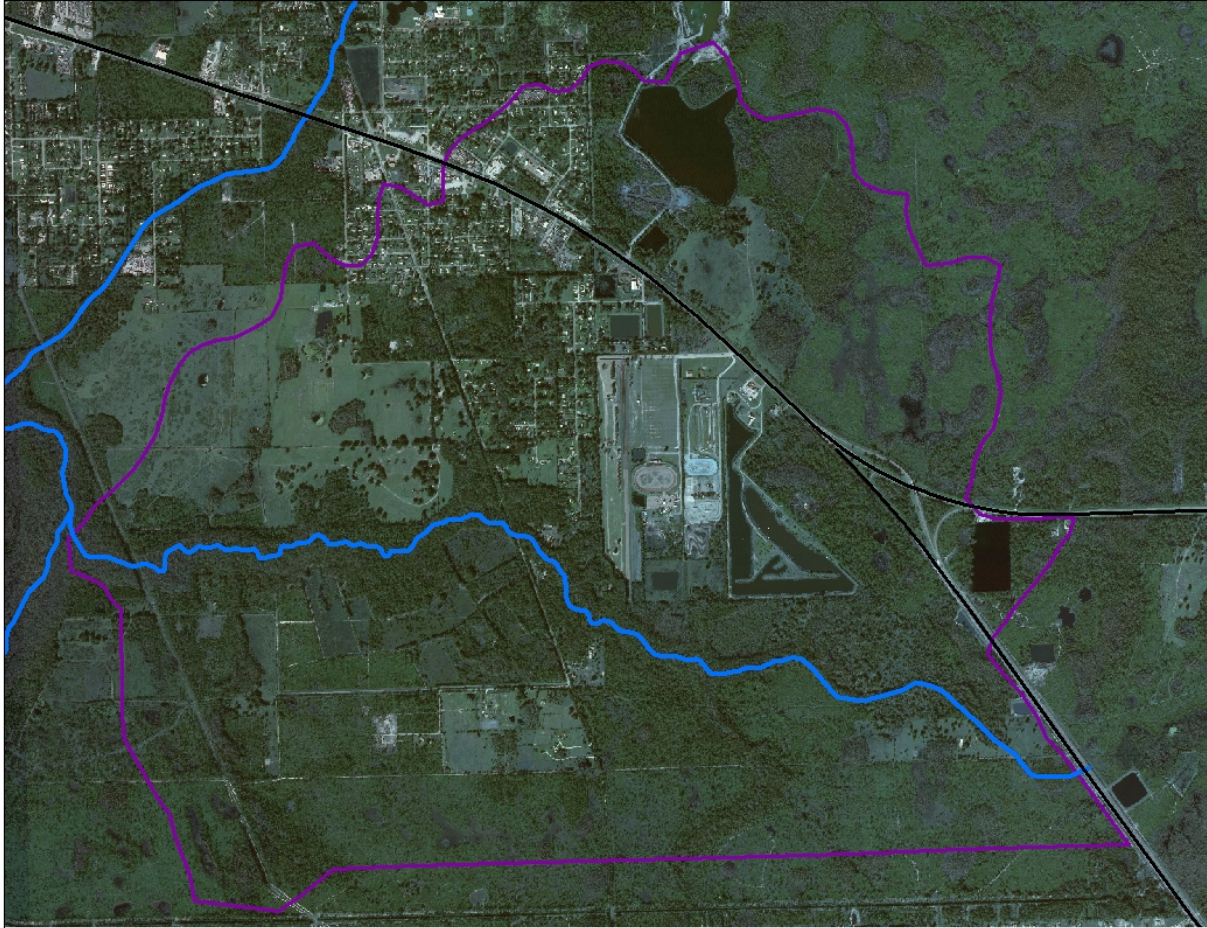


2014 PROGRESS REPORT

For the Long Branch Basin Management Action Plan



Prepared by the
Division of Environmental Assessment and Restoration
Water Quality Restoration Program
Florida Department of Environmental Protection
Tallahassee, Florida 32399

In cooperation with the
Long Branch BMAP stakeholders

August 2014

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This Long Branch BMAP 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 in cooperation with the Long Branch stakeholders, including:

- Florida Department of Agriculture and Consumer Services.
- Florida Department of Environmental Protection.
- Orange County Environmental Protection Department.
- Orange County Health Department.

For additional information on the watershed management approach in the Long Branch Basin, contact:

Moira Rojas, Basin Coordinator
Florida Department of Environmental Protection
Water Quality Restoration Program, Watershed Planning and Coordination Section
2600 Blair Stone Road, Mail Station 3565
Tallahassee, FL 32399-2400
Email: Moira.Rojas@dep.state.fl.us
Phone: (850) 245-8460

TABLE OF CONTENTS

LIST OF ACRONYMS AND ABBREVIATIONS	III
SUMMARY	IV
SECTION 1 : INTRODUCTION	1
1.1 Purpose of the Report	1
1.2 Total Maximum Daily Load for the Long Branch Basin	1
1.3 Responsible Parties and Key Stakeholders	2
1.4 BMAP Allocations	2
SECTION 2 : STATUS OF BMAP MANAGEMENT ACTIONS	4
2.1 Speed World Assessment	4
2.2 Mobile Home Park Issues	4
2.3 Agriculture	4
2.4 Summary of Efforts	5
2.5 Hydrologic Measurements and Water Quality Sampling	8
2.5.1 OCEPD Monitoring Results	8
2.5.2 BMAP Monitoring Plan Results	8
2.6 Next Steps	12

LIST OF FIGURES

<i>Figure 1: Location of the Long Branch Watershed</i>	<i>3</i>
<i>Figure 2: Agricultural BMP Implementation within the Long Branch Basin</i>	<i>5</i>
<i>Figure 3: August 2013 DO Data in Long Branch</i>	<i>11</i>
<i>Figure 4: November 2013 DO Data in Long Branch</i>	<i>11</i>

LIST OF TABLES

<i>Table 1: Long Branch TMDLs and Reduction Requirements</i>	<i>1</i>
<i>Table 2: Management Actions Summary</i>	<i>6</i>
<i>Table 3: Water Quality Data</i>	<i>8</i>
<i>Table 4: Fecal Coliform and Sucralose Results</i>	<i>9</i>

LIST OF ACRONYMS AND ABBREVIATIONS

BMAP	Basin Management Action Plan
BMP	Best Management Practice
BOD	Biochemical Oxygen Demand
Department	Florida Department of Environmental Protection
DO	Dissolved Oxygen
FDACS	Florida Department of Agriculture and Consumer Services
mL	Milliliter
MS4	Municipal Separate Storm Sewer System
OCEHD	Orange County Environmental Health Department
OCEPD	Orange County Environmental Protection Department
OCSMD	Orange County Stormwater Management Division
RV	Recreational Vehicle
SCI	Stream Condition Index
SJRWMD	St. Johns River Water Management District
TMDL	Total Maximum Daily Load
TN	Total Nitrogen
TP	Total Phosphorus

SUMMARY

TOTAL MAXIMUM DAILY LOADS

The Long Branch watershed is located within the Middle St. Johns River Basin and is a tributary to the Big Econlockhatchee River. The watershed is entirely within unincorporated Orange County and comprises approximately 4,511 acres, including a small portion of the unincorporated town of Bithlo. Streamflow in this system is intermittent, and there is typically only flow immediately after a storm event. Times of no flow or stagnant water in Long Branch are common.

In 2006, the Florida Department of Environmental Protection adopted total maximum daily loads (TMDLs) to address elevated fecal coliforms and low dissolved oxygen (DO) in Long Branch. For the DO TMDL, three different causative pollutants were found: (1) biochemical oxygen demand (BOD) in the tributaries, (2) total phosphorus (TP) in the tributaries, and (3) total nitrogen (TN) in the mainstem. The BMAP to implement the TMDLs was adopted by the Department in May 2008.

This is the fifth annual progress report for the Long Branch BMAP, reflecting progress for the first six years of BMAP implementation. The information presented in this report includes updates on activities and monitoring that occurred from June 1, 2013 through May 31, 2014.

STATUS OF BMAP MANAGEMENT ACTIONS

The stakeholders have continued the source assessment efforts in the Long Branch watershed. Orange County Environmental Protection Division (OCEPD) staff made four quarterly visits to eight site locations within the Long Branch area. Staff have been unable to collect any samples from the ditches discharging from Speed World because of stagnant flow or dry conditions, which are inappropriate for sample collection. The Orange County Environmental Health Department (OCEHD) addressed the sewage overflow at the J&C Mobile Home Park, which was documented in May 2013 and reported in the fifth-year assessment report. OCEHD continues to monitor this facility to ensure compliance. The Florida Department of Agriculture and Consumer Services (FDACS) determined that there were no additional agricultural producers that needed to be enrolled in best management practices (BMPs) in the basin. In addition, OCEPD continued the sampling program in the watershed, although low water and/or no flow conditions made it difficult to collect data. As stated in the fifth-year assessment report, the new monitoring plan began on August 1, 2013 and ended on May 22, 2014. The Department's Central District Office collected the additional data to supplement OCEPD's existing monitoring efforts.

Data were collected from two sites within the middle segment of Long Branch, and monitoring included a combination of water quality and biological sampling.

ACTIVITIES FOR THE UPCOMING YEAR

The adopted BMAP has been in place for six years, despite numerous assessments and water quality sampling events, the source(s) of the low DO and fecal coliforms are still unknown. The majority of the basin is undeveloped with large areas of forest, open lands, and wetlands. Therefore, it appears that the low DO concentrations may be a natural condition for the waterbody and that the majority of fecal coliform loading is from wildlife. Based on the monitoring plan results, the Department plans to delist Long Branch as not impaired during the 2014 Group 2, Cycle 3 assessment, which is currently underway. The Department's Central District will continue monitoring to track water quality in Long Branch. In lieu of future BMAP progress reports, brief annual water quality reports will be prepared to evaluate trends in Long Branch. If data indicate that water quality is deteriorating, BMAP efforts will resume to help reduce the nutrients and/or fecal coliform contributions to Long Branch.

Section 1: INTRODUCTION

1.1 PURPOSE OF THE REPORT

This is the fifth annual progress report for the Long Branch Basin Management Action Plan (BMAP), reflecting progress for six years of BMAP implementation. The information presented in this report includes updates on activities that occurred from June 1, 2013 through May 31, 2014.

1.2 TOTAL MAXIMUM DAILY LOAD FOR THE LONG BRANCH BASIN

The Long Branch watershed is located within the Middle St. Johns River Basin. Long Branch is a tributary to the Big Econlockhatchee River and is located in east central Orange County as shown on **Figure 1**. The watershed is generally bounded on the west by the Big Econlockhatchee River, to the south by the Wedgefield Subdivision, to the east by State Road 520, and to the north by Madison Avenue. The area of the watershed is entirely within unincorporated Orange County and comprises approximately 4,511 acres, including a small portion of the unincorporated town of Bithlo. Long Branch consists of a northern tributary that drains the southeastern portion of Bithlo, a southern tributary that drains a conservation area, and the mainstem flanked primarily by wetlands. Streamflow in this system is intermittent, and there is typically only flow immediately after a storm event. Times of no flow or stagnant water in Long Branch are common.

In 2006, the Florida Department of Environmental Protection adopted total maximum daily loads (TMDLs) to address elevated fecal coliforms and low dissolved oxygen (DO) in Long Branch. For the DO TMDL, three different causative pollutants were found: (1) biochemical oxygen demand (BOD) in the tributaries, (2) total phosphorus (TP) in the tributaries, and (3) total nitrogen (TN) in the mainstem. Thus, the DO TMDL is expressed in terms of these three parameters. **Table 1** lists the TMDLs adopted for Long Branch. The BMAP to implement the TMDLs was adopted by the Department in May 2008.

TABLE 1: LONG BRANCH TMDLs AND REDUCTION REQUIREMENTS

PARAMETER	TMDL	ORANGE COUNTY PERMITTED STORMWATER (PERCENT REDUCTION)	OTHER NONPOINT (PERCENT REDUCTION)
Fecal Coliform	4.64 x 10 ¹⁰ counts/day	32%	32%
BOD (tributaries)	14.96 tons/year	10%	10%
TP (tributaries)	0.74 tons/year	30%	30%
TN (mainstem)	5.20 tons/year	17%	17%

1.3 RESPONSIBLE PARTIES AND KEY STAKEHOLDERS

The Long Branch BMAP identified the Orange County municipal separate storm sewer system (MS4), other urban stormwater, and agriculture as potential sources of the BOD, TN, TP, and fecal coliform impairments in the basin. Orange County is responsible for the reductions and investigations in the BMAP. Several county departments are involved in these efforts including the Orange County Environmental Protection Division (OCEPD), Orange County Environmental Health Department (OCEHD), and Orange County Stormwater Management Division (OCSMD). In addition to these entities, the Florida Department of Agriculture and Consumer Services (FDACS), the Department, and St. Johns River Water Management District (SJRWMD) are key to the implementation of the BMAP activities.

1.4 BMAP ALLOCATIONS

With only one permitted source in the watershed, the Orange County MS4, there was no need to divide the initial DO TMDL allocation beyond permitted nonpoint and non-permitted nonpoint sources. In addition, fecal coliform counts in the natural environment are variable. Given the unknowns about fecal coliform behavior in Long Branch (such as the potential for regrowth in the sediments, frequency of extremely low flow, effect of sampling day selection relative to flow), division of the fecal coliform allocation could not be made. Thus, detailed allocations were not developed in the Long Branch BMAP.

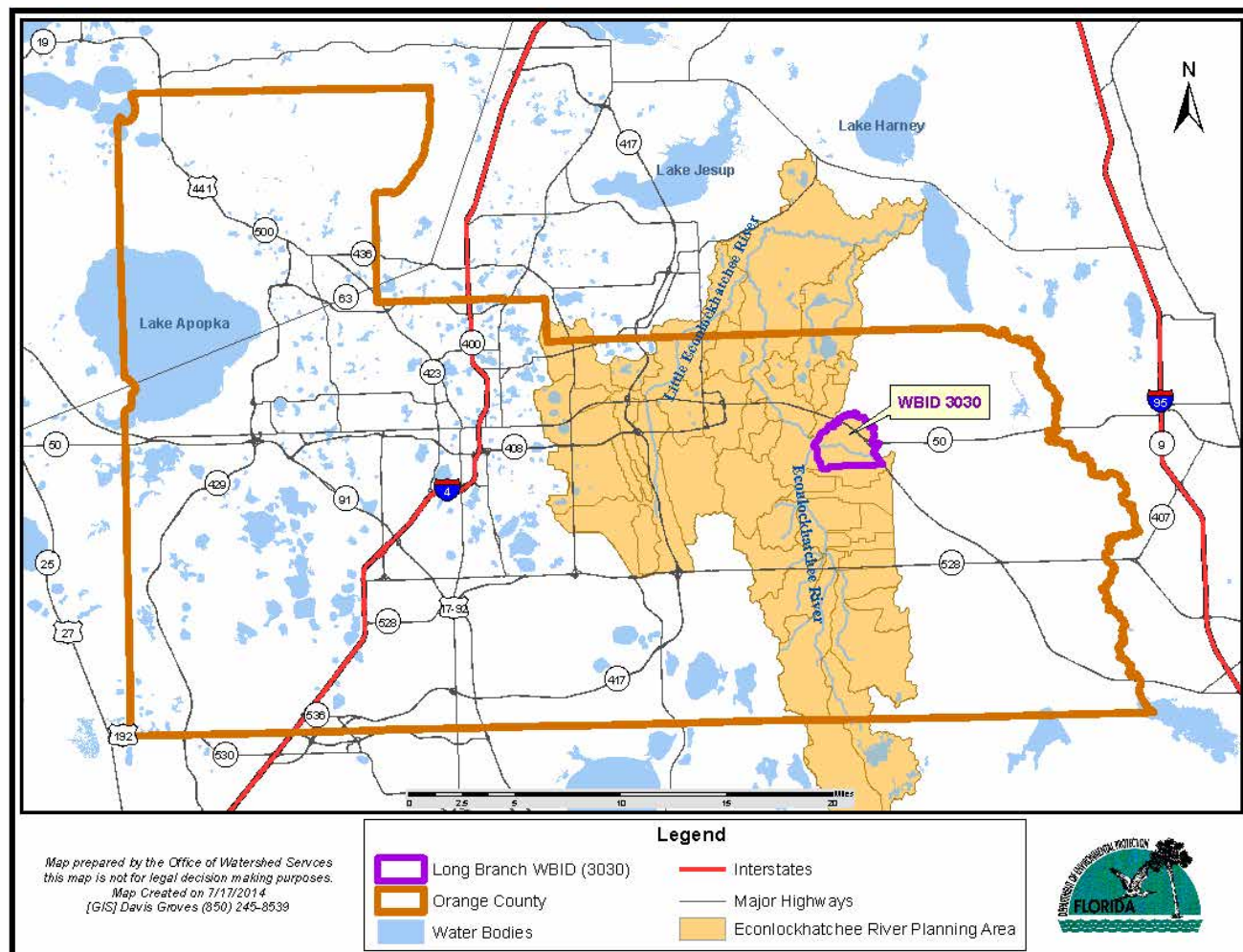


FIGURE 1: LOCATION OF THE LONG BRANCH WATERSHED

Section 2: STATUS OF BMAP MANAGEMENT ACTIONS

2.1 SPEED WORLD ASSESSMENT

The existing bathroom facility at Speed World is adequate for small events; however, for larger multi-day events Speed World provides portable toilets. In addition, pump-out access is provided to recreational vehicle (RV) owners by a private company. OCEPD has made signs stating that onsite discharge of waste is illegal and the signs are posted with the owner's permission in the area where RVs park, which is adjacent to a drainage canal. The signs are visible to Speed World attendees as well as the adjacent property owners. During the reporting period, staff did not attend any Speed World events to observe how waste was handled. In addition, as a result of stagnant flow or dry conditions, which are inappropriate for sample collection, staff were unable to collect any samples from the ditches discharging from Speed World.

2.2 MOBILE HOME PARK ISSUES

OCEHD continued its enforcement actions in the basin. The documented incident that occurred on May 10, 2013 (reported in the fifth-year assessment report) in which the J&C Mobile Home Park had a sewage overflow was addressed during the reporting period. This mobile home park has had several sewer overflows over the last few years. OCEHD continues to monitor this facility to ensure compliance.

2.3 AGRICULTURE

The largest agricultural operation in the Long Branch basin, a 600-acre cow/calf operation (see **Figure 2**), enrolled in the BMP program in spring 2010. About half of the operation resides inside the basin. FDACS contracted field staff visited the enrolled cow/calf operation on July 9, 2014, to conduct a BMP Implementation Assurance review. At present, the owner maintains only a few cows on the property, and has not applied fertilizer or lime to the pasture in several years. The pastures mostly have returned to native vegetation. A portion of the ranch that runs along the Little Econlockhatchee River is in a conservation easement with SJRWMD and Orange County and will never be developed. Although, the ranch is no longer in production, FDACS will periodically check the status of agricultural activity on the ranch. Based on aerial photos and SJRWMD 2009 land use data, there appears to be little other agriculture in the basin. The updated land use indicates that there are approximately 50 acres of field crops in the basin. However, 48 acres, located in the southern half of the basin, appear to be residential equestrian facilities and associated pasture. The remaining two acres are improved pasture that appears

to be vacant. In the northern portion of the basin, there are approximately 77 acres of improved pasture that was historically used for cattle grazing, but an Office of Agricultural Water Policy contractor contacted the current landowner and determined that the land is now vacant and awaiting development. Therefore, there are no additional agriculture properties that need to enroll in BMPs in the basin.

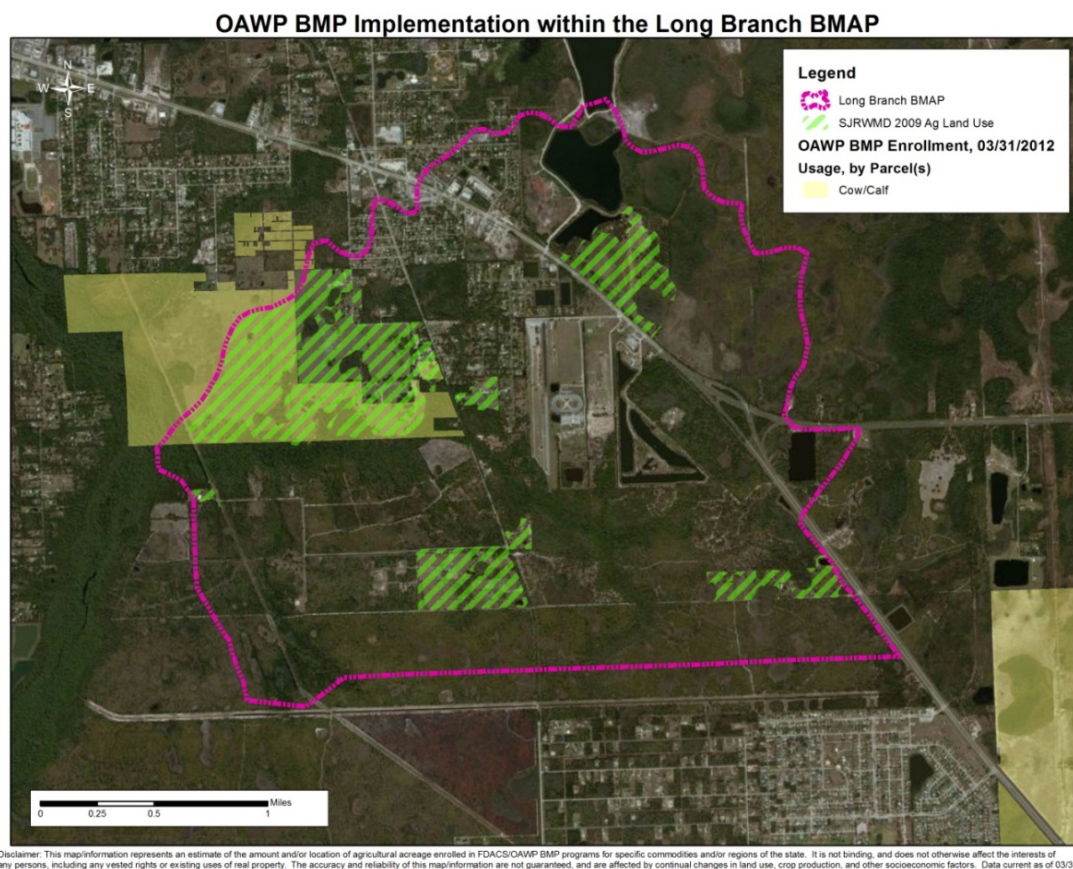


FIGURE 2: AGRICULTURAL BMP IMPLEMENTATION WITHIN THE LONG BRANCH BASIN

2.4 SUMMARY OF EFFORTS

Table 2 summarizes the management actions that were described above, as well as other broad-based actions, which have contributed to water quality improvements in the Long Branch Basin.

TABLE 2: MANAGEMENT ACTIONS SUMMARY

- = Empty cell/no data

MANAGEMENT ACTION	DESCRIPTION	TIMELINE	RESPONSIBLE PARTY
Hydrologic Measurements	Flow-related measurements have occurred at Site G along County Road 13 since March 2008. An acoustic flow velocity meter and pressure transducer was installed that recorded velocity and stage, respectively. The County installed ISCO 2150 series flow modules on April 16, 2010 at the location of the Long Branch tributary and County Road 13 to capture smaller velocities in order to document the low to no flow conditions. The county removed the flow modules on March 9, 2011, and the data confirm that the water recedes quickly after an event unless the tributary is staged by the Econlockhatchee River, which results in stagnant to near stagnant conditions or no water. The equipment can be re-deployed if additional data are needed. Sampling conditions at the site have continued to be problematic, as the flashiness of the system does not allow for the collection of water samples on a routine basis. Due to low water and /or no flow, no samples were collected at station BELB. However, OCEPD did collect samples at several upstream sites listed in Table 3 .	Ongoing	OCEPD
Sanitary Survey	A field survey was conducted on April 2, 2010 and no visible illicit connections from septic systems to the creek were observed. OCEH followed up on one washing machine connection, past inspections for the mobile home parks, and septic tank repair records for Bithlo. Flooding does not appear to be an issue for septic tanks in the area.	Completed	OCEHD
Mobile Home Park Issues	The OCEHD addressed the compliance issues at the J&C Mobile Home Park related to past sewage overflows.	Completed	OCEHD
Optical Brightener Testing	Optical brightener tests have not been performed in the Long Branch basin. Use in other waterbodies provided inconclusive results. However, Methylene Blue Active Substances testing was conducted to determine whether detergents were present; the results were negative. Samples at Site D came back positive for human sewage indicators.	Completed	OCEPD
Speed World Wastewater Field Visits and Follow-up	Staff coordinated with the Speed World owner regarding onsite waste management during events. OCEPD has posted signs stating that onsite discharge of waste is illegal. Staff have been unable to collect any samples to date from the ditches discharging from Speed World following an event due to low or no flow conditions.	Completed	OCEPD
MS4 Permit Implementation	Orange County is a Phase I MS4 (Permit No. FLS000011) responsible for developing and implementing a stormwater management program that reduces pollutants in stormwater to the maximum extent practicable. This involves a broad range of activities from public education through erosion control, stormwater system and facility inspections, and system inventories.	Ongoing	OCEPD
Public Education and Outreach	To help citizens develop a commitment to the environment's health and well-being, the County conducts two types of public outreach efforts: those intended to change behavior and those intended to inform the public about water resources. These efforts include implementation of the Florida Yards and Neighborhoods Program, the Orange County Water Atlas www.orange.wateratlas.org , brochures, public presentations, school programs, Earth Day activities, and other outreach efforts.	Ongoing	Orange County
Econlockhatchee River Protection Program	Orange County has established special criteria for development within the Big Econlockhatchee River Basin, which are defined in Chapter 15 of the County's Code of Ordinances. Within this basin, Orange County regulations require pollution abatement, recharge where possible, and flood protection.	Ongoing	OCEPD

Final 2014 Progress Report Long Branch Basin Management Action Plan – August 2014

MANAGEMENT ACTION	DESCRIPTION	TIMELINE	RESPONSIBLE PARTY
Orange County Fertilizer Ordinance	Orange County has implemented a countywide fertilizer ordinance effective March 1, 2010, that is applicable to turf fertilization. The ordinance addresses nitrogen and phosphorus content, weather and seasonal application restrictions, a fertilizer-free zone around waterbodies, the requirement for a deflector shield on spreaders, the requirement for training for applicators, and enforcement options as necessary.	Ongoing	Orange County
Pollution Abatement Swale Design Criteria	The County has researched the possibility of developing more specific criteria for the design, construction, and maintenance of environmental berms and swales on properties abutting lakes and streams. The County has identified specific deficiencies in the current code that require modification. These modifications would apply to new development and redevelopment in the Land Development Code.	Program under development	OCSMD
Environmental Control Regulations (Ch. 15, Article X, Orange County Code)	Orange County has established environmental regulations for development within Orange County. These regulations require pollution abatement, flood protection, and wetland habitat preservation.	Ongoing	Orange County
Stormwater Regulations (Ch. 38, Zoning, Orange County Code)	In the zoning code, Orange County established stormwater regulations for development within Orange County. These regulations require pollution abatement, recharge criteria, and flood protection.	Ongoing	Orange County
Environmentally Sensitive Lands Ordinance (Chapter 15, Article XVIII)	Provides further protection of habitat, buffer areas of the Econlockhatchee River, and density requirements.	Ongoing	Orange County
Environmental Resource Permit	Activities that exceed SJRWMD permitting thresholds must be authorized by an Environmental Resource Permit from the District, which incorporates both stormwater treatment and mitigation of any wetland impacts.	Ongoing	SJRWMD
Agricultural BMPs	FDACS develops, adopts, and implements BMPs to reduce water quality impacts from agricultural discharges and enhance water conservation. FDACS has enrolled the largest agricultural operation in BMPs, and there appears to be no other agriculture in the basin that needs to be enrolled.	Completed	FDACS and Private Landowners

2.5 HYDROLOGIC MEASUREMENTS AND WATER QUALITY SAMPLING

2.5.1 OCEPD MONITORING RESULTS

The sample sites for Long Branch include one site (BELB) that is part of the overall long-term OCEPD sampling program. However, due to low water and/or no flow, no data were collected at this site. During the reporting period, OCEPD staff collected samples at several upstream sites listed in **Table 3**. All of the sites met the proposed revised DO criteria of above 38% DO saturation for the sampling events during the report period.

TABLE 3: WATER QUALITY DATA

STATION	STATION NAME	SAMPLE DATE	DO (MG/L)	DO SATURATION (%)	FECAL COLIFORMS (COUNTS/100 mL)
XLONGBRO	Long Branch Site O	7/8/2013	7.2	94.5	530
XLONGBRD	Long Branch Site D	7/8/2013	5.4	66.5	500
XLONGBRG	Long Branch Site G	7/8/2013	4.4	54.9	3,800
XLONGBRG	Long Branch Site G	10/14/2013	5.6	63.2	5,900
XLONGBRO	Long Branch Site O	10/14/2013	3.5	40.2	2,200
XLONGBRG	Long Branch Site G	2/12/2014	6.3	64.5	928
XLONGBRD	Long Branch Site D	2/12/2014	6.9	72.3	580

2.5.2 BMAP MONITORING PLAN RESULTS

As noted in the five-year assessment report, the majority of the Long Branch Basin is undeveloped with large areas of forest, open lands, and wetlands. In addition, approximately 34% of the watershed is in public ownership or management. Based on these conditions, it appears that the low DO concentrations may be a natural condition for the waterbody and that the majority of fecal coliform loading is from wildlife. To verify these assumptions, the Department and Orange County created a new monitoring plan to gather additional data in Long Branch.

This monitoring began on August 1, 2013 and ended on May 22, 2014. The Department's Central District Office collected the additional data to supplement OCEPD's existing monitoring efforts (described above). Data were collected from two sites within the middle segment of Long Branch, and the monitoring included a combination of water quality and biological sampling.

For the water quality monitoring, grab samples were collected at the two sites to assess nutrients, fecal coliforms, metals, and field conditions. Grab samples of sucralose were also collected to help determine if the fecal coliforms were coming from a human source. In addition, a DO sonde was deployed for two,

one week periods (one in August 2013 and one in November 2013) to provide a diel reading of DO. Biological sampling was conducted at two different times (in August 2013 and November 2013) to gather data for the stream condition index (SCI), which measures the number of different organisms present in the stream.

The median fecal coliform value was 220 counts per 100 milliliters (mL) (see **Table 4**). The water quality standard for fecal coliforms is 400 counts per 100 mL; therefore, the values in Long Branch are currently meeting the standards. In addition, the sucralose samples had very low concentrations, which indicates a very small contribution from human waste sources to the fecal coliform counts. These results indicate that the fecal coliform concentrations found in Long Branch are most likely from wildlife sources.

TABLE 4: FECAL COLIFORM AND SUCRALOSE RESULTS

N/A = Not applicable

STATION	DATE	FECAL COLIFORMS (COUNTS/100 mL)	SUCRALOSE (MICROGRAMS PER LITER [µG/L])
LONG BRANCH-1	8/1/2013	96	0.083
LONG BRANCH-2	8/1/2013	88	0.11
LONG BRANCH-1	8/8/2013	N/A	0.12
LONG BRANCH-2	8/8/2013	N/A	0.17
LONG BRANCH-1	8/22/2013	290	0.14
LONG BRANCH-2	8/22/2013	102	0.13
LONG BRANCH-1	9/1/2013	220	N/A
LONG BRANCH-2	9/1/2013	267	N/A
LONG BRANCH-1	9/5/2013	110	0.17
LONG BRANCH-2	9/5/2013	220	0.16
LONG BRANCH-1	11/1/2013	108	N/A
LONG BRANCH-2	11/1/2013	755	N/A
LONG BRANCH-1	11/14/2013	62	0.22
LONG BRANCH-2	11/14/2013	300	0.17
LONG BRANCH-1	1/1/2014	2	N/A
LONG BRANCH-2	1/1/2014	480	N/A
LONG BRANCH-1	2/20/2014	N/A	0.2
LONG BRANCH-2	2/20/2014	N/A	0.2
LONG BRANCH-1	3/27/2014	13	0.4
LONG BRANCH-2	3/27/2014	440	0.36
LONG BRANCH-1	5/13/2014	41	0.28
LONG BRANCH-2	5/13/2014	1,310	0.28
LONG BRANCH-1	5/22/2014	310	0.24
LONG BRANCH-2	5/22/2014	307	0.25

STATION	DATE	FECAL COLIFORMS (COUNTS/100 mL)	SUCRALOSE (MICROGRAMS PER LITER [µG/L])
Median	N/A	220	N/A

The August 2013 DO data were between 4 mg/L and 5 mg/L (see **Figure 3**). The November 2013 DO data were generally between 3 mg/L and 4 mg/L (see **Figure 4**). Although these DO concentrations do not meet the standard of 5 mg/L, two SCI evaluations for Long Branch were also conducted that showed healthy biological communities in the stream. The August 2013 SCI score was 42 and the November 2013 SCI score was 45, both of which are passing scores. Therefore, although the DO standard was not met, the biological community in Long Branch has not been affected so the low DO appears to be a natural condition. In addition, the DO percent saturation values achieve the new DO standard, which was adopted by the Department in 2013.

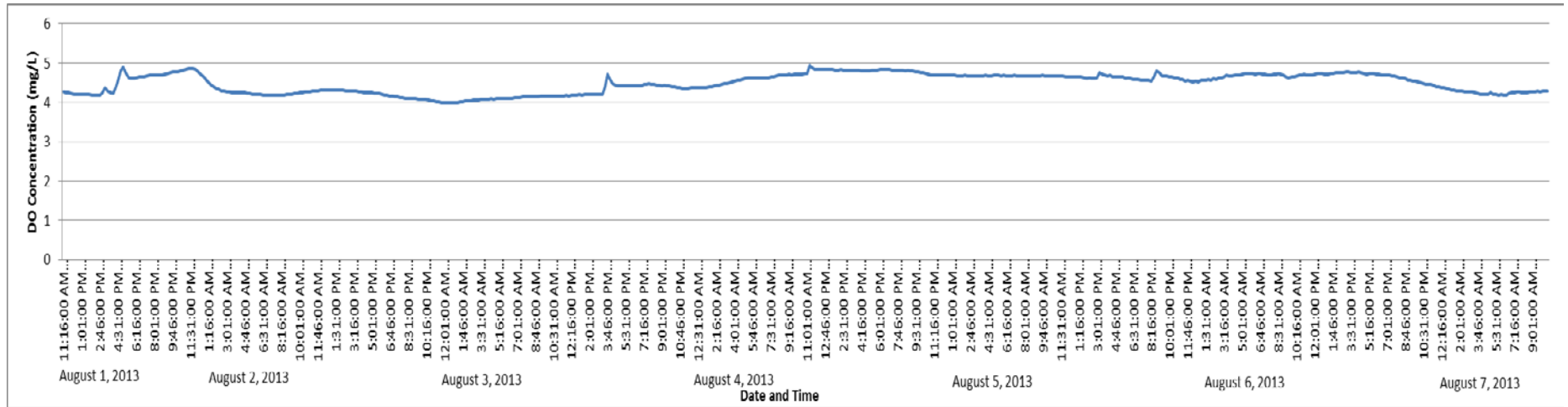


FIGURE 3: AUGUST 2013 DO DATA IN LONG BRANCH

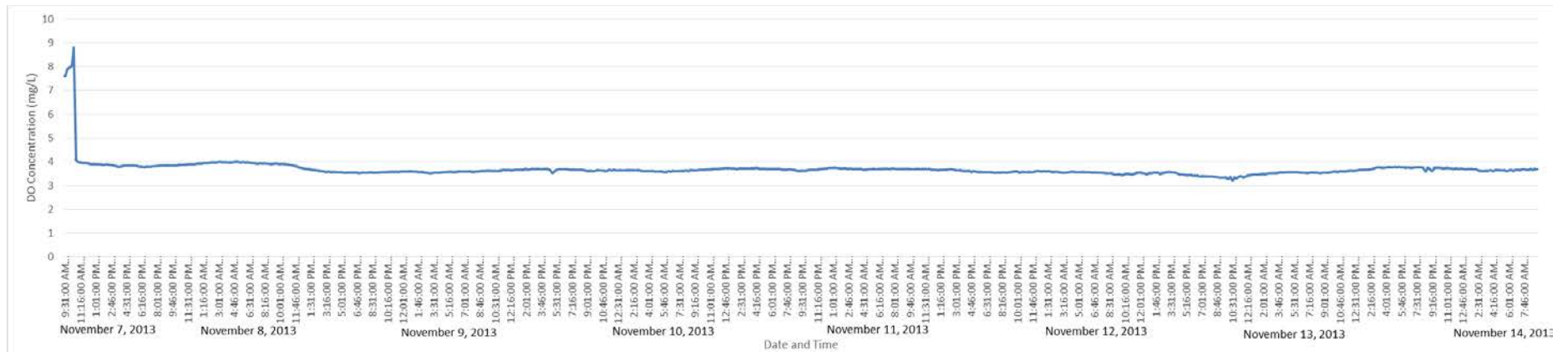


FIGURE 4: NOVEMBER 2013 DO DATA IN LONG BRANCH

2.6 NEXT STEPS

Based on monitoring plan results, the Department plans to delist Long Branch as not impaired during the 2014 Group 2, Cycle 3 assessment, which is currently underway. The Department's Central District will continue monitoring the sampling sites identified in the monitoring plan to track water quality in Long Branch. In lieu of future BMAP progress reports, brief annual water quality reports will be prepared to evaluate trends in Long Branch. If the data indicate that water quality is deteriorating, BMAP efforts will resume to help reduce the nutrients and/or fecal coliform contributions to Long Branch.