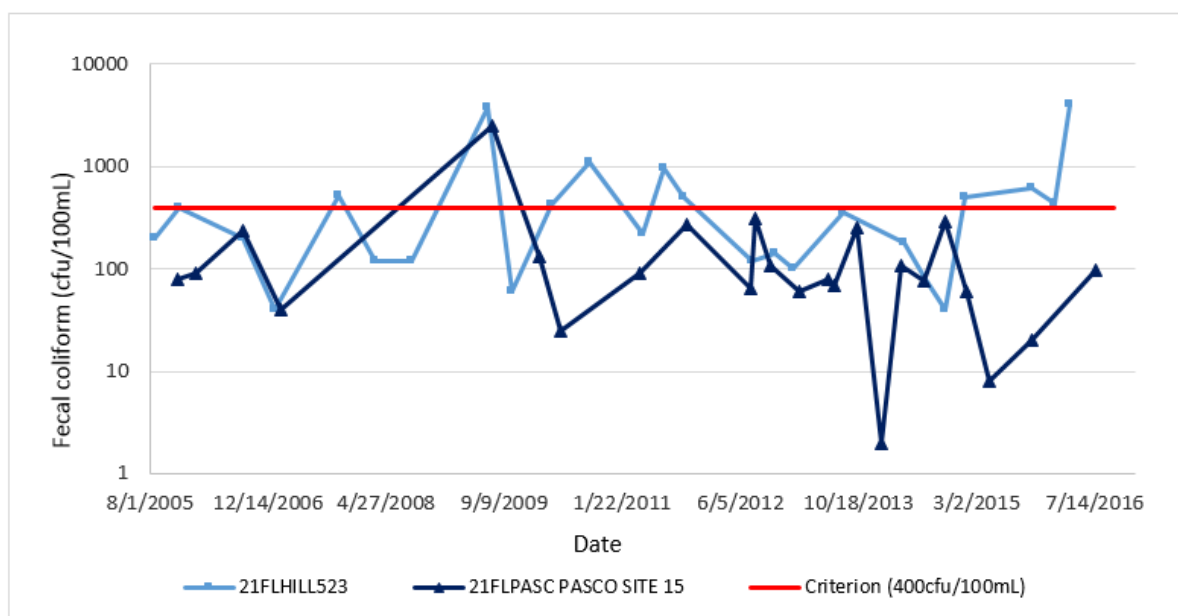


Figure 4. 2005–16 fecal coliform counts in the New River

3.4.3 Spartman Branch, Baker Creek, Flint Creek, and Lower Hillsborough River

At Station 533 on Spartman Branch, fecal coliform data results were frequently below 400 cfu/100mL from 2014 to June 30, 2016 (**Figure 5**). At Station 107 on Baker Creek, fecal coliform data results remained below 400 cfu/100mL during the end of 2015 and first half of 2016 (**Figure 6**). At Station 148 on Flint Creek, fecal coliform data results remained below 400 cfu/100mL during the end of 2015 and first half of 2016 (**Figure 7**). Occasional spikes occurred in the Hillsborough River, while the majority of results remained below 400 cfu/100mL during the end of 2015 and first half of 2016 (**Figure 8** and **Figure 9**). Lower Hillsborough River (WBID 1443E), a Class III marine WBID, will be assessed in the future using the new *Enterococci* criterion. The data for the Lower Hillsborough River BMAP stations currently show frequent exceedances of the new state *Enterococci* threshold (**Figure 10**).

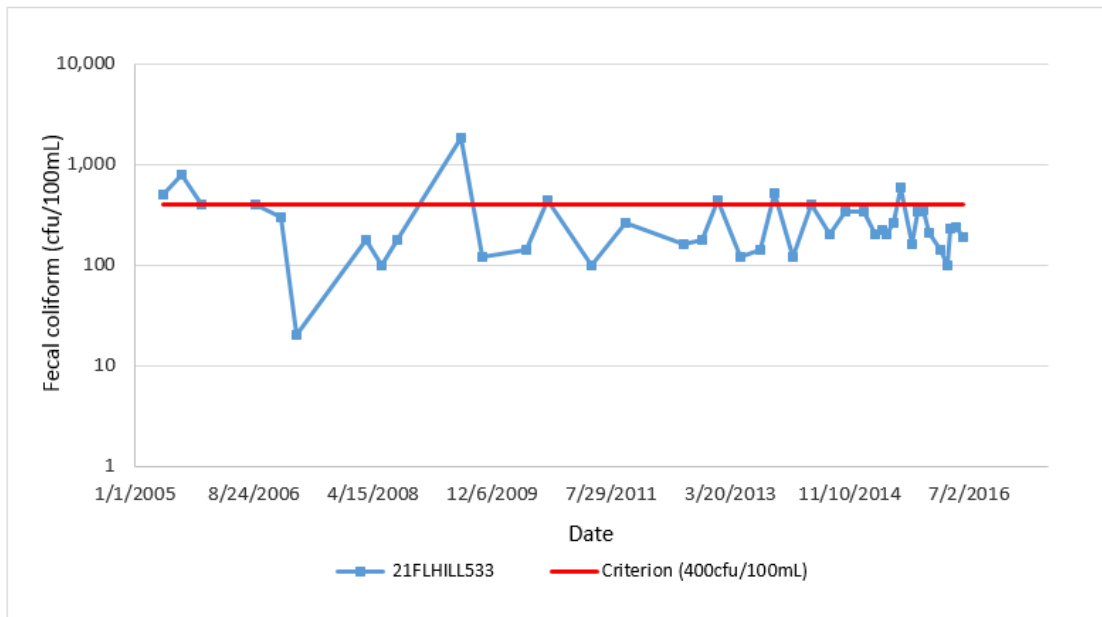


Figure 5. Fecal coliform counts in Spartman Branch, 2005–16

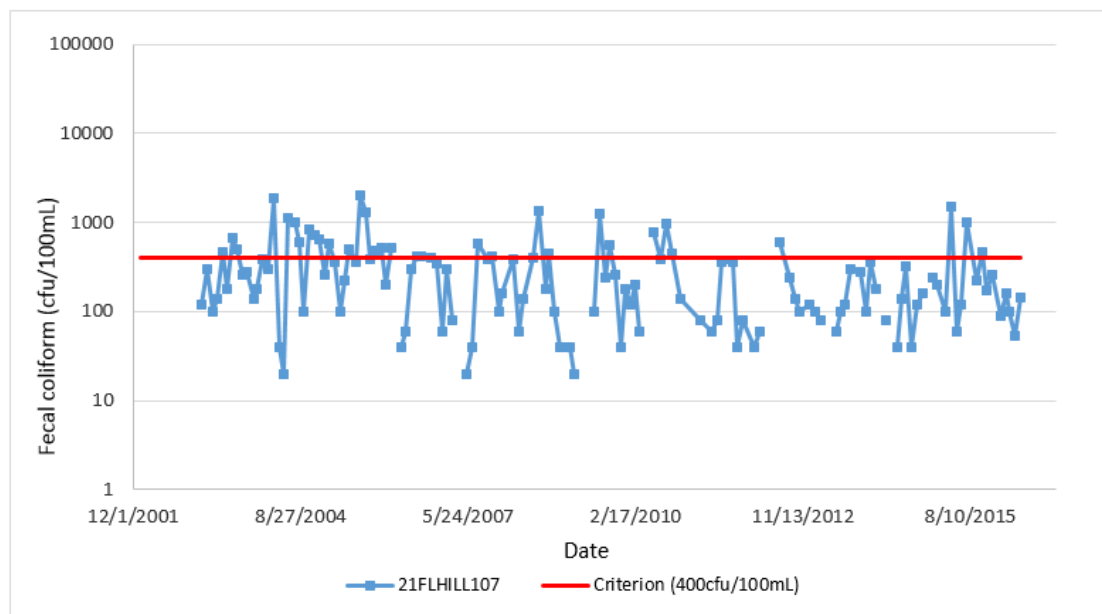


Figure 6. Fecal coliform counts in Baker Creek, 2003–16

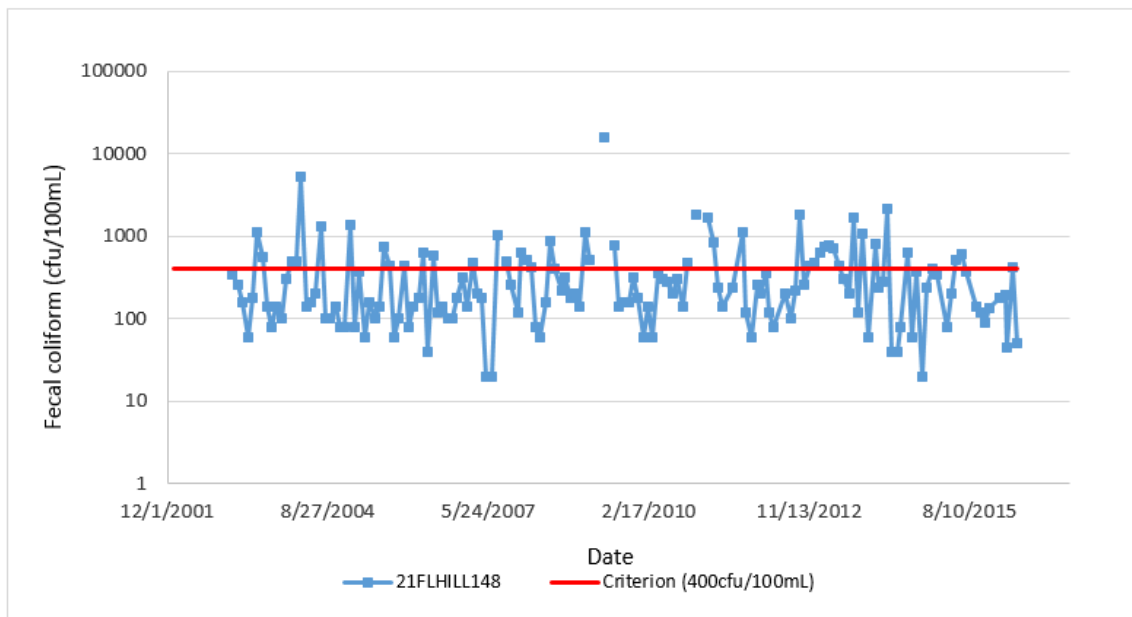


Figure 7. Fecal coliform counts in Flint Creek, 2003–16

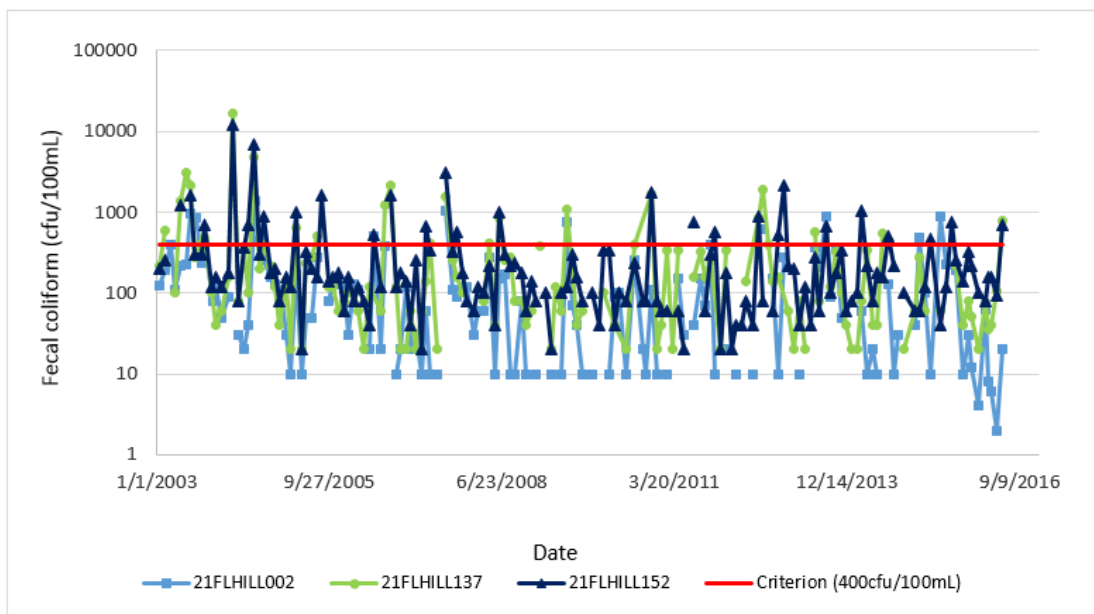


Figure 8. Fecal coliform counts in the Lower Hillsborough River, 2003–16

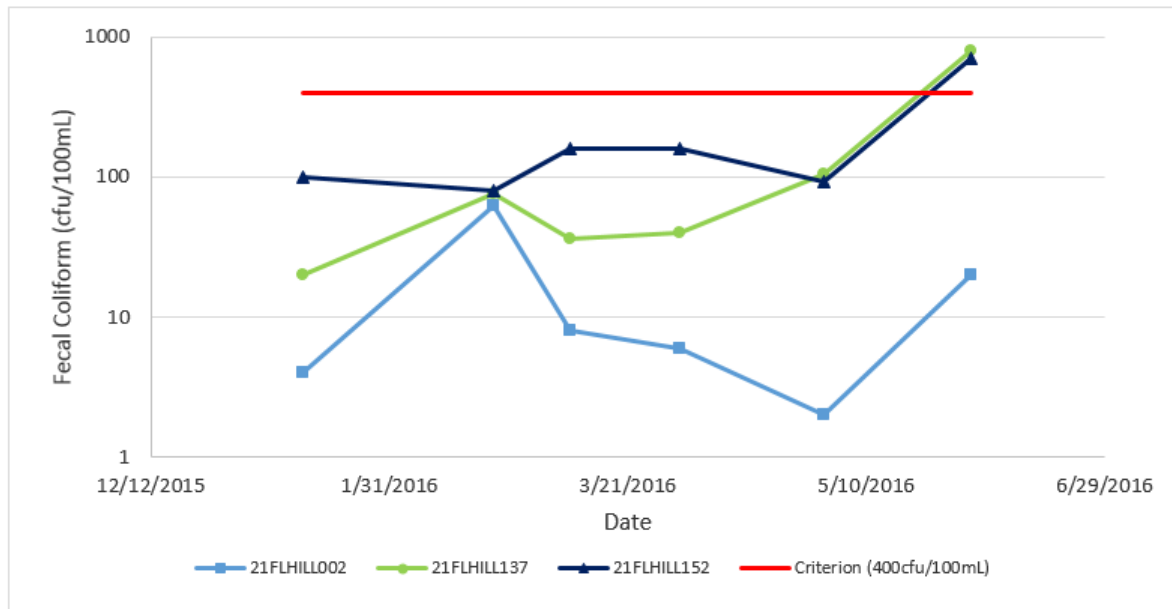


Figure 9. Fecal coliform counts in the Lower Hillsborough River, January 1, 2016–June 30, 2016

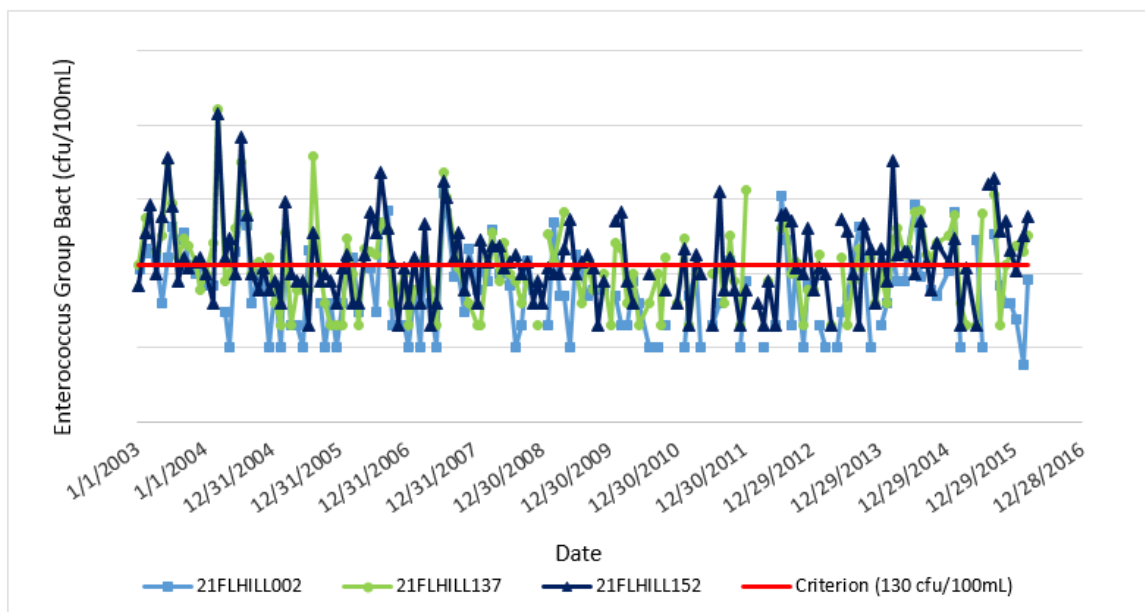


Figure 10. *Enterococcus* group bacteria counts in the Lower Hillsborough River, 2003–16

Appendices

Appendix A: Important Links

The following lists the complete addresses for websites in this document, in the order in which they appear in the text:

- **Cover page:** DEP website – <http://www.dep.state.fl.us/mainpage/default.htm>
- **Acknowledgments:** Anita Nash email address – anita.nash@dep.state.fl.us
- **Section 1:** Hillsborough River BMAP and annual Progress Reports – <http://www.dep.state.fl.us/water/watersheds/bmap.htm>
- **Section 1:** Hillsborough River TMDLs – <http://www.dep.state.fl.us/water/tmdl/index.htm>
- **Section 3:** Ken Weaver email address – ken.weaver@dep.state.fl.us
- **Section 3:** STORET public access database – <http://prodenv.dep.state.fl.us/DearSpa/public/welcome>
- **Appendix C:** FDOH Florida Water Management Inventory (FLWMI) – <http://floridahealth.gov/flwmi>
- **Appendix C:** U.S. Environmental Protection Agency (EPA) publication, *A homeowner's guide to septic systems*: – https://www3.epa.gov/npdes/pubs/homeowner_guide_long.pdf

Appendix B: Stakeholder Projects Completed, Ongoing, or Planned During the Reporting Period (November 1, 2015–October 31, 2016)

Updated project information, including new projects, for the reporting period are identified by the red, boldface, italicized font (*example*). Projects with a project status of ongoing are believed to have occurred during the reporting period and should continue to occur in subsequent years, unless notification is provided to DEP that the project has been discontinued. Additional project information, including a complete list of projects, can be acquired by contacting DEP.

There are no ongoing SWFWMD projects with activities related to the Hillsborough River BMAP. The SWFWMD accepts projects with the potential for nutrient reduction, but is not requesting or tracking any fecal coliform reduction potential. The SWFWMD relies on its cooperating partners to update DEP on any fecal coliform reductions associated with cooperative projects.

Table B-1. Project list

Project Number	Project Name	Project Description	Project Type	Project Status	Estimated Cost	Funding Source	Lead Entity/ Project Partner
COL-284	Hillsborough River and Tributaries Assessment Team (HRTAT)	Continue participation in HRTAT coordination calls and other related efforts.	Technical Assistance	Ongoing	Unknown	COL	COL
COL-285	Source Identification Follow Up	Assist DEP in following up on source identification results that indicate human source. <i>No sources have been identified through COL investigation efforts.</i>	Technical Assistance	Ongoing	Unknown	COL	COL
COL-286	Sample Analysis	Monthly monitoring of up to two stations, with adjustments made as needed, and follow up on high counts per HRTAT protocol. Samples will be analyzed for both fecal coliform and <i>E. coli</i> . <i>No appropriate locations have been identified for sampling. Sampling has not been conducted.</i>	Monitoring	Ongoing	Unknown	COL	COL

Project Number	Project Name	Project Description	Project Type	Project Status	Estimated Cost	Funding Source	Lead Entity/ Project Partner
COL-288	Tributary Clean Up and Search for Illicit Connections	Promote community awareness of waterbodies' health, organize annual community cleanups, and inspect for illicit connections. Provide FDACS with locations of bovine access to creeks.	Public Education	Ongoing	Unknown	COL	COL
COL-290	Follow-up to 2014 Walk the WBID	<i>COL staff followed up with industrial facilities to discuss stormwater pollution prevention.</i>	Stormwater Management	Ongoing	Unknown	COL	COL
SBF-12	Lake Thonotosassa Diagnostic Assessment and Water Quality Treatment Project	Evaluate feasibility of implementing stormwater treatment system to treat mixture of stormwater and highly treated reclaimed water before discharging into Westside Canal.	Special Studies, Planning, Monitoring, and Assessment	<i>Canceled</i>	\$100,000/yr	COPC/ SWFWMD	COPC/ SWFWMD
BWC-20	Plant City Sewer Line Maintenance Program	Maintain and repair over 120 miles of sanitary sewer lines. Program helps to prevent both infiltration/inflow of groundwater to collection system, and exfiltration of wastewater to ground and surface water.	Wastewater Infrastructure Management	Ongoing	<i>\$1,500,000</i>	COPC	COPC
BWC-23	Plant City Lift Station Maintenance	<i>Annual maintenance of 50 lift stations.</i>	Wastewater Infrastructure Management	Ongoing	<i>\$500,000/yr</i>	COPC	COPC
BWC-24, SBF-28	Plant City Inflow and Infiltration (I&I) Program	Clean, carry out video inspection of, and grout sanitary sewer lines and manholes.	Wastewater Infrastructure Management	Ongoing	<i>\$1,500,000</i>	COPC	COPC

Project Number	Project Name	Project Description	Project Type	Project Status	Estimated Cost	Funding Source	Lead Entity/ Project Partner
SBF-27, BWC-25	Plant City Grease Management Program	<i>Inspect, monitor, and educate facilities that generate cooking oil and grease to ensure BMPs are in use and that pretreatment systems are being managed properly.</i>	Technical Assistance	Ongoing	<i>\$50,000/yr</i>	COPC	COPC
SBF-29	Plant City Water Reclamation Facility (WRF) Maintenance	<i>Annual maintenance of WRF and all appurtenances.</i>	Wastewater Infrastructure Management	Ongoing	<i>\$500,000/yr</i>	COPC	COPC
SBF-30, BWC-14	Plant City Stormwater Inlet Marking Program	Affix plaques to stormwater inlets that state in English and Spanish, "DO NOT POLLUTE THE WATER. DUMP NO WASTE. IT'S THE LAW." Environmental education pamphlets are distributed to residents in areas where plaques are affixed.	Public Education	Ongoing	\$1,000/yr	COPC	COPC
SBF-31, BWC-19	Plant City Spill Prevention/Response Program	Address sanitary sewer overflow <i>and other spill</i> incidents to prevent introduction of pollutants to environment.	Wastewater Infrastructure Management	Ongoing	\$50,000/yr	COPC	COPC
BWC-21	Plant City Lift Station Security Program	Maintain basic security (fences, gates, locks) for sanitary sewer lift stations. Currently <i>30 of 50</i> stations are secured in this fashion.	Wastewater Infrastructure Management	Ongoing	\$10,000/yr	COPC	COPC
BWC-22, SBF-34	Plant City Lift Station Auxiliary Power Program	Maintain auxiliary power generators at sanitary sewer lift stations. Currently <i>21 of 50</i> stations have permanent onsite generators; 8 portable generators are also available as needed	Wastewater Infrastructure Management	Ongoing	<i>\$50,000/yr</i>	COPC	COPC

Project Number	Project Name	Project Description	Project Type	Project Status	Estimated Cost	Funding Source	Lead Entity/ Project Partner
SBF-35, BWC-46	Plant City WRF Fecal Coliform Bacteria Reduction Program	Implementation of operational protocol at city WRF to reduce bacteriological contamination in effluent.	Wastewater Infrastructure Management	Ongoing	\$72,000/yr	COPC	COPC
COPC-284	HRTAT	Continue participation in HRTAT coordination calls and other related efforts.	Technical Assistance	Ongoing	Unknown	COPC	COPC
COPC-285	Source Identification Follow Up	Assist DEP in following up on source identification results that indicate human source.	Technical Assistance	Ongoing	Unknown	COPC	COPC
COPC-286	Assistance with Sample Analysis	Assistance with BMAP monitoring for fecal coliform, with adjustments made as needed, and follow up on high counts per HRTAT protocol.	Monitoring	Ongoing	Unknown	COPC	COPC
COPC-288	Non-MS4 Tributary Search for Illicit Connections	Prioritize segments of creeks based on land use and historical problems. Inspect priority segments annually or more often as needed to look for illicit connections on banks of tributary.	Stormwater Management	Ongoing	Unknown	COPC	COPC
COPC-289	Implement Procedures to Maintain Stormwater Flow to Tributaries	Procedures to ensure stormwater projects return water to streams when designing stormwater treatment and flood prevention and relief projects.	Stormwater Management	Ongoing	Unknown	COPC	COPC
COPC-290	Walk the WBID Follow Up	Address action items identified as result of 2014 Walk the WBID.	Stormwater Management	Ongoing	Unknown	COPC	COPC
COPC-291	Alleyway Sanitary Sewer Lining Project	Sewer lining for problematic lines in designated alleyways.	Wastewater Infrastructure Management	Ongoing	\$1,581,500	COPC	COPC

Project Number	Project Name	Project Description	Project Type	Project Status	Estimated Cost	Funding Source	Lead Entity/ Project Partner
LHR-40	Manhole Rehabilitation Project	City has two contracts for manhole rehabilitation: (1) insertion of fiberglass liner into existing manhole; and (2) application of calcium aluminate cementitious structural coating system that is sprayed onto existing walls of manhole. Project locations are identified routinely.	Wastewater Infrastructure Management	Ongoing since 2007	Approximately \$750,000 annually	COT	COT Wastewater Dept.
LHR-45, LHR-36	Street Sweeping Maintenance	Regularly scheduled street sweeping in residential and business areas with curb and gutter. Residential area sweeping covers about 1,860 curbed miles. Commercial area covers about 140 curbed miles.	Stormwater Management	Ongoing	Funding amount varies annually	COT Stormwater Utility, FDOT	COT/FDOT
LHR-56	Cypress Street Outfall	Construction of box culvert at Cypress St. outfall to North Blvd., large junction box at North Blvd. and Cypress St., and dual box culvert from North Blvd. to Cass St. with stub-out at Cass St. to serve future stormwater upgrades.	Stormwater Management	Completed Jan. 2016	\$10,000,000	COT	COT
LHR-59, LHR-61	Box Culvert Miscellaneous Rehabilitation	Repair major culverts within roadways prior to resurfacing or rebuilding roads.	Stormwater Management	Ongoing since 2014 with completion in 2017	\$1,500,000	COT	COT
LHR-62	Collection System Repair Contract	Collection system repairs throughout city.	Wastewater Infrastructure Management	Ongoing since 2008	\$1,000,000/yr	COT	COT Wastewater Dept.
LHR-63	Cured in Place Pipe (CIPP) Rehabilitation	Pipe rehabilitation throughout city.	Wastewater Infrastructure Management	Ongoing since 2006	\$1,000,000/yr	COT	COT Wastewater Dept.

Project Number	Project Name	Project Description	Project Type	Project Status	Estimated Cost	Funding Source	Lead Entity/ Project Partner
LHR-67	Mulberry Pump Station Rehabilitation	Pump station rehabilitation on Mulberry Dr. next to river.	Wastewater Infrastructure Management	<i>Planned with completion date in 2018</i>	\$600,000	COT	COT Wastewater Dept.
LHR-68	Pump Station Supervisory Control and Data Acquisition (SCADA) Improvements	SCADA improvements throughout city.	Wastewater Infrastructure Management	Ongoing since 2014	\$100,000	COT	COT Wastewater Dept.
LHR-69	Louisiana Pump Station Rehabilitation	Pump station rehabilitation on Louisiana Ave. next to river.	Wastewater Infrastructure Management	<i>Planned with completion date in 2017-18</i>	\$6,000,000	COT	COT Wastewater Dept.
LHR-71	Oak Pump Station Replacement	Replace pump station on Oak Ave. next to river.	Wastewater Infrastructure Management	<i>Planned with completion date in 2017-18</i>	\$300,000	COT Wastewater Dept./ Developer	COT Wastewater Dept./Developer
LHR-72	Watrous Canal Rehabilitation	Improvement of ditch system to extend useful life of ditch and improve conveyance of storm flows from drainage basin.	Stormwater Management	Ongoing with completion date of February. 2017	\$2,250,000	COT	COT
<i>LHR-73</i>	<i>Krause Pump Station Rehabilitation</i>	<i>Pump station rehabilitation located on Ashley Drive downtown next to river</i>	<i>Wastewater Infrastructure Management</i>	<i>Completed in 2016</i>	<i>\$6,000,000</i>	<i>COT</i>	<i>COT Wastewater Dept.</i>
<i>LHR-74</i>	<i>Rowlett Park Dr. Ditch Stabilization</i>	<i>Emergency project to rebuild eroded drainage ditch and exposed water pipe at outfall to river.</i>	<i>Stormwater Management</i>	<i>Completed July 2016</i>	<i>\$260,000</i>	<i>COT</i>	<i>COT</i>
<i>LHR-75</i>	<i>Ditch Stabilization Project</i>	<i>Project will repair eroded ditch banks and install stabilization material at six locations in city.</i>	<i>Stormwater Management</i>	<i>Planned</i>	<i>\$1,000,000</i>	<i>COT</i>	<i>COT</i>

Project Number	Project Name	Project Description	Project Type	Project Status	Estimated Cost	Funding Source	Lead Entity/ Project Partner
LHR-76	Riverside Pipe Relocation	Project will eliminate two direct stormwater pipes to river and divert flow through existing treatment system prior to discharge.	Stormwater Management	Planned	\$125,000	COT	COT
LHR-77	Perry Ave. Siphon Hydraulic Modeling	Siphon hydraulic modeling along river from Perry Ave. to downtown.	Wastewater Infrastructure Management	Ongoing with completion in 2016	\$50,000	COT	COT Wastewater Dept.
COT-284	HRTAT	Continue participation in HRTAT coordination calls and other related efforts.	Technical Assistance	Ongoing	Unknown	COT	COT
COT-285	Source Identification Follow Up	Assist DEP in following up on source identification results that indicate human source.	Technical Assistance	Ongoing	Unknown	COT	COT
COT-286	Sample Analysis	Analyze 12 samples per year for fecal coliform.	Monitoring	Ongoing	Unknown	COT	COT
COT-288	Inspect and Inventory Sanitary Sewer Pop-off Sites	Update geographic information system (GIS) layer to reflect location of all pop-offs to Lower Hillsborough River; notate which ones have been plugged; inspect plugs	Wastewater Infrastructure Management	Ongoing	Unknown	COT	COT
COT-290	Walk the WBID Follow Up	Address action items identified as result of 2014 Walk the WBID.	Stormwater Management	Ongoing	Unknown	COT	COT

Project Number	Project Name	Project Description	Project Type	Project Status	Estimated Cost	Funding Source	Lead Entity/ Project Partner
PH2-06	Lake and Stream Management Program	Provides education and technical assistance about water quality and natural system health to waterfront homeowners in unincorporated Hillsborough County. Contracts with Florida LakeWatch to provide increased service to lake residents in Hillsborough County. Funds small water quality projects in cooperation with residents.	Public Education	Ongoing	Varies	Hillsborough County Stormwater Utility	Hillsborough County Public Works Dept.
BWC-26	Septic System Complaint Response	Respond to septic system complaints.	Wastewater Infrastructure Management	Ongoing	Unknown	Hillsborough County	Hillsborough County
PH2-09	Tools for Public Reporting of Illicit Discharges	Anonymous reporting of pollution via county website.	Public Education	Ongoing	Unknown	Hillsborough County	Hillsborough County
BWC-30, LHR-30, NR-16	Sanitary Sewer Overflow (SSO) Database	Maintain database of reported SSOs.	Wastewater Infrastructure Management	Ongoing	Unknown	Hillsborough County	EPCHC Water Management Division
BWC-48, SBF-37	Evaluation of Progress Towards Water Quality Improvements	Monitoring results are reviewed annually to determine water quality trends over time. Results are used to guide further actions as necessary to reach restoration.	Restoration and Water Quality Improvement	Ongoing	Unknown	Hillsborough County	EPCHC
LHR-27, BWC-28, NR-13, SF-20	Private Pump Station Identification and Compliance Program	Identify private pump stations in Tampa, Plant City, and Temple Terrace. Establish compliance inspection program to reduce number of SSOs from private pump stations.	Wastewater Infrastructure Management	Ongoing since 2005	\$22,200/year	Hillsborough County	EPCHC Water Management Division

Project Number	Project Name	Project Description	Project Type	Project Status	Estimated Cost	Funding Source	Lead Entity/ Project Partner
LHR-33, SBF-24, BWC-32	Bacterial Contamination Complaint Response to Hillsborough County Health Department (HCHD)	Bacterial contamination complaints received by EPCHC possibly caused by septic system failure; complaints forwarded to HCHD for follow-up.	Stormwater Management	Ongoing	Unknown	Hillsborough County	EPCHC
BWC-9, LHR-6, NR-9, SBF-8	Stormwater Ecologist Education Program	Program targets 3rd through 12th grades. Students participate in critical thinking activities, demonstrations, and volunteer projects that highlight stormwater pollution and address pet waste, agricultural waste, septic systems, and water treatment plant overflow as they relate to stormwater pollution.	Public Education	Ongoing	\$9,000/year	Hillsborough County Stormwater Fee	HCPWD/ SWFWMD
HCPWD-284	HRTAT	Continue participation in HRTAT coordination calls and other related efforts.	Technical Assistance	Ongoing	Unknown	Hillsborough County	HCPWD/ EPCHC
HCPWD-285	Source Identification Follow Up	Assist DEP in following up on source identification results that indicate human source.	Technical Assistance	Ongoing	Unknown	Hillsborough County	Hillsborough County
HCPWD-290	Walk the WBID Follow Up	Address any action items identified as result of 2014 Walk the WBID.	Stormwater Management	Ongoing	Unknown	Hillsborough County	HCPWD
HCPWD-291	Public Education	Operate countywide public education programs and support existing regional programs.	Public Education	Ongoing	Unknown	Hillsborough County	Hillsborough County
NR-10	New River and Hillsborough River Watershed Management Plans in Pasco County	Preparation and implementation of watershed management plans.	Stormwater Management	Ongoing	\$1,600,000 (4-year program funding)	Pasco County/ SWFWMD	Pasco County/ SWFWMD

Project Number	Project Name	Project Description	Project Type	Project Status	Estimated Cost	Funding Source	Lead Entity/ Project Partner
NR-15	Fecal Coliform Quarterly Monitoring	Quarterly samples were collected at two stations: New River at Creek Rd. (Site 15) and Trout Creek at County Line Site 5 (TC-0.0). <i>Dates: January 13, April 20, July 20, and October 14, 2016. New River was dry during January and April events.</i>	Monitoring	Ongoing	\$6,000 annually for three years	Pasco County	Pasco County
PC-284	HRTAT	Continue participation in HRTAT coordination calls and other related efforts.	Technical Assistance	Ongoing	Unknown	Pasco County	Pasco County
PC-285	Source Identification Follow Up	Assist DEP in following up on source identification results that indicate human source.	Technical Assistance	Ongoing	Unknown	Pasco County	Pasco County
PC-286	Assistance with Sample Analysis	Monitoring for fecal coliform, with adjustments made as needed, and follow up on high counts per HRTAT protocol.	Monitoring	Ongoing	Unknown	Pasco County	Pasco County
PC-288	MS4 Permit Implementation	Continue proactive illicit discharge detection and elimination program and respond to citizen complaints regarding potential illicit connections. Continue ongoing public education efforts.	Stormwater Management	Ongoing	Unknown	Pasco County	Pasco County
PC-290	Follow up to 2014 Walk the WBID	<i>In October 2016, visually observed monitoring stations in Pasco County (Site 15) and Hillsborough County (Morris Bridge Rd.) to identify sources of elevated bacteria levels between these stations. No obvious sources were identified.</i>	Stormwater Management	Ongoing	Unknown	Pasco County	Pasco County

Project Number	Project Name	Project Description	Project Type	Project Status	Estimated Cost	Funding Source	Lead Entity/ Project Partner
BWC-34	Public Education	Ongoing annual countywide public health education program distributed via permit issuance.	Public Education	Ongoing	\$500/yr	Polk County	Polk County
BWC-39	Drainage Maintenance on Blackwater Creek	Annual removal of debris and snags from Blackwater Creek.	Stormwater Management	Ongoing	\$9,000/yr	Polk County	Polk County
BWC-40	Water Quality Ambient Monitoring for Blackwater Creek	Yearly monitoring of water quality in Blackwater Creek.	Stormwater Management	Ongoing	\$5,200/yr	Polk County	Polk County
BWC-41	Illicit Discharge Complaint Investigations	Complaint investigations of NPDES illicit discharges on Blackwater and Itchepackesassa Creeks.	Stormwater Management	Ongoing	Unknown	Polk County	Polk County
BWC-43	Routine Maintenance Erosion Control	Routine erosion control maintenance countywide.	Stormwater Management	Ongoing	\$25,000/yr	Polk County	Polk County
BWC-46	Pet Waste Campaign Study	Provide educational materials and portable pet waste bag containers at public functions.	Public Education	Ongoing	\$2,000/yr	Polk County	Polk County
BWC-48	Stormwater Inlet Labeling	Affix "Do Not Dump" decals on stormwater inlets.	Public Education	Ongoing	\$1,000/yr	Polk County	Polk County
BWC-49	SSO Database	Maintain database of reported SSOs.	Wastewater Infrastructure Management	Ongoing	Unknown	Polk County	Polk County
BWC-50	Environmental Programs at Circle B Preserve	Student ecology programs given at Circle B Preserve Education Center.	Public Education	Ongoing	\$60,000/yr	Polk County	Polk County
BWC-51	Sanitary Sewer Line Maintenance Program	Inspect and repair sanitary sewer lines (1.5 miles in Blackwater Creek).	Wastewater Infrastructure Management	Ongoing	Unknown	Polk County	Polk County
BWC-58	Inspection of Stormwater at Industrial Facilities	Stormwater inspections at industrial facilities.	Stormwater Management	Ongoing	\$1,200/yr	Polk County	Polk County
BWC-59	Sanitary Sewer Line I&I Program	Conduct I&I testing on sewer lines (1.5 miles in Blackwater Creek).	Wastewater Infrastructure Management	Ongoing	Unknown	Polk County	Polk County
BWC-60	Septic System Complaint Response	Respond to complaints; coordinate with FDOH and county code enforcement staff.	Wastewater Infrastructure Management	Ongoing	Unknown	Polk County	Polk County

Project Number	Project Name	Project Description	Project Type	Project Status	Estimated Cost	Funding Source	Lead Entity/ Project Partner
POLK COUNTY-284	HRTAT	Continue participation in HRTAT coordination calls and other related efforts.	Technical Assistance	Ongoing	Unknown	Polk County	Polk County
POLK COUNTY-285	Source Identification Follow Up	Assist DEP in following up on source identification results that indicate human source.	Technical Assistance	Ongoing	Unknown	Polk County	Polk County
POLK COUNTY-286	Water Quality Sample Analysis	Quarterly monitoring of Station BLACKWATER Crk2, with adjustments made as needed, and follow up on high counts per HRTAT protocol. Samples are analyzed for both fecal coliform and <i>E. coli</i> .	Monitoring	Ongoing	Unknown	Polk County	Polk County
POLK COUNTY-288	Tributary Clean Up and Search for Illicit Connections	Promote community awareness of waterbodies' health, and inspect for illicit connections. Provide FDACS with locations of horse and livestock access to creeks.	Public Education	Ongoing	Unknown	Polk County	Polk County
POLK COUNTY-290	Walk the WBID Follow Up	Address action items identified during 2014 Walk the WBID.	Stormwater Management	Ongoing	Unknown	Polk County	Polk County
NR-11, SBF-14	FDACS Farm BMP Program	Enroll agricultural producers in FDACS Farm BMP Program.	BMPs	Ongoing	Unknown	FDACS	FDACS
FDACS-1	Source Identification Follow Up	Assist DEP in following up on source identification results that indicate human source.	Technical Assistance	Ongoing	Unknown	FDACS	FDACS
BWC-49	Public Education Septic System Program	Flyers provided with septic system permits.	Public Education	Ongoing	Unknown	Polk County FDOH	Polk County FDOH
NR-6	Septic System 200-foot Setback for Hillsborough River—Potable Supply Protection	Implement setback requirement when issuing septic system permits.	Regulations, Ordinances, and Guidelines	Ongoing (since 1980s)	\$50,000 (annual countywide program)	Hillsborough County FDOH	Hillsborough County FDOH
SBF-26, BWC-34, LHR-38, NR-19	Public Health Education Program	Annual countywide public health education program distributed via permit issuance.	Public Education	Ongoing	\$500/yr	Hillsborough County FDOH	Hillsborough County FDOH

Project Number	Project Name	Project Description	Project Type	Project Status	Estimated Cost	Funding Source	Lead Entity/ Project Partner
DOH-100	Source Identification Follow Up	Assist DEP in following up on source identification results that indicate human source.	Technical Assistance	Ongoing	Unknown	FDOH	FDOH
DOH-101	HRTAT	Continue participation in HRTAT coordination calls and other related efforts.	Technical Assistance	Ongoing	Unknown	FDOH	FDOH
DOH-102	Florida Water Management Inventory	Identify drinking water source and wastewater treatment method for all built parcels in BMAP study area. Reporting will consist of GIS maps and summary tables.	Technical Assistance	Ongoing with completion in 2017	\$50,000	FDOH	FDOH
LHR-36	Street Sweeping Curb and Bridge Roadway Sections	Street sweeping throughout Hillsborough River Basin.	Stormwater Management	Ongoing	Unknown	FDOT	FDOT/ City of Tampa/ City of St. Petersburg
LHR-37, BWC-33, NR-18	Public Education Program for Tampa Bay Regional Planning Council	Provide variety of program components targeting school-age children, working residents, retirees, and all those in between. Key element of regional education effort is "Bay Soundings," quarterly news journal that provides full range of public education and scientific information on watershed management.	Public Education	Ongoing since 1996	\$65,000/year	FDOT	FDOT
FDOT-01	IDDE Training	Mandatory IDDE training for FDOT staff and contractors.	Stormwater Management	Ongoing since 2014	Unknown	FDOT	FDOT
TBEP-101	HRTAT	Continue participation in HRTAT coordination calls and other related efforts.	Technical Assistance	Ongoing	Unknown	TBEP	TBEP

Appendix C: FDOH Septic System Summary for the Hillsborough River BMAP Area

Nonpoint source pollutants from onsite sewage treatment and disposal systems (OSTDS) can have significant impacts on surface water and groundwater quality. Approximately thirty percent of Florida's population uses an OSTDS as their method of wastewater disposal. In Florida, OSTDS are regulated by FDOH and cover wastewater from establishments that generate domestic sewage up to 10,000 gallons per day (gpd) or commercial strength sewage waste up to 5,000 gpd. A typical OSTDS consists of a septic tank and drain field (**Figure C-1**).

Table C-1 lists six waterbodies, each with a unique WBID, impaired for fecal coliform in the BMAP area. These WBIDs are distributed throughout Pasco, Hillsborough, and Polk Counties (**Figure C-2**). In these WBIDs, there are an estimated 35,954 built parcels (**Table C-2**). Of those built parcels, about 10.8 % (3,869) are connected to an OSTDS, 83.2 % (29,905) are connected to a DEP regulated wastewater treatment facility (WWTF), and 6.1 % (2,179) are unknown. Of those parcels with OSTDS, 1,050 are known and 2,819 are likely to exist. The known and likely data qualifiers were assigned based on factors related to the level of certainty for the source information. The information used comes from the FDOH FLWMI, which is a centralized geographic data map linking each built property in the state with a drinking water source (public water or private domestic well) and wastewater treatment method (central sewer or onsite septic). More information on this data source can be found by visiting <http://floridahealth.gov/flwmi>. The spatial distributions of built parcels on different wastewater treatment methods in each WBID or WBID aggregate are demonstrated in **Figure C-3** through **Figure C-7**. These figures are organized in such a way that, all spatially-connected BMAP WBIDs are aggregated into one map figure, while BMAP WBIDs not spatially connected to any other BMAP WBIDs are included in separate map figures. **Table C-1** is a lookup table showing which WBIDs are included on which map figure.

Further analysis was done by linking the data points with the FDOH Environmental Health Database (EHD). EHD is a statewide web-based permitting database that FDOH uses to keep track of Environmental Health Program information (permits issued, facilities regulated, etc.) EHD has electronic permitting and inspection data for OSTDS covering a period from the mid-1990s onward. Information on the system installation date and type of system installed can be extracted and linked to the FLWMI map.

Table C-3 shows the proportion of permitted OSTDS that were constructed prior to or after 1983. Construction and use standards for OSTDS in Florida began in 1921. A major revision to the standards occurred in 1982 when a separation of 24 inches was required between the bottom of a newly constructed drain field and the estimated seasonal high groundwater table. Research in Florida and elsewhere has shown that OSTDS installed to the 1982 standards effectively reduce the concentration of pathogens found in normal wastewater and that nitrogen levels are reduced as well. Knowing how many OSTDS were installed prior to this rule, and where they are located, could provide information to assist with future BMAP efforts.

Table C-3 also shows information on the estimated age of systems. This information was assigned to each parcel based on EHD data or from the Florida Department of Revenue for the year the structure was built if EHD data were not available. The average age of all OSTDS in the BMAP study area is 18 years, with those that are known having an average age of 12 years and those that are likely having an average age of 23 years.

Table C-4 breaks out the EHD information from 2011 through 2016 on the permit types such as new construction, system in need of repair, evaluated existing, or abandoned system. This information may be useful to see any trends in new construction and system failures over time. The red points in **Figure C-3** through **Figure C-7** indicate the total number of repairs that were permitted between 2011 and 2016 within the BMAP study area.

Table C-1. Map lookup table for BMAP WBIDs

WBID	Waterbody Name	Map Figure
1442	New River	Figure C-3
1443E	Hillsborough River	Figure C-4
1482	Blackwater Creek	Figure C-5
1552A	Flint Creek	Figure C-6
1552C	Baker Creek	Figure C-6
1561	Spartman Branch	Figure C-7

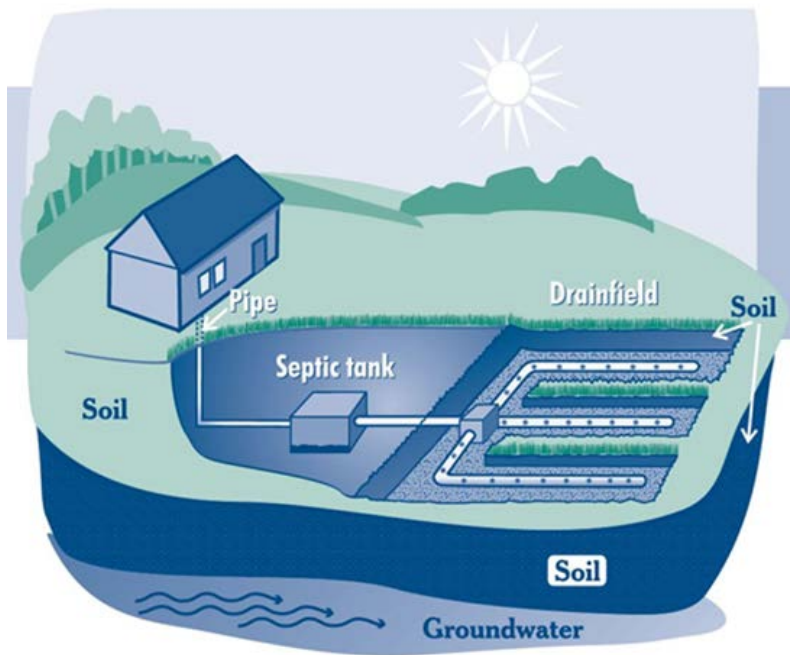


Figure C-1. Illustration of a typical OSTDS

Source: EPA: [A Homeowner's Guide to Septic Systems](#)

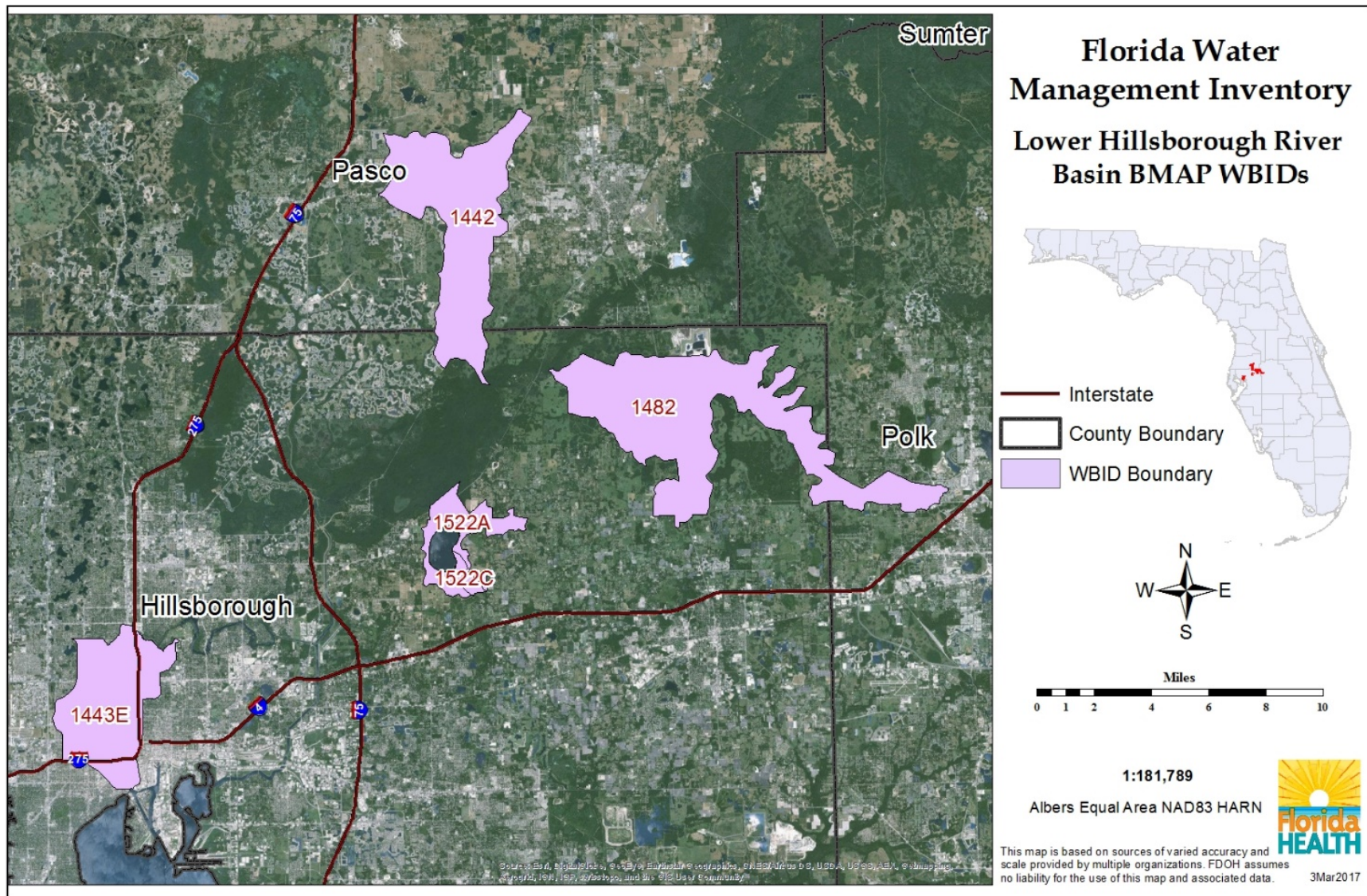


Figure C-2. WBID locations in the BMAP study area

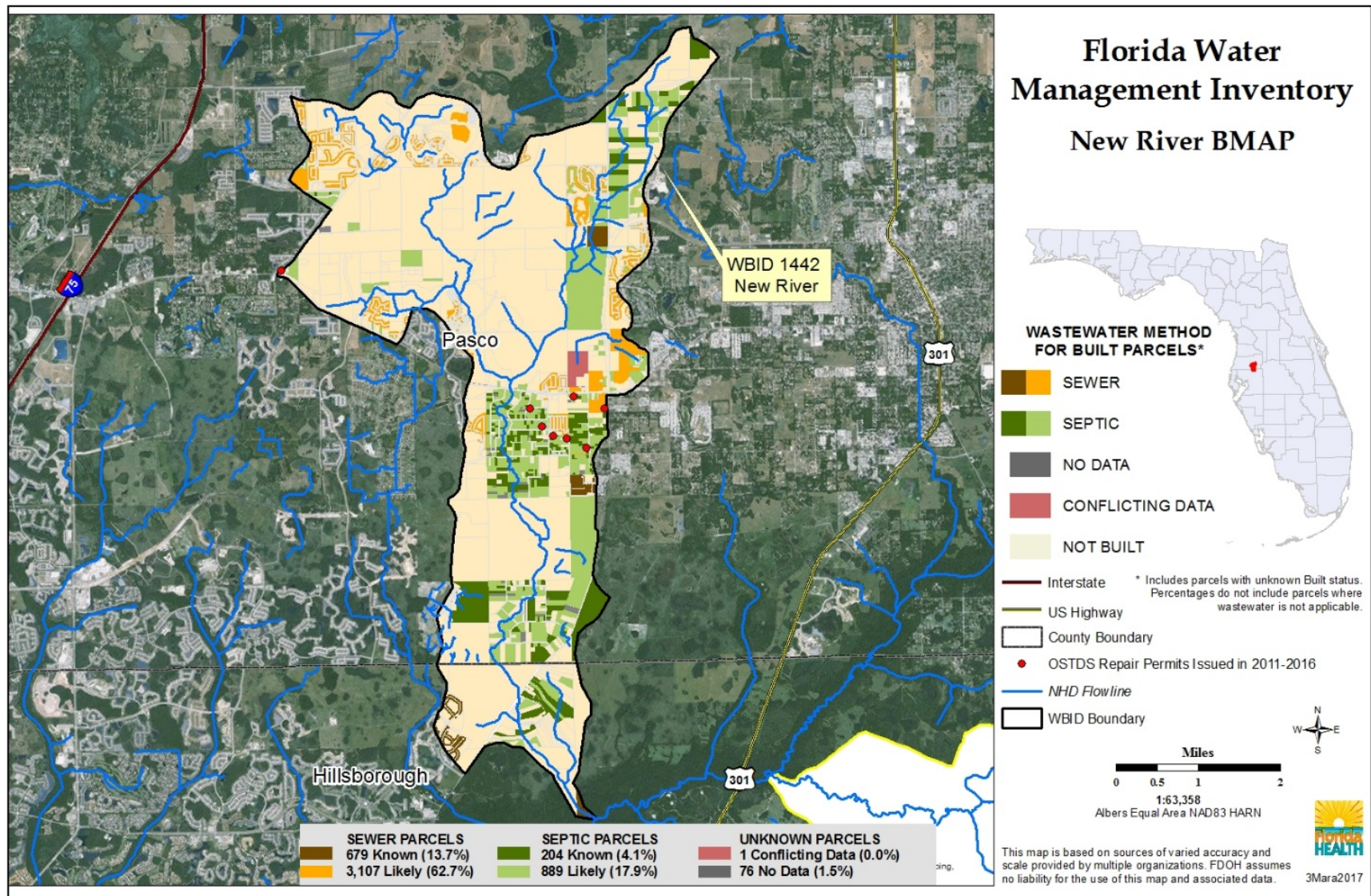


Figure C-3. Wastewater disposal method for parcels within WBID 1442 in the BMAP study area as of March 3, 2017

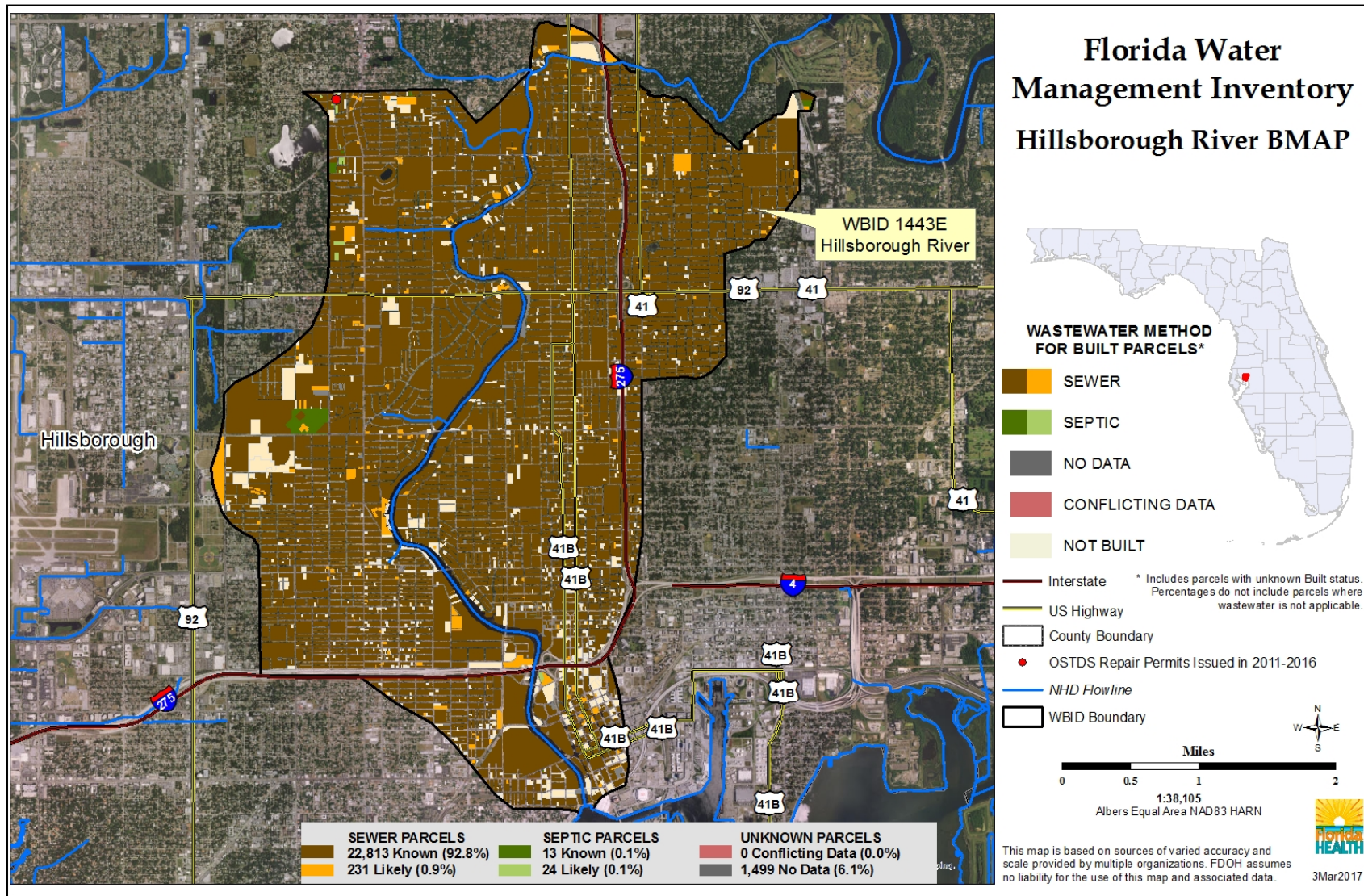


Figure C-4. Wastewater disposal method for parcels within WBID 1443E in the BMAP study area as of March 3, 2017

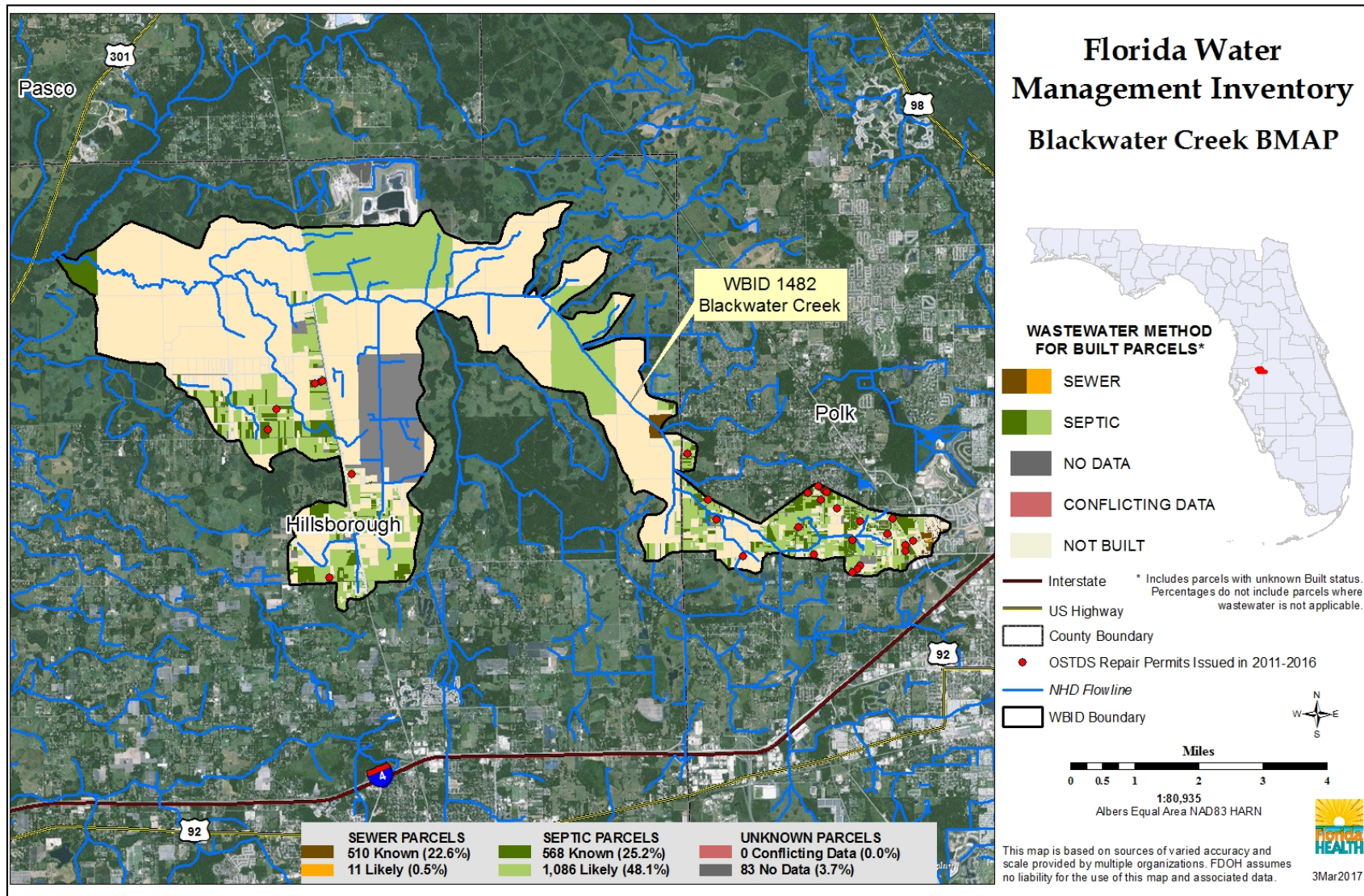


Figure C-5. Wastewater disposal method for parcels within WBID 1482 in the BMAP study area as of March 3, 2017

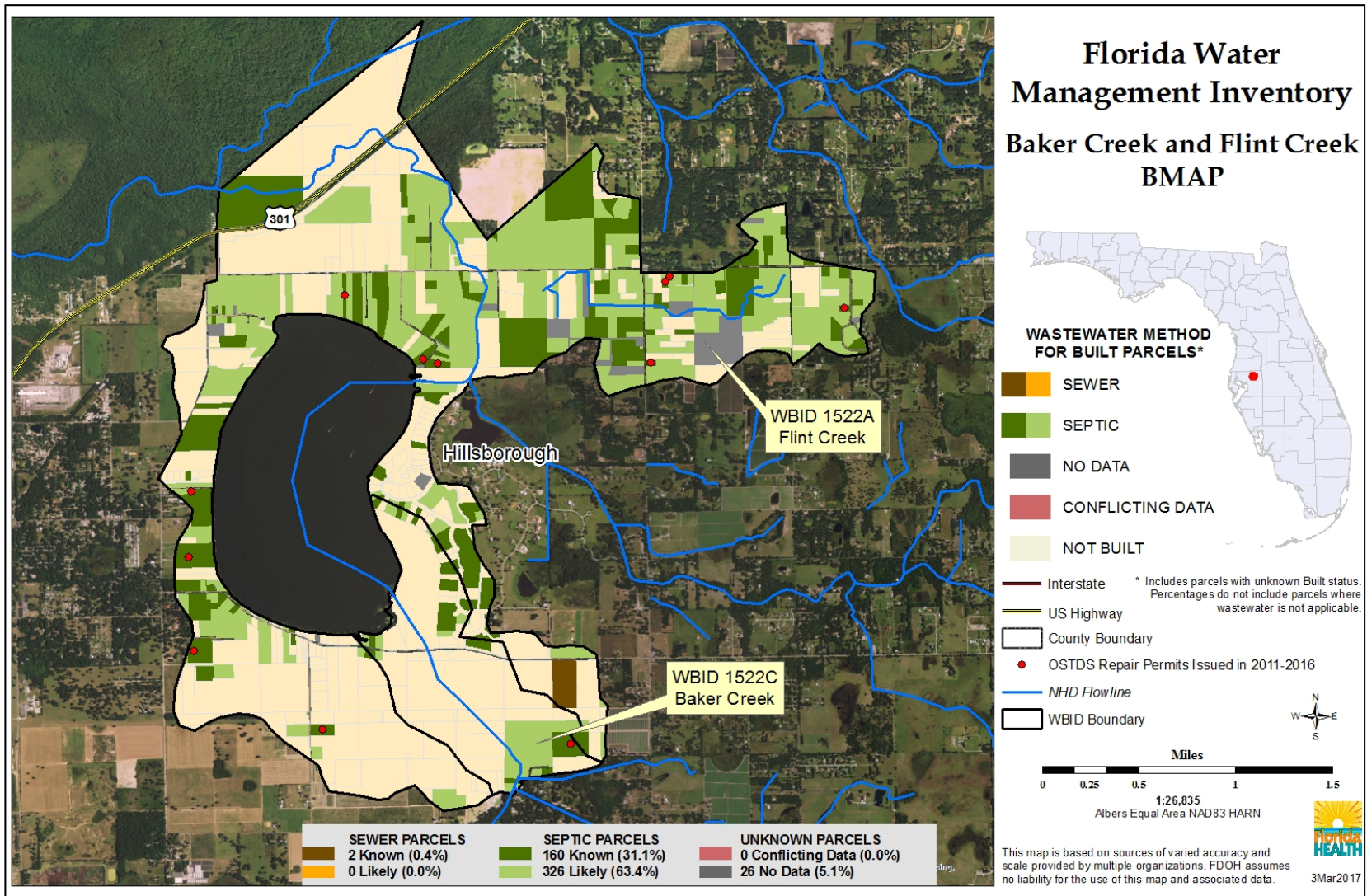


Figure C-6. Wastewater disposal method for parcels within WBIDs 1522A and 1522C in the BMAP study area as of March 3, 2017

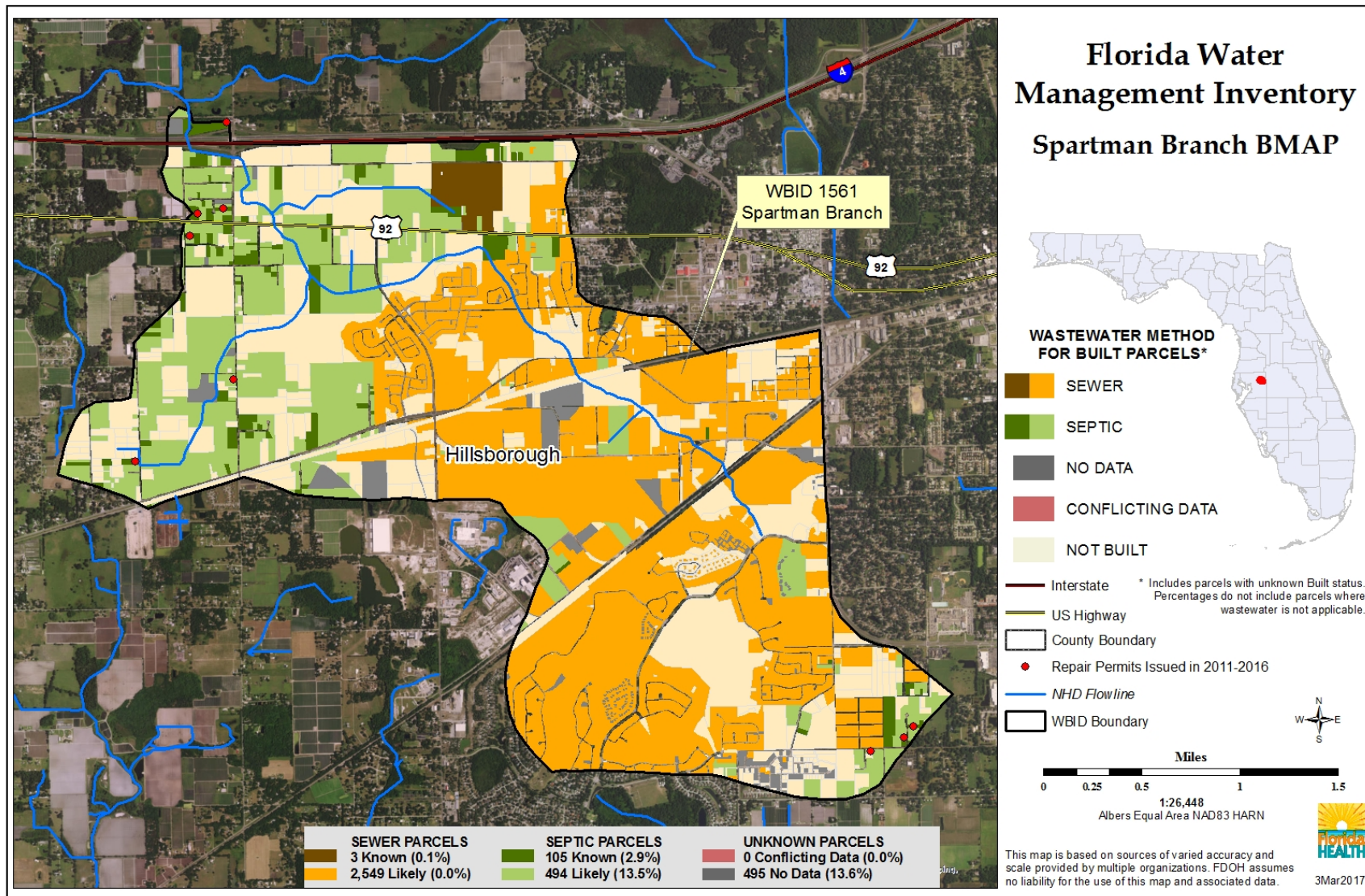


Figure C-7. Wastewater disposal method for parcels within WBID 1561 in the BMAP study area as of March 3, 2017

Table C-2. Summary of number of parcels on different wastewater methods by WBID

Note: 'Known' is assigned to parcels where the wastewater is confirmed from the permitting agency, 'Likely' is assigned to parcels where there is some indication of the wastewater disposal method, 'Undetermined' is assigned if two different data sources have equal opposing values, 'Unknown' is assigned for built parcels with no intersecting source information, 'Not Built' is assigned to parcels with no structure that could generate wastewater.

WBIDs	Known Septic	Likely Septic	Total Septic	Known Sewer	Likely Sewer	Total Sewer	Undetermined	Unknown	Not Built	Total
1422	204	889	1,093	679	3,107	3,786	1	76	1298	6,254
1443E	13	24	37	22,813	231	23,044	0	1,499	1,225	25,805
1482	568	1,086	1,654	510	11	521	0	83	575	2,833
1522A	135	297	432	1	0	1	0	25	246	704
1522C	25	29	54	1	0	1	0	1	43	99
1561	105	494	599	3	2,549	2,552	0	495	544	4190
Total	1,050	2,819	3,869	24,007	5,898	29,905	1	2,179	3,931	39,885

Table C-3. Percent of OSTDS constructed before or after 1983 and average age of OSTDS from March of 2017 by WBID

WBID	Percent of OSTDS Constructed Before 1983 (%)	Percent of OSTDS Constructed after 1983 (%)	Age of Known Septic (Year)	Age of Likely Septic (Year)
1442	27.9	72.1	13.0	22.7
1443E	5.9	94.1	13.8	24.5
1482	22.5	77.5	12.1	29.8
1522A	6.1	93.9	10.7	14.5
1522C	5.6	94.4	9.9	17.9
1561	20.	80.	12.5	28.9
Average	14.8	85.3	12.0	23.1

Table C-4. New, repair, existing, and abandonment construction permits by year

Note: The number of systems permits for new, repair, existing, and abandoned OSTDS, and total OSTDS with permits were obtained from the EHD, which stores permit dates. The total number of parcels with OSTDS in the WBID shown in the last column were obtained from the FWMI, which indicates whether an OSTDS is present or absent on a parcel, but does not indicate the OSTDS permit date. Therefore, the values in the last column do not have associated date information and the systems constructed each year is designated as N/A – not applicable. The values in the rows are not intended to be summed across the columns.

WBID	Year	New OSTDS	Repair OSTDS	OSTDS Existing	Abandoned OSTDS	Total with Permits	Total Parcels with OSTDS in WBID
1442	Subtotal	15	8	0	0	23	1093
1442	2011	4	2	0	0	6	N/A
1442	2012	2	2	0	0	4	N/A
1442	2013		2	0	0	2	N/A
1442	2014	6	1	0	0	7	N/A
1442	2015	2	1	0	0	3	N/A
1442	2016	1		0	0	1	N/A
1443E	Subtotal	0	1	0	0	1	37
1443E	2011	0	0	0	0	0	N/A
1443E	2012	0	0	0	0	0	N/A
1443E	2013	0	0	0	0	0	N/A
1443E	2014	0	0	0	0	0	N/A
1443E	2015	0	1	0	0	1	N/A
1443E	2016	0	0	0	0	0	N/A
1482	Subtotal	23	40	4	0	67	1654
1482	2011	13	10	2	0	25	N/A
1482	2012	1	5	1	0	7	N/A
1482	2013	4	5	1	0	10	N/A
1482	2014	3	5	0	0	8	N/A
1482	2015	2	13	0	0	15	N/A
1482	2016	0	2	0	0	2	N/A
1522A	Subtotal	17	12	2		31	432

WBID	Year	New OSTDS	Repair OSTDS	OSTDS Existing	Abandoned OSTDS	Total with Permits	Total Parcels with OSTDS in WBID
1522A	2011	6	4	1	0	11	N/A
1522A	2012	4	3	0	0	7	N/A
1522A	2013	2	1	0	0	3	N/A
1522A	2014	3	2	1	0	6	N/A
1522A	2015	2	2	0	0	4	N/A
1522A	2016	0	0	0	0	0	N/A
1561	Subtotal	3	13	0	0	16	599
1561	2011	2	2	0	0	4	N/A
1561	2012	0	4	0	0	4	N/A
1561	2013	0	2	0	0	2	N/A
1561	2014	0	2	0	0	2	N/A
1561	2015	0	3	0	0	3	N/A
1561	2016	1	0	0	0	1	N/A
1522C	Subtotal	3	1	0	0	4	54
1522C	2011	1	1	0	0	2	N/A
1522C	2012	1	0	0	0	1	N/A
1522C	2013	1	0	0	0	1	N/A
1522C	2014	0	0	0	0	0	N/A
1522C	2015	0	0	0	0	0	N/A
1522C	2016	0	0	0	0	0	N/A

Appendix D: BMAP Water Quality Monitoring Stations

Table D-1. Water quality monitoring stations

Waterbody Name	WBID	Monitoring Entity	Organization ID	Station ID	Station Description	Sampling Frequency	Class III
Blackwater Creek	1482	EPCHC	21FLHILL	143	Blackwater Creek at SR 39 under railroad bridge	Quarterly	Fresh
Blackwater Creek	1482	Polk County	21FLPOLK	BLACK WATER CRK2	Blackwater Crk2	Quarterly	Fresh
Baker Creek	1522C	EPCHC	21FLHILL	107	Baker Creek at Thonotosassa-Plant City Road	Quarterly	Fresh
Flint Creek	1522A	EPCHC	21FLHILL	148	Flint Creek at U.S. 301 Bridge eastside	Quarterly	Fresh
Lower Hillsborough River	1443E	EPCHC	21FLHILL	152	Lower Hillsborough River at Sligh Avenue	Quarterly	Marine
Lower Hillsborough River	1443E	EPCHC	21FLHILL	137	Lower Hillsborough River at Columbus Drive bridge	Quarterly	Marine
Lower Hillsborough River	1443E	EPCHC	21FLHILL	002	Lower Hillsborough River at Platt Street	Quarterly	Marine
New River	1442	Pasco County	21FLPASC	015	New River at Creek Road	Quarterly	Fresh
New River	1442	EPCHC	21FLHILL	523	New River at Morris Bridge Road	Quarterly	Fresh
Spartman Branch	1561	EPCHC	21FLHILL	533	Spartman Branch Beauchamp Road East of North Forbes Road	Quarterly	Fresh

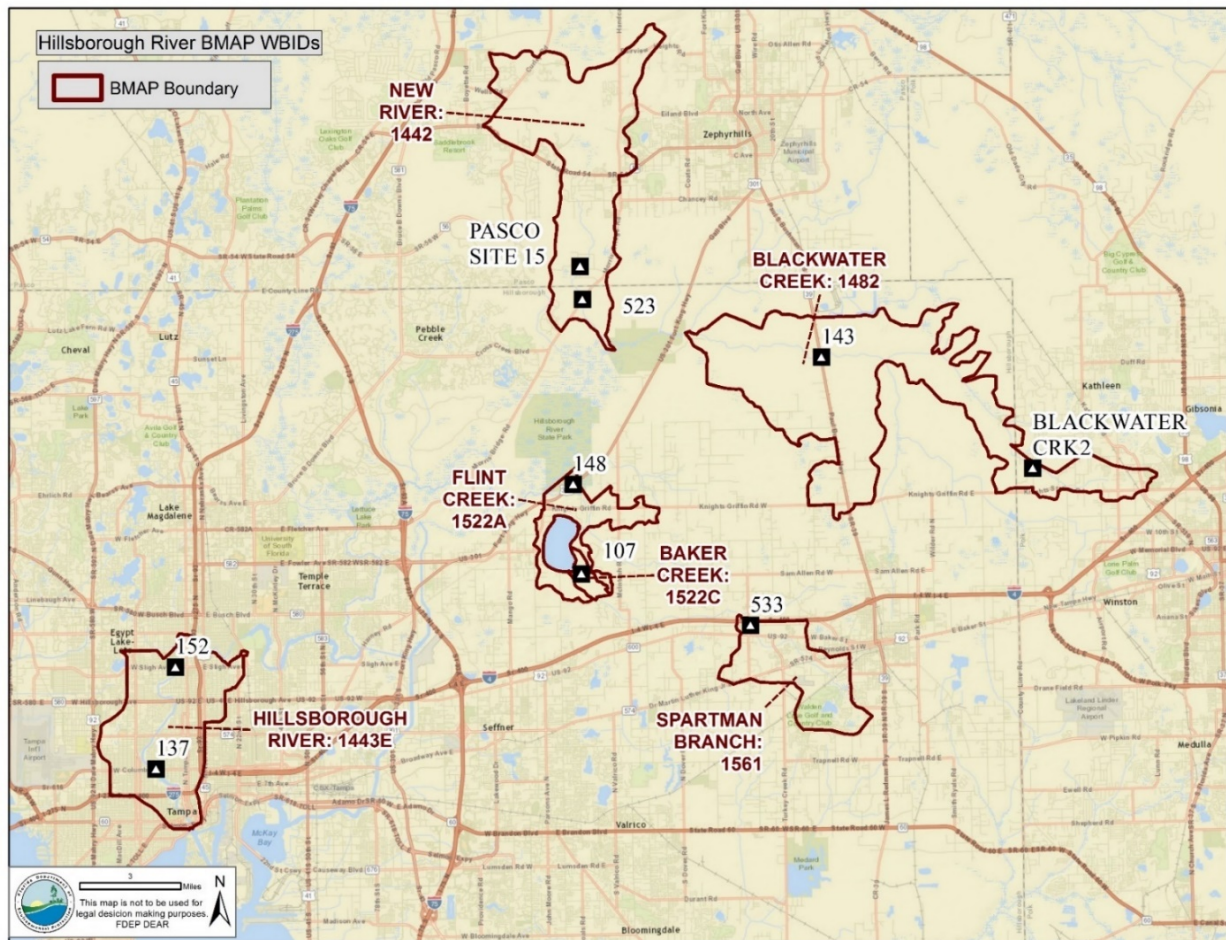


Figure D-1. Monitoring stations in the Hillsborough River Basin