

2015 PROGRESS REPORT

for the Hillsborough River Basin Management Action Plan

prepared by the
Division of Environmental Assessment and Restoration
Water Quality Restoration Program
Florida Department of Environmental Protection

with participation from the
Hillsborough River Basin Stakeholders

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ACKNOWLEDGMENTS

This *2015 Progress Report for the Hillsborough River Basin Management Action Plan* 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 with participation from the Hillsborough River Basin stakeholders.

Hillsborough River Basin participants

Entity Type	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
DEP	Florida Department of Environmental Protection
<i>E. coli</i>	<i>Escherichia coli</i>
EPCHC	Environmental Protection Commission of Hillsborough County
F.A.C.	Florida Administrative Code
FDACS	Florida Department of Agriculture and Consumer Services
F.S.	Florida Statutes
IWR	Impaired Surface Waters Rule
mL	Milliliter
STORET	Storage and Retrieval (Database)
TMDL	Total Maximum Daily Load
UF–IFAS	University of Florida–Institute of Food and Agricultural Sciences
WBID	Waterbody Identification

Section 1: INTRODUCTION

1.1 PURPOSE OF THE REPORT

This is the sixth Annual Progress Report for the Hillsborough River Basin Management Action Plan (BMAP). **Section 2** describes the water quality monitoring that occurred during the reporting period, and **Section 3** discusses the efforts in the upcoming reporting period. Project and activity updates implemented by stakeholders during the reporting period (November 1, 2014, through October 31, 2015) are not included in this report, since they were recently included in the Phase 2 BMAP update document.

1.2 TOTAL MAXIMUM DAILY LOADS (TMDLS) FOR THE HILLSBOROUGH RIVER BASIN

Within portions of the Hillsborough River Basin, fecal coliform bacteria were identified as the primary pollutant causing impairment. The BMAP boundaries outline the geographic areas this plan covers (see **Figure 1**). In 2003, the Florida Department of Environmental Protection (DEP) adopted TMDLs for six of the verified impaired waterbodies in the Hillsborough River Basin. DEP adopted the Hillsborough River BMAP in October 2009 to implement the coliform TMDLs in the watershed.

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 will track ongoing and additional efforts to help assess current and future strategies.

The [fecal coliform TMDLs](#) that define the required fecal coliform reductions needed for each segment or tributary with a waterbody identification (WBID) number are available online.

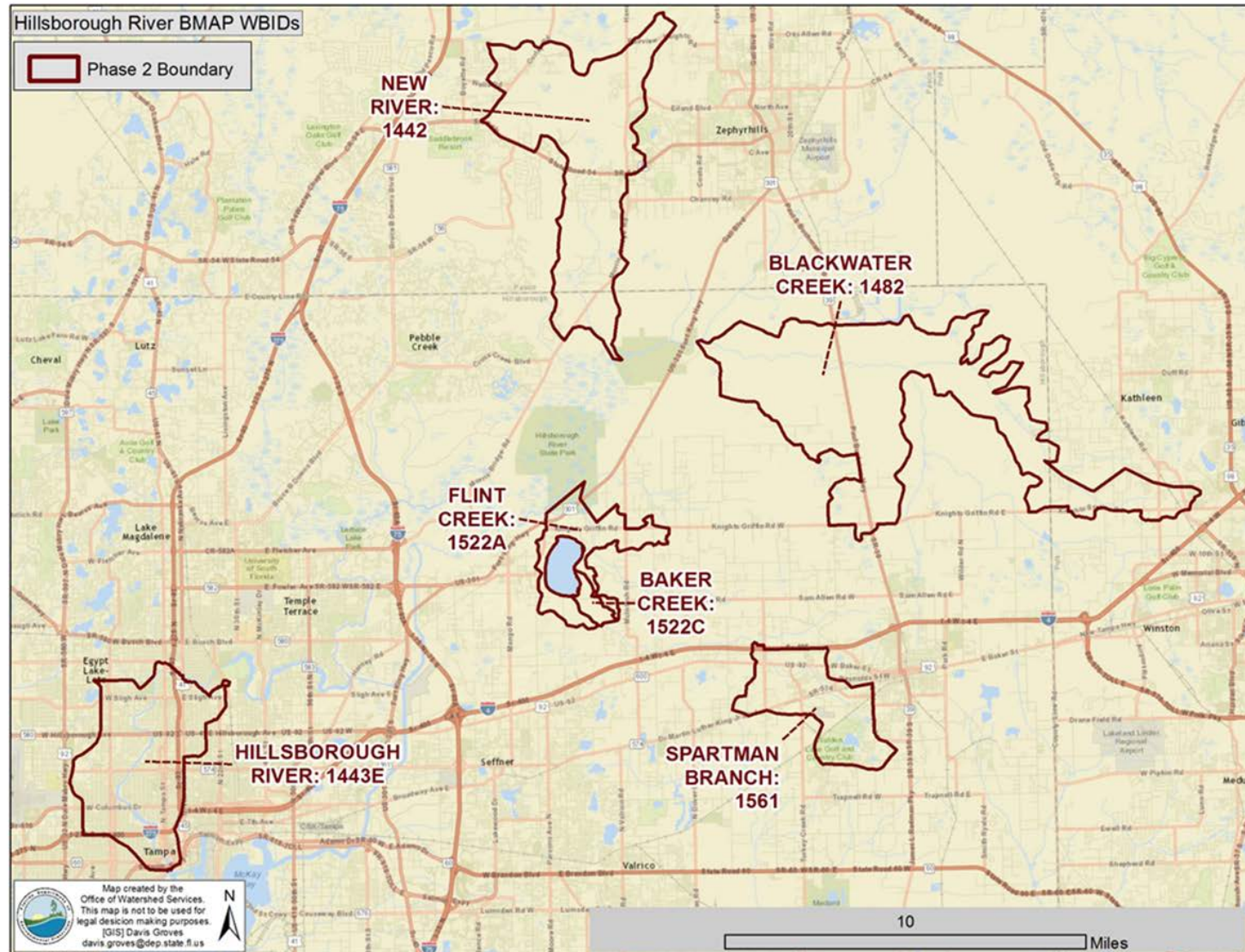


Figure 1: Hillsborough River BMAP areas

1.3 RESPONSIBLE PARTIES AND KEY STAKEHOLDERS

The following organizations and entities are key stakeholders in the Hillsborough River BMAP:

- Agriculture.
- City of Plant City.
- City of Tampa.
- City of Temple Terrace.
- Environmental Protection Commission of Hillsborough County (EPCHC).
- Florida Department of Health in Hillsborough County.
- Hillsborough County.
- Pasco County.
- Polk County.
- Florida Department of Agriculture and Consumer Services (FDACS).
- Florida Department of Environmental Protection (DEP).
- Florida Department of Transportation.
- Southwest Florida Water Management District.
- Tampa Bay Estuary Program.
- University of Florida–Institute of Food and Agricultural Sciences (UF–IFAS).
- University of South Florida.

1.4 FECAL COLIFORM REDUCTIONS SINCE BMAP ADOPTION

DEP determines progress towards meeting the fecal coliform criterion for the 6 verified impaired 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 IWR criterion during 2015 was set so that if more than 10% of the data exceeded 400 colony-forming units per 100 milliliters (cfu/100mL) during each verified period, the water is verified as impaired.

Column 5 in **Table 1** 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 **Table 1** 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 1: Fecal coliform exceedances by tributary

¹ The 7.5-year dataset is from January 1, 2008, through June 30, 2015

WBID Number	Waterbody Name	Total Number of Fecal Coliform Data Points	Number of Exceedances	Minimum Number of Exceedances To Be Considered Impaired (Subsection 62-303.420[2], F.A.C., Tables 1 and 3)	% Exceedance
1443E	Lower Hillsborough River	348	45	43	13%
1522C	Baker Creek	89	15	14	17%
1482	Blackwater Creek	96	17	14	18%
1561	Spartman Branch	28	5	6	18%
1442	New River	36	7	7	19%
1522A	Flint Creek	97	36	15	37%

Table 2 shows the percent exceedance of the IWR data periods analyzed prior to BMAP adoption (Cycle 1 and Cycle 2) and at the time of BMAP adoption (Cycle 3). Each cycle's verified period includes 7.5 years of data. To show current progress, the percent exceedance for the most recent 7.5 years of data was calculated (as described and listed above) for each WBID and included in the last column of **Table 2**. The current dataset was obtained from the Cycle 3 assessment dataset and the state's Storage and Retrieval (STORET) Database. The data search in STORET was limited to the same set of stations used in the Cycle 3 assessment dataset, and was only searched to obtain more recent data (data outside the IWR Run 50 date range).

A comparison of the data periods shows that the percent exceedance gradually decreased in the 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 slight decrease in percent exceedance for Flint Creek and a slight increase in percent exceedance for Blackwater Creek.

Pasco County data were not included in the Cycle 3 New River assessment because they were not available in STORET in time for the IWR Run 50 data pull on October 31, 2014. The dataset used to assess the current 7.5-year period includes the Cycle 3 assessment data, supplemental STORET data, and Pasco County data. The Pasco County dataset begins in 2008. The county data that fall within the dates of the Cycle 4 assessment period are likely to be included in the Cycle 4 assessment because the county is now uploading its data to STORET.

Table 2: Exceedance frequency progress toward the fecal coliform state criterion

¹ Data period is January 1, 1996, through June 30, 2003.

² Data period is January 1, 2001, through June 30, 2008.

³ Data period is January 1, 2007, through June 30, 2014.

⁴ Data period is January 1, 2008, through June 30, 2015.

WBID Number	Waterbody Name	% Exceedance Cycle 1 ¹	% Exceedance Cycle 2 ²	% Exceedance Cycle 3 ³	% Exceedance Current 7.5-Year Rolling Period ⁴
1443E	Lower Hillsborough River	18%	22%	16%	13%
1522C	Baker Creek	16%	33%	18%	17%
1482	Blackwater Creek	18%	25%	16%	18%
1561	Spartman Branch	29%	27%	23%	18%
1442	New River	43%	43%	27%	19%
1522A	Flint Creek	23%	25%	38%	37%

Section 2: WATER QUALITY MONITORING AND PATTERNS

2.1 WATER QUALITY MONITORING

The Hillsborough River 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 TMDL, to facilitate comparisons of water quality in the BMAP watersheds before and after the implementation of best management practices (BMPs), and to provide information to help guide the selection of future BMPs.

The BMAP monitoring plan consists of ambient water quality sampling at ten stations. The stations are sampled quarterly, with some sampled more frequently for other programs. The BMAP monitoring stations are monitored by the EPCHC, Polk County, and Pasco County. Hillsborough River BMAP data providers upload their data to STORET regularly, at least twice a year. **Appendix A** lists the monitoring stations in the BMAP monitoring plan and contains a map of the stations.

2.2 WATER QUALITY TRENDS

The following data plots depict the fecal coliform data at each BMAP monitoring station in each BMAP tributary and how they compare with the state water quality criterion of 400 cfu/100mL. BMAP progress assessments, as presented in **Section 1.4**, 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.

For determining impairment, the IWR assessments use a larger dataset, obtained by evaluating data from additional monitoring sites in the watershed. This section only includes data from the BMAP monitoring network stations that are a subset of the IWR monitoring network. The BMAP monitoring network station data plots 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.

In July 2015, more than 11 inches of rain flooded the western regions of the basin, affecting water quality. Rainfall levels were more than 4 inches over the typical average rainfall for July. Fecal coliform levels that spiked above 400 cfu/100mL in some creeks during the July 2015 sampling events may have

been caused by rainfall washing and suspending bacteria into the water column that usually remains in the sediments.

2.2.1 *Blackwater Creek*

As shown in **Figure 2**, in Blackwater Creek from 2002 to 2015 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 CR2 remains high. The median value for 2015 at Station 21FLHILL143 was 80 cfu/100mL, while at Station 21FLPOLKBLACKWATER CR2, the median value was 800 cfu/100mL.

Station 21FLPOLKBLACKWATER CR2 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 as natural bacteria from sediment are released into the water column. Polk County has begun taking *Escherichia coli* (*E. coli*) samples at this station, and county staff have investigated nearby areas for potential illicit connections to the natural system. No illicit connections have been found recently.

2.2.2 *New River*

New River flow is intermittent, and therefore the river is 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. Pasco and Hillsborough County staff are working collaboratively to determine if there are sources of bacteria between the two stations that may be elevating the levels at Station 21FLHILL523. **Figure 3** shows the intermittent spikes above the state criterion of 400 cfu/100mL that occurred between 2005 and 2015. The levels of the spikes do not indicate a raw human sewage source, but 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.

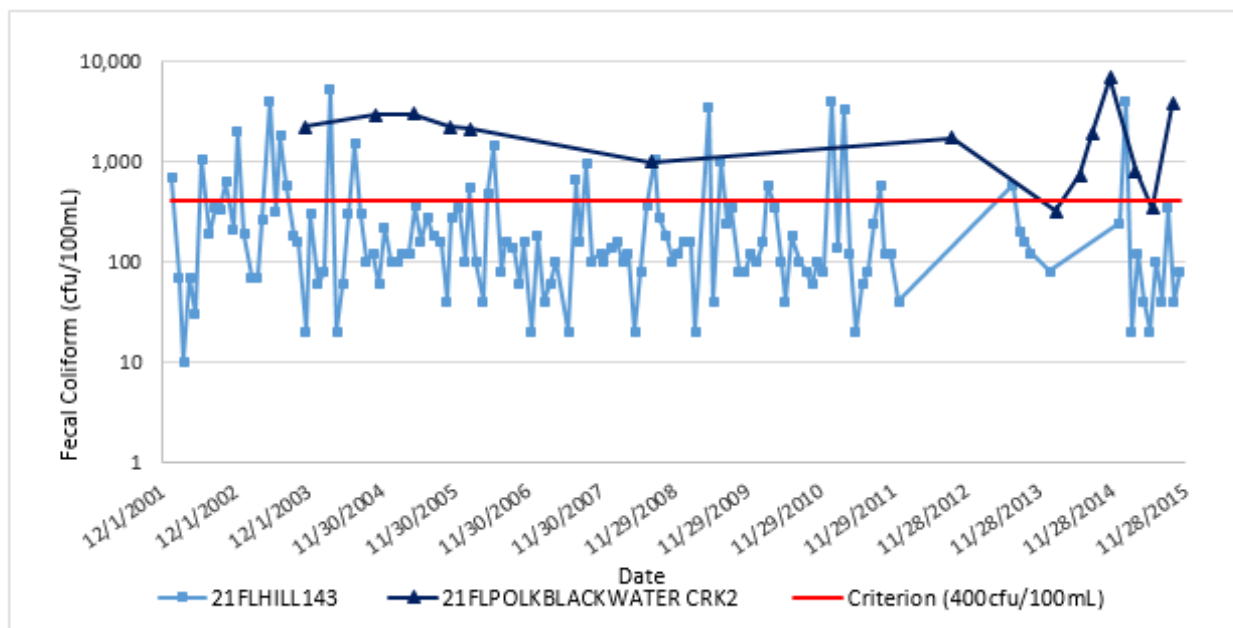


Figure 2: 2002–15 fecal coliform counts in Blackwater Creek

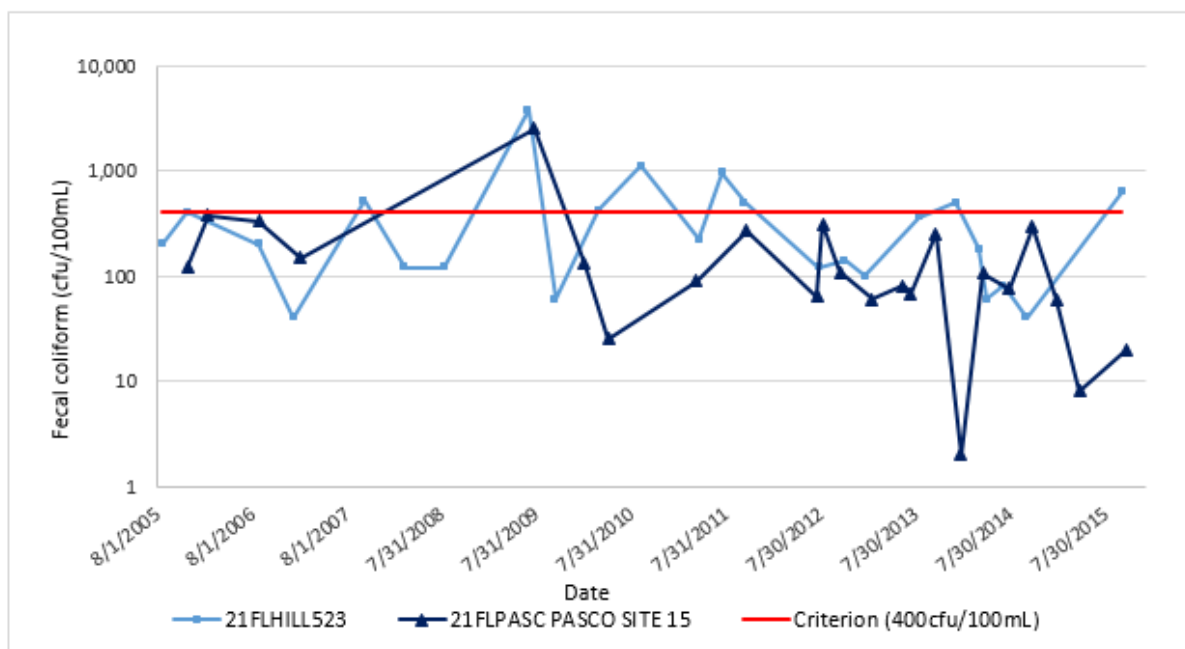


Figure 3: 2005–15 fecal coliform counts in the New River

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

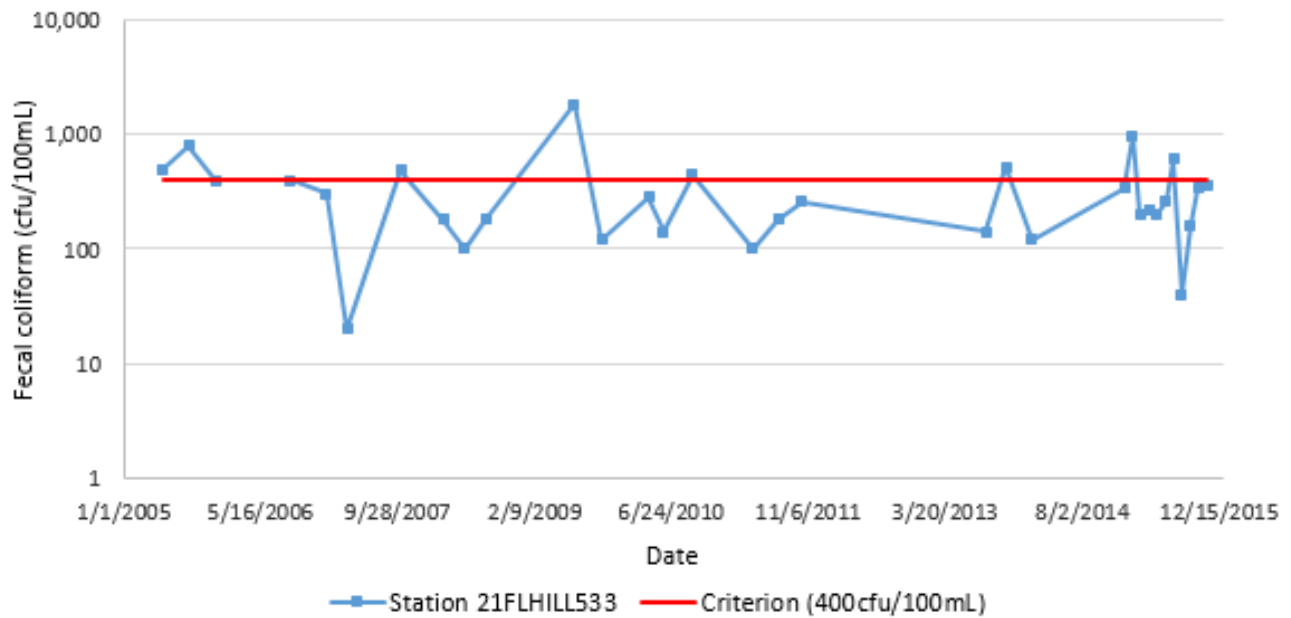


Figure 4: 2005–15 fecal coliform counts in Spartman Branch

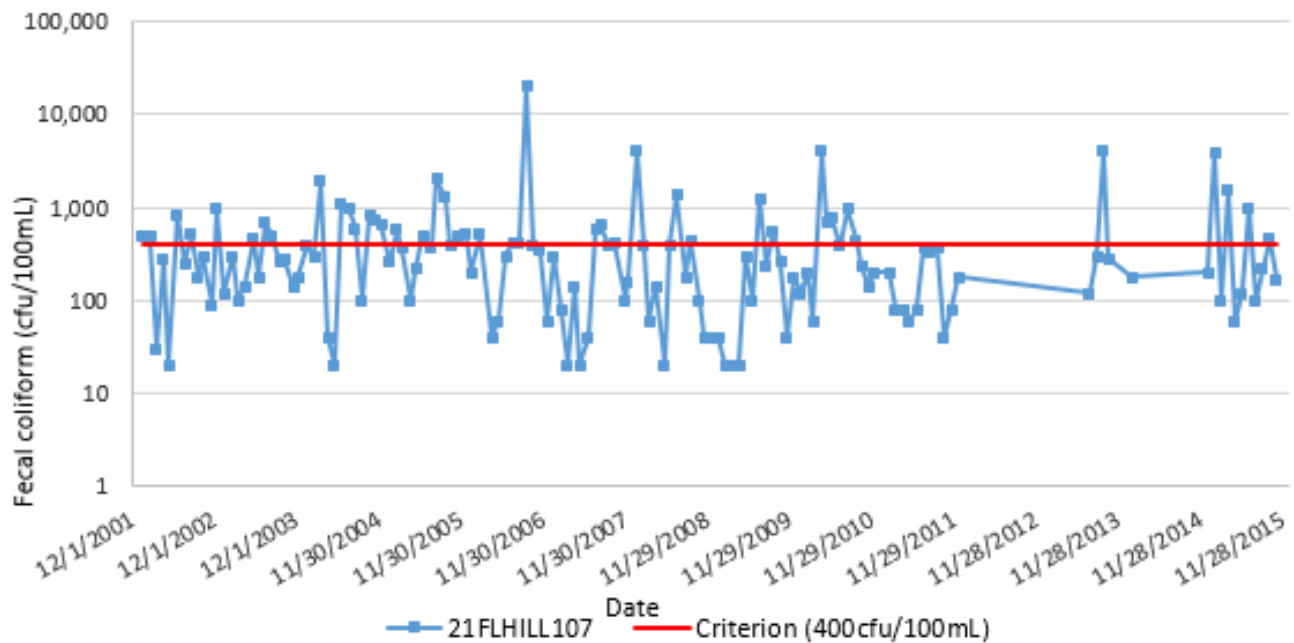


Figure 5: 2002–15 fecal coliform counts in Baker Creek

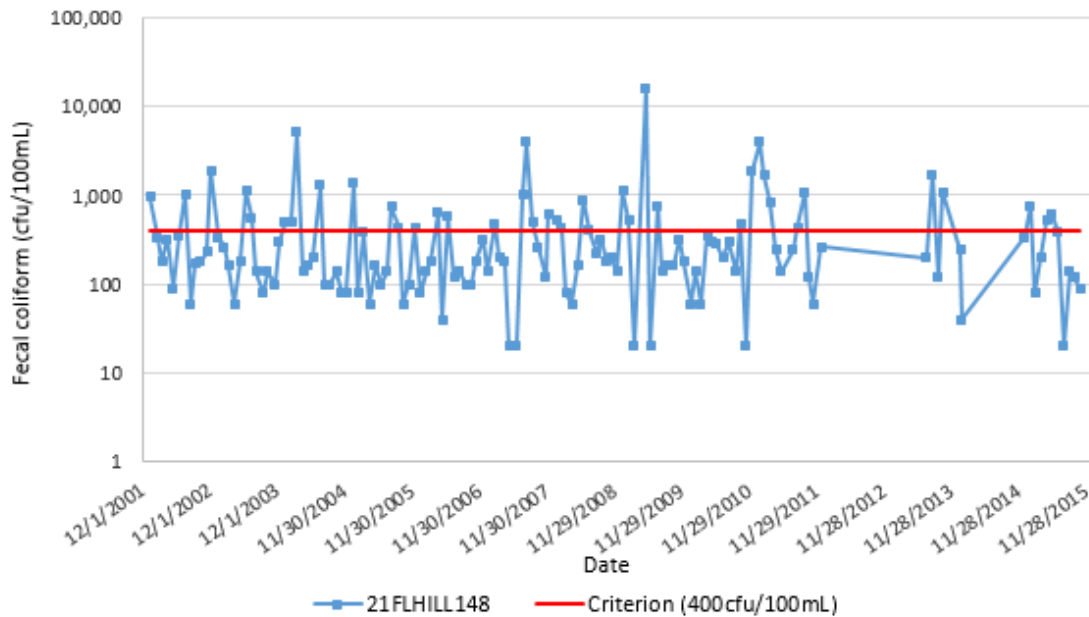


Figure 6: 2002–15 fecal coliform counts in Flint Creek

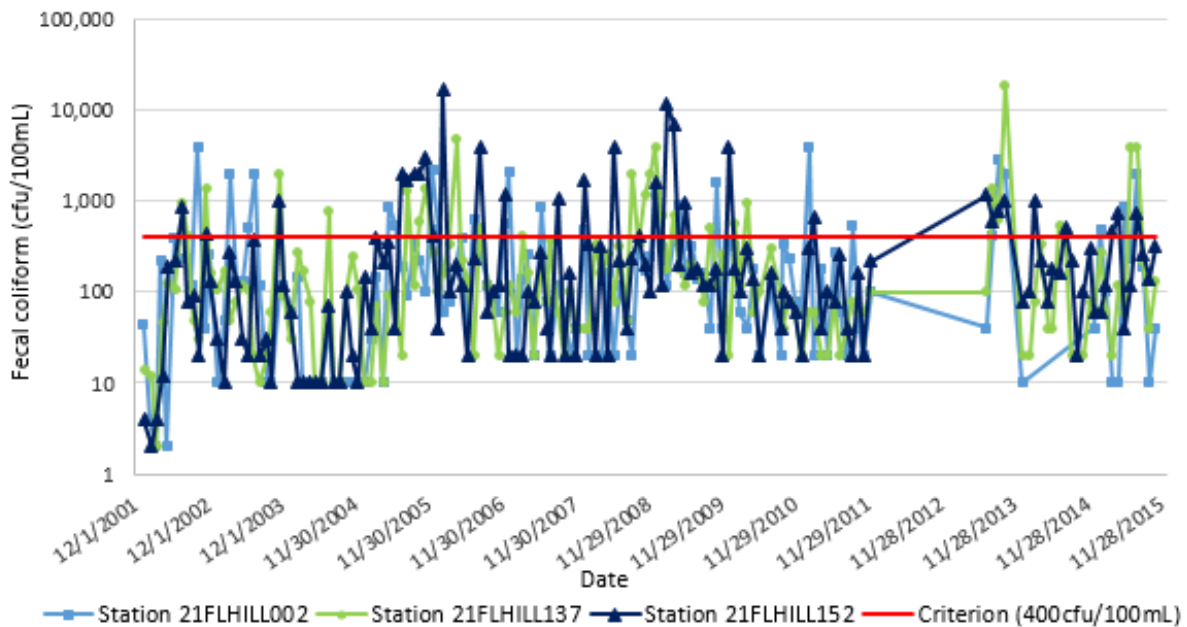


Figure 7: 2002–15 fecal coliform counts in the Lower Hillsborough River

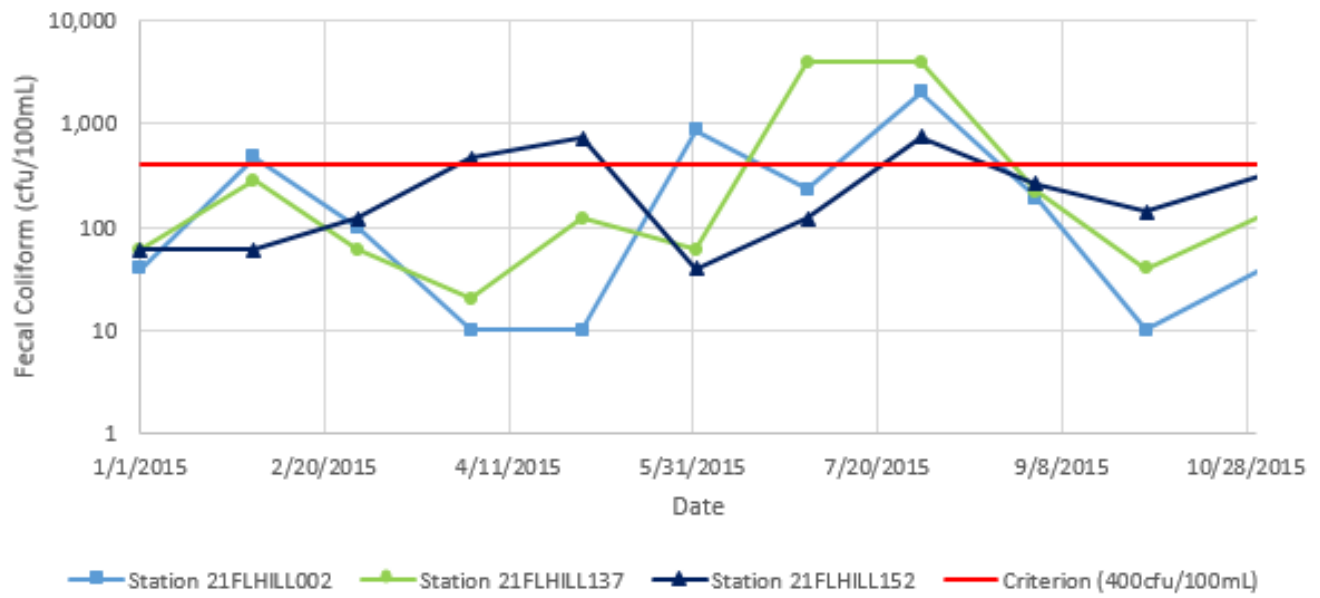


Figure 8: 2015 fecal coliform counts in the Lower Hillsborough River

Section 3: UPCOMING ACTIVITIES

DEP has updated the current water quality standard for Class III (recreational use) waters from fecal coliform to *E. coli* in freshwater environments and *Enterococci* in marine environments. To transition to the new criterion, the BMAP efforts will continue to implement the fecal coliform TMDLs while integrating sampling for *E. coli* and/or *Enterococci*, so that the waterbodies can be assessed using the new water quality standard 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.

Stakeholders will continue the implementation of ongoing maintenance programs and planned projects during the upcoming year. Meanwhile, DEP and stakeholders will work together to continue to identify the sources of fecal indicator bacteria through field investigations and monitoring of source indicator parameters.

APPENDIX A: WATER QUALITY MONITORING PLAN

Table A-1: Water quality monitoring stations

Waterbody Name	WBID Number	Monitoring Entity	Organization ID	Station ID	Station description	Sampling Frequency
Blackwater Creek	1482	EPCHC	21FLHILL	143	Blackwater Creek at SR 39 under Railroad Bridge	Quarterly
Blackwater Creek	1482	Polk County	21FLPOLK	Blackwater Crk2	Blackwater Crk2	Quarterly
Baker Creek	1522C	EPCHC	21FLHILL	107	Baker Creek at Thonotosassa-Plant City Road	Quarterly
Flint Creek	1522A	EPCHC	21FLHILL	148	Flint Creek at US 301 Bridge Eastside	Quarterly
Lower Hillsborough River	1443E	EPCHC	21FLHILL	152	Lower Hillsborough River at Sligh Avenue	Quarterly
Lower Hillsborough River	1443E	EPCHC	21FLHILL	137	Lower Hillsborough River at Columbus Drive Bridge	Quarterly
Lower Hillsborough River	1443E	EPCHC	21FLHILL	002	Lower Hillsborough River at Platt Street	Quarterly
New River	1442	Pasco County	21FLPASC	015	New River at Creek Road	Quarterly
New River	1442	EPCHC	21FLHILL	523	New River at Morris Bridge Road	Quarterly
Spartman Branch	1561	EPCHC	21FLHILL	533	Spartman Branch Beauchamp Road East of North Forbes Road	Quarterly

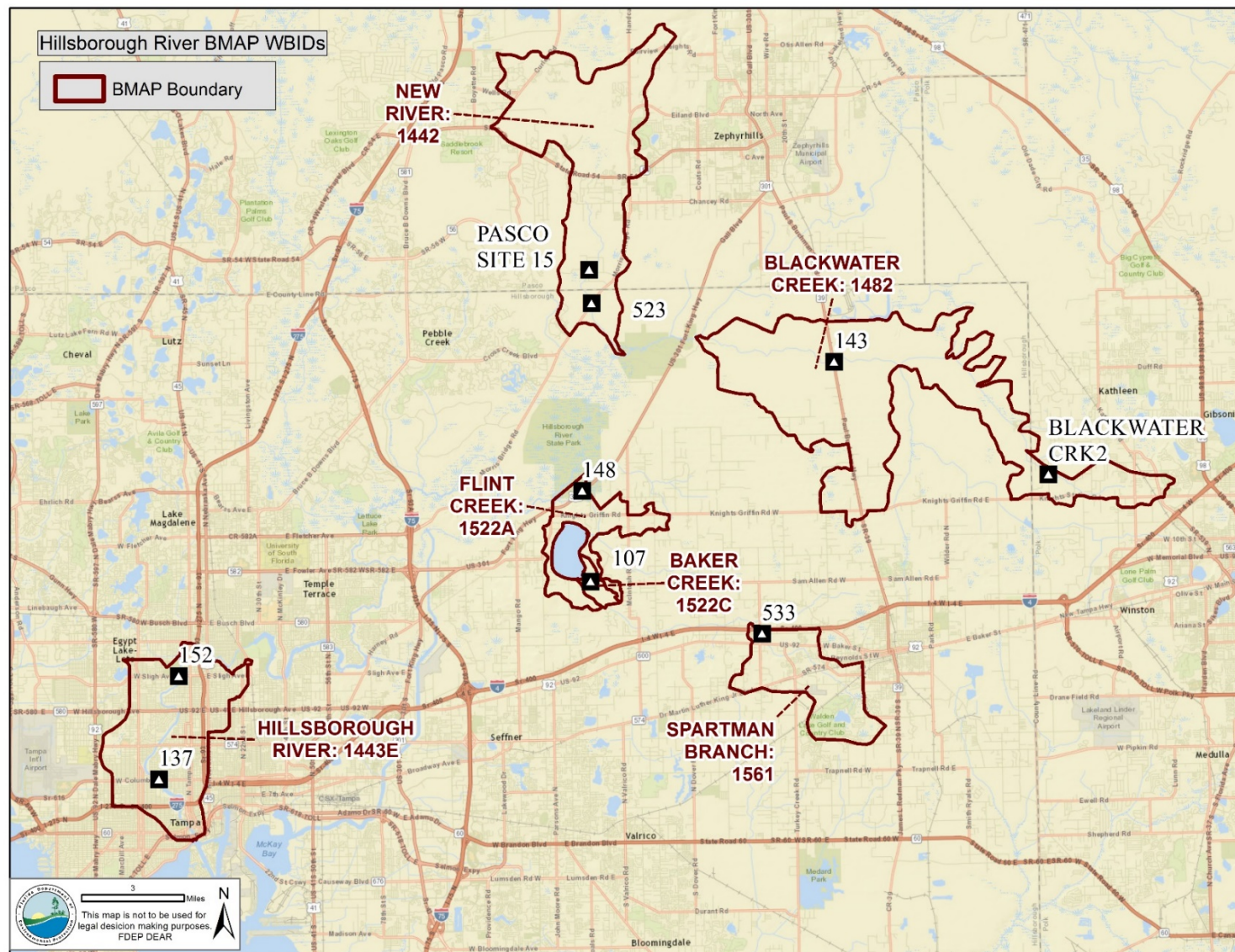


Figure A-1: Monitoring stations for fecal coliform and nutrients in the Hillsborough River Basin