

2015 PROGRESS REPORT

for the Everglades West Coast 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

with participation from the
Everglades West Coast Stakeholders

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This 2015 Progress Report for the Everglades West Coast 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 Everglades West Coast stakeholders.



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LIST OF ACRONYMS AND ABBREVIATIONS

BMAP	Basin Management Action Plan
BMP	Best Management Practice
CDD	Community Development District
CREW	Corkscrew Regional Ecosystem Watershed
DEP	Florida Department of Environmental Protection
DO	Dissolved Oxygen
FDACS	Florida Department of Agriculture and Consumer Services
FDOT	Florida Department of Transportation
FYN	Florida Yards and Neighborhoods (Program)
lbs/yr	Pounds Per Year
mg/L	Milligrams Per Liter
MS4	Municipal Separate Storm Sewer System
NOI	Notice of Intent
NPDES	National Pollutant Discharge Elimination System
OAWP	FDACS Office of Agricultural Water Policy
PSA	Public Service Announcement
SFWMD	South Florida Water Management District
STORET	STOrage and RETrieval (Database)
TMDL	Total Maximum Daily Load
TN	Total Nitrogen
WBID	Waterbody Identification

SUMMARY

Total Maximum Daily Loads (TMDLs)

The Florida Department of Environmental Protection (DEP) adopted total nitrogen (TN) TMDLs for [Hendry Creek](#) and the [Imperial River](#) in August 2008 to address the dissolved oxygen (DO) impairments in these waterbodies. DEP adopted the [Everglades West Coast Basin Management Action Plan \(BMAP\)](#) in November 2012 to implement the TN TMDLs in the watershed. This is the third annual Progress Report for the Everglades West Coast BMAP, and it describes the activities that occurred during the reporting period from December 1, 2014, through November 30, 2015.

Summary of Load Reductions

During the third annual BMAP reporting period, in the Hendry Creek Basin, several entities continued their ongoing efforts and Lee County increased street sweeping collection. Because of recent revisions to Florida Department of Transportation (FDOT) maintenance contracts, the FDOT street sweeping program changed in the 2014–15 fiscal year. However, the agency recently developed an approach to resolve the issue with the street sweeping contracts and expects to reimplement street sweeping by the next reporting period in order to provide DEP with reasonable assurance that FDOT can meet its reduction schedule. The reductions mentioned above are in addition to those projects given credit before BMAP adoption. Therefore, the total estimated reduction to date is 7,012 lbs/yr of TN, or 68% of the reductions needed to meet the TMDL. **Figure ES-1** shows progress towards the Hendry Creek TN TMDL load reduction.

In the Imperial River Basin, local entities also continued their ongoing efforts, and Lee County increased its street sweeping collection. In addition, the TN reductions from agricultural BMP implementation were updated, and enrollments during the reporting period resulted in a reduction of 882 lbs/yr TN. The reductions mentioned above are in addition to those projects given credit before BMAP adoption and in previous annual reports. Therefore, the total reduction to date is 14,513 lbs/yr of TN, or 24% of the reductions needed to meet the TMDL. **Figure ES-2** shows progress towards the Imperial River TN TMDL load reduction.

Water Quality Monitoring

Lee County continued monitoring at 14 water quality stations in the Hendry Creek Basin. At 4 of these stations, the DEP South District collected data quarterly. Lee County also continued monitoring at 5

water quality stations in the Imperial River Basin. In addition, the city of Bonita Springs continued monitoring at 7 water quality stations in the Imperial River Basin.

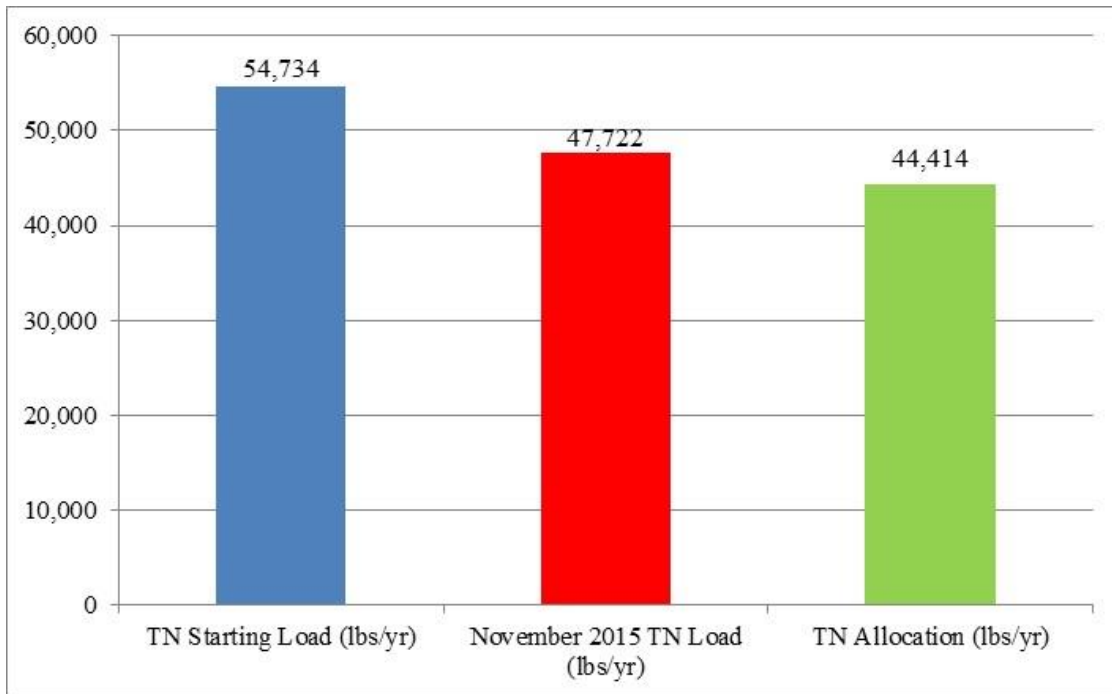


Figure ES-1: Progress towards the Hendry Creek TN TMDL through November 30, 2015

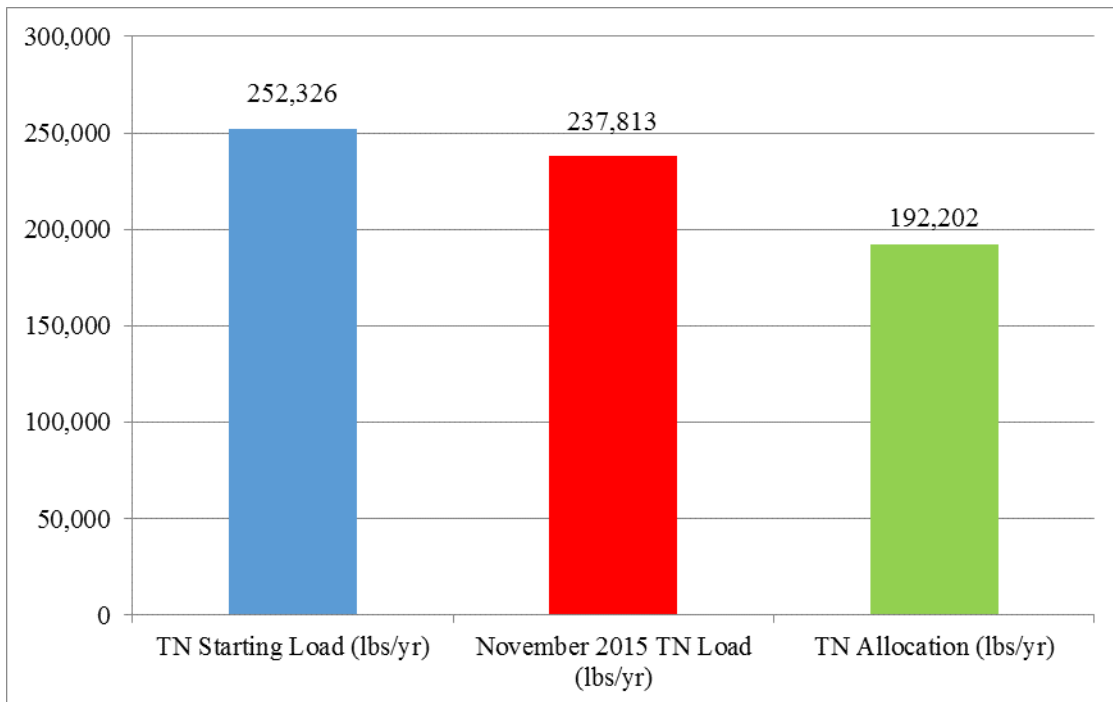


Figure ES-2: Progress towards the Imperial River TN TMDL through November 30, 2015

Section 1: INTRODUCTION

1.1 Purpose of the Report

This is the third annual Progress Report for the Everglades West Coast Basin Management Action Plan (BMAP). **Section 2** and **Section 3** describe the activities that occurred from December 1, 2014, through November 30, 2015, for the Hendry Creek and Imperial River Basins, respectively. **Section 4** describes the water quality monitoring that occurred during the reporting period.

1.2 Total Maximum Daily Loads (TMDLs) for the Everglades West Coast Basin

Hendry Creek and the Imperial River (**Figure 1** and **Figure 2**) were determined to be impaired for low dissolved oxygen (DO), caused by high concentrations of total nitrogen (TN). The Florida Department of Environmental Protection (DEP) adopted the TN TMDLs for [Hendry Creek](#) and the [Imperial River](#) in August 2008 to address the DO impairments (**Table 1**). DEP adopted the [Everglades West Coast BMAP](#) in November 2012 to implement the TN TMDLs in the watersheds.

Table 1: Everglades West Coast TMDLs

WBID = Segment with waterbody identification number
 mg/L = Milligrams per liter
 NPDES = National Pollutant Discharge Elimination System

WBID	Waterbody	Parameter	TMDL (mg/L)	Wasteload Allocation for NPDES Stormwater (% Reduction)	Load Allocation (% Reduction)
3258B	Hendry Creek	TN	0.74	44%	44%
3258B1	Hendry Creek	TN	0.60	44%	44%
3258E	Imperial River	TN	0.74	24.87%	24.87%

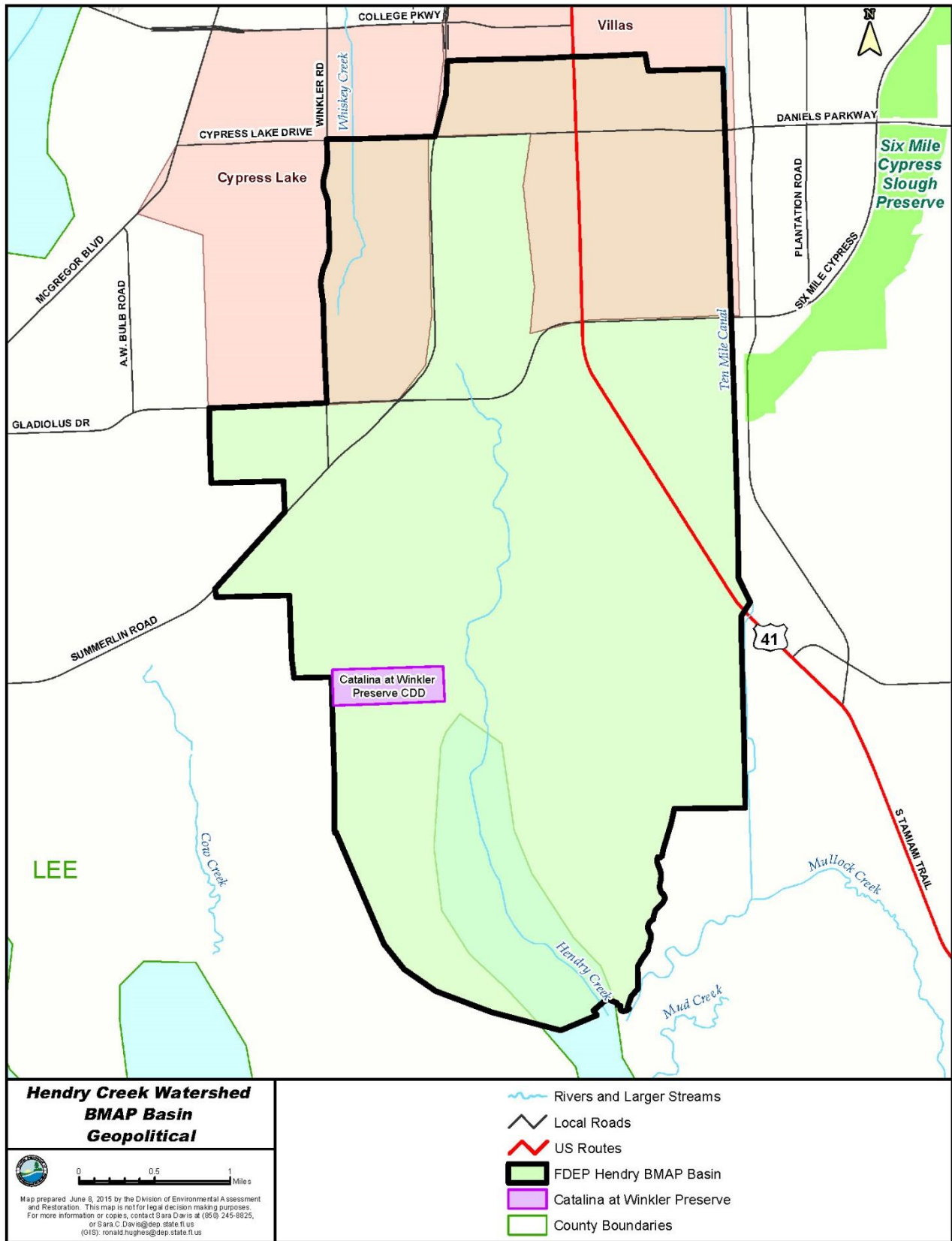


Figure 1: Hendry Creek Basin

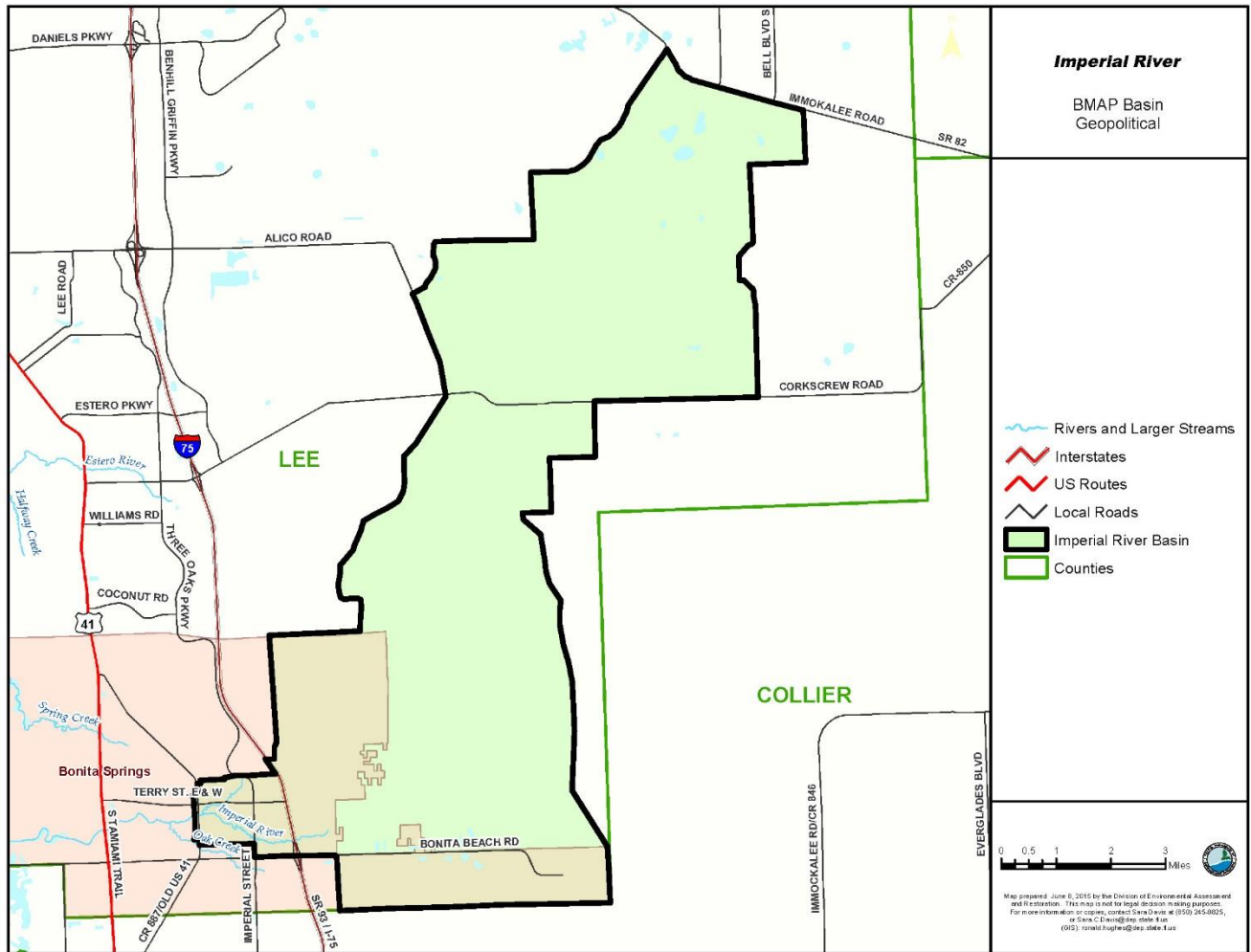


Figure 2: Imperial River Basin

1.3 Responsible Parties and Key Stakeholders

The following organizations and entities are key stakeholders with assigned load reductions in the Hendry Creek portion of the Everglades West Coast BMAP:

- Agriculture.
- Catalina at Winkler Preserve Community Development District (CDD).
- Lee County.
- Florida Department of Transportation (FDOT) District 1.

The following organizations and entities are key stakeholders with assigned load reductions in the Imperial River portion of the Everglades West Coast BMAP:

- Agriculture.
- City of Bonita Springs.
- Lee County.
- FDOT District 1.

In addition to these entities, the Florida Department of Agriculture and Consumer Services (FDACS), DEP, and the South Florida Water Management District (SFWMD) are essential to the implementation of the BMAP activities.

Section 2: HENDRY CREEK ACTIVITIES DURING THE REPORTING YEAR

Section 2.1 through **Section 2.2** describe the accomplishments in the Hendry Creek Basin during the reporting year. New projects added to the individual project tables are described below, as are individual projects completed during the reporting period. Ongoing efforts such as street sweeping, ordinances, and public education efforts, while not specifically described below, must continue each year for the project credit to remain effective. **Appendix A** contains the individual project tables.

2.1 Activities by Entity in the Hendry Creek Basin

2.1.1 FDOT District 1

Because of recent revisions to FDOT maintenance contracts, the agency's street sweeping program changed in the 2014–15 fiscal year. However, FDOT recently developed an approach to resolve the issue with the street sweeping contracts so that street sweeping credits can be appropriately evaluated for the BMAP. FDOT expects to reimplement street sweeping by the end of the reporting period in order to provide DEP with reasonable assurance that FDOT can meet its reduction schedule. For these reasons, the reductions associated with FDOT street sweeping were not updated in this report.

2.1.2 Lee County

Lee County increased its street sweeping efforts, resulting in an increase in reductions of 148 lbs/yr and total street sweeping credits of 224 lbs/yr. The county also performed proactive inspections to ensure compliance with its fertilizer ordinance. During the reporting period, the county performed 30 inspections that resulted in 3 warning citations and 14 citations with fines.

Lee County rolled out an updated "Fertilize Smart" campaign entitled "Don't Feed the Monster" in 2014, and expanded this campaign in 2015. The campaign includes an [updated website](#), a [social media site](#), brochure materials, and a [public service announcement \(PSA\) video featuring "The Slime Monster."](#) Lee County funded the placement of 197 Slime Monster spots on local television stations. All stations delivered no-charge, added value to the commercials. A new addition to the "Fertilize Smart" campaign efforts involves the placement of billboards in four locations in Lee County.

Additionally, Lee County conducted vegetation harvesting at Lakes Park Filter Marsh, removing 301.5 cubic yards of material.

2.1.3 Agriculture

In the SFWMD region, FDACS currently has seven field staff who work with producers on best management practice (BMP) enrollment and implementation. Landowners who sign Notices of Intent (NOIs) agree to implement applicable BMPs on their enrolled properties. FDACS updates its enrollment database quarterly.

These quarters do not necessarily align with the reporting periods for the various BMAPs. For example, this annual Progress Report covers the reporting period from December 1, 2014, through November 30, 2015. However, the enrollment reflected is through September 30, 2015. As of this date, FDACS had enrolled 30.7 acres in the Hendry Creek Basin (**Table 2**) based on the entire parcel acreage.

Table 2: Agricultural acreage and BMP enrollment for the Hendry Creek Basin

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

2004 SFWMD Land Use	2004 Acres	FDACS-Adjusted Acres for Enrollment ¹	Related FDACS BMP Programs	Acreage Enrolled	Related NOIs
Pasture	0.2	N/A	Cow/Calf, Vegetable and Agronomic Crops (hay)	0.0	0
Row/Field/Mixed Crops	87.1	50.5	Vegetable/Agronomic Crops	0.0	0
Tree Nurseries	0.0	5.0	Statewide Nursery, Specialty Fruit and Nut	0.0	0
Ornamentals	10.6	35.6	Container Nursery	30.7	2
Total	97.9	91.1		30.7	2

In the Hendry Creek Basin, agricultural land uses include improved pasture, row crops, and ornamentals. According to 2004 land use data, these comprise 98 acres in the basin (**Table 2**). Not all the acreage listed as agriculture in **Table 2** is included in enrollment calculations, because the NOIs document the estimated total number of acres on which applicable BMPs are implemented, not the land use acreage mapped as agriculture. Land use data can contain nonproduction acres (such as buildings, parking lots, and fallow acres) that will not be used in BMAP reduction calculations. There also may be acreage that is not appropriate for enrollment in the FDACS Office of Agricultural Water Policy (OAWP) BMPs, such as lands not in commercial production. When looking at the portion of the enrolled acreage associated with these agricultural land uses, 27 acres were enrolled as of September 2015 (**Figure 3** and **Table 3**). The BMPs implemented on this acreage resulted in reductions of 78 lbs/yr of TN.

Table 3: Summary of agricultural enrollment in the Hendry Creek Basin

Category	Acres
Total Agricultural Acres in BMAP	98
FDACS-Adjusted Agricultural Acres in BMAP	91
BMAP Phase I FDACS Enrollment Goal (50%)	45
Enrolled Acres Used for TN Reduction Calculation	27
TN Reduction (lbs/yr)	78
BMAP Phase I Remaining Acres To Enroll	18
Total Remaining Acres To Enroll	71

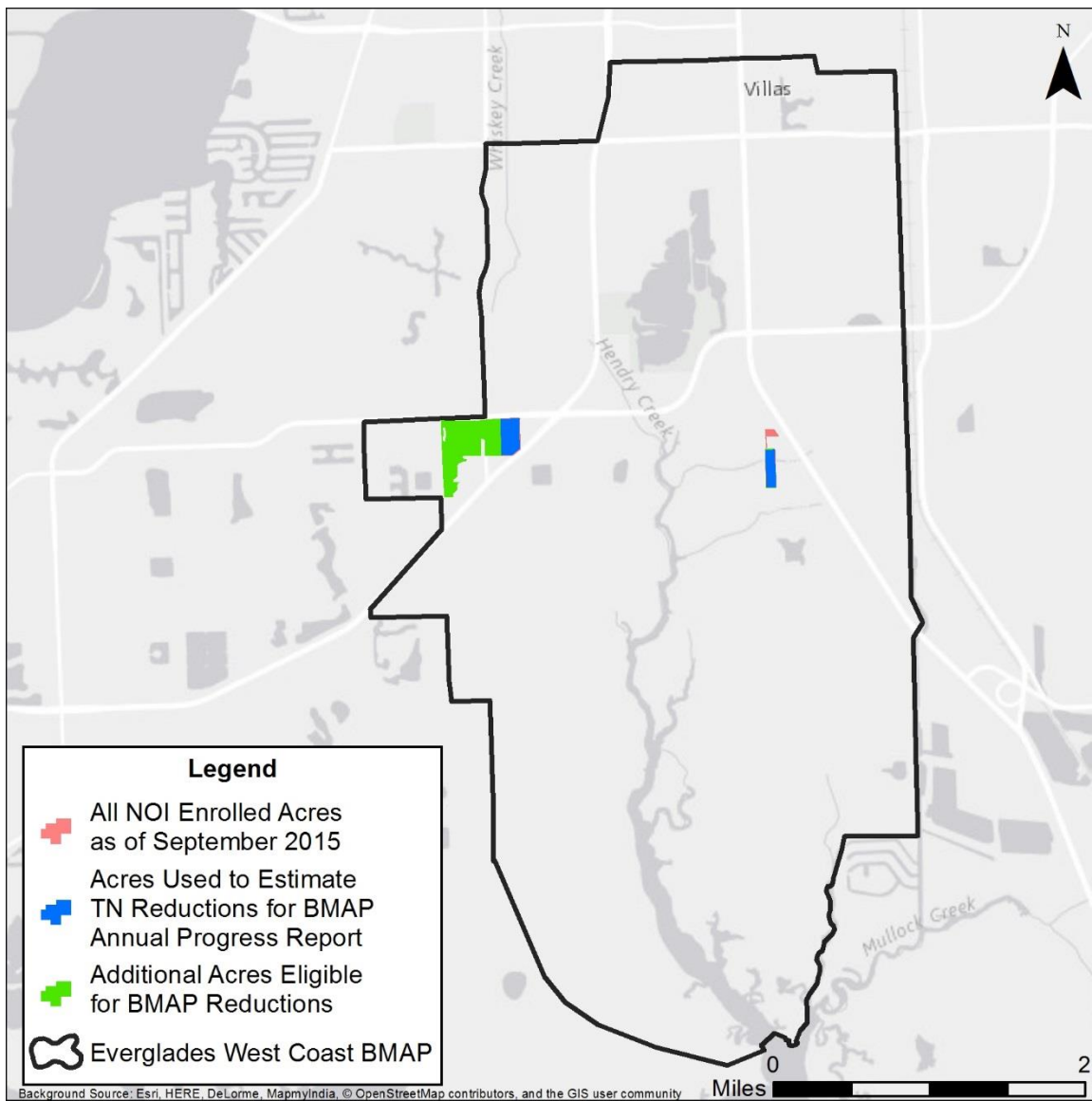


Figure 3: FDACS BMP Program enrollments in the Hendry Creek Basin as of September 30, 2015

2.2 Summary of Load Reductions in the Hendry Creek Basin

Table 4 summarizes the projects completed in the Hendry Creek Basin during the third annual BMAP reporting period. These projects reduced TN by 148 lbs/yr. The reduction is in addition to those projects given credit before BMAP adoption and listed in the [2013](#) and [2014](#) Progress Reports. Therefore, the total reductions to date are 7,012 lbs/yr of TN, or 68% of the reductions needed to meet the TMDL.

Table 4: Summary of projects completed in the reporting period (December 1, 2014–November 30, 2015) in the Hendry Creek Basin

Entity	Project Number	Project Name	TN Reduction (lbs/yr)
Lee County	LC-2	Street Sweeping – additional reductions	148
Total		Total Reductions in Reporting Period	148

Figure 4 shows progress towards the TN TMDL load reductions. The first bar shows the starting load for urban and agricultural stormwater runoff. The second bar shows the current loading based on those projects listed as completed in the BMAP, those completed as part of the 2013 and 2014 Progress Reports, and those listed above. The third bar shows the total allocation for stormwater runoff to meet the TMDL.

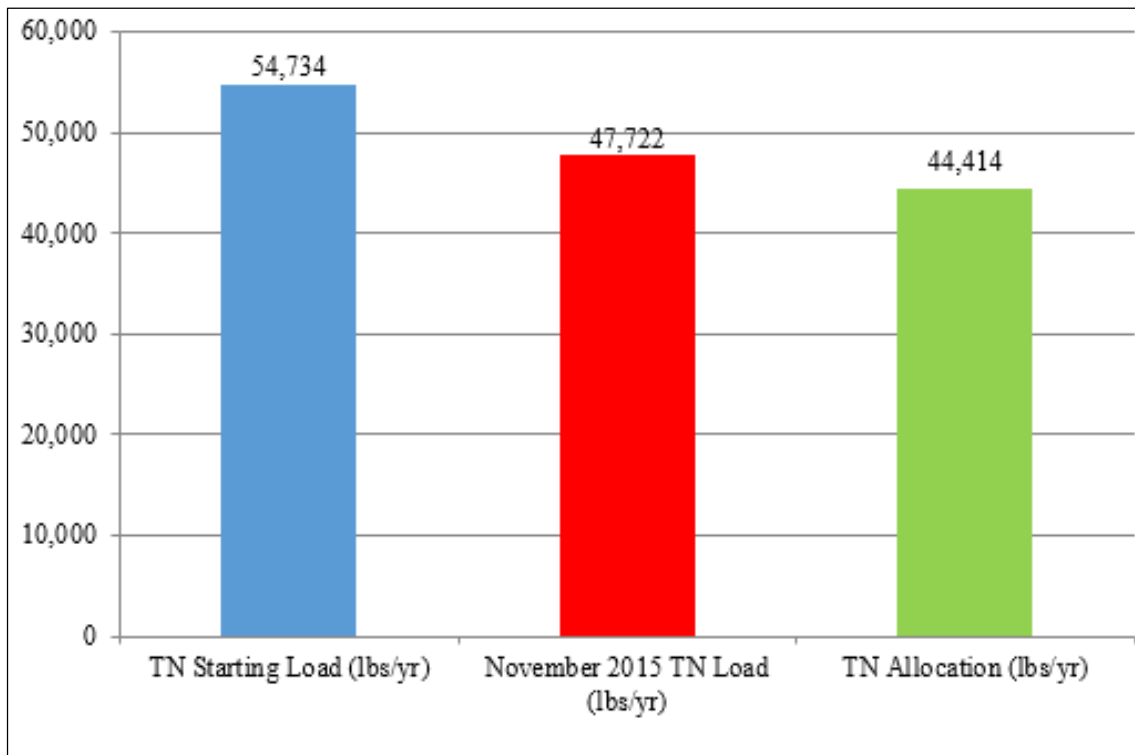


Figure 4: Progress towards the Hendry Creek TN TMDL through November 30, 2015

Section 3: IMPERIAL RIVER ACTIVITIES DURING THE REPORTING YEAR

Section 3.1 and **Section 3.2** describe the accomplishments in the Imperial River Basin over the past year, and **Appendix A** contains the individual project tables.

3.1 Activities by Entity in the Imperial River Basin

3.1.1 City of Bonita Springs

Bonita Springs has two projects under way, as described below. These projects will be updated in future annual reports as "completed" once they are finished.

Woodchip Bio-Reactor Project: Bonita Springs has contracted with South Florida Engineering to provide design services for the Felts Avenue Woodchip Bioreactor Project, which will use woodchips in an anaerobic environment to strip nitrogen from incoming stormwater. The 40-acre watershed will be treated on a two-acre site along Felts Avenue. As of the end of this reporting period, South Florida Engineering had completed the following:

- Geotechnical assessment.
- Watershed topographic survey.
- Tree survey.

The city plans to construct the project in late spring/early summer 2016 and then follow up with comprehensive inflow and outfall monitoring to establish the project's nutrient removal efficiencies.

Pine Lake Preserve Rehydration Project: This hydrologic restoration project is a joint venture between Bonita Springs and Lee County. The Lee County Conservation 20/20 Program is overseeing the design of the project, as it is located on 20/20 conservation lands within the city limits and the Imperial River BMAP area. Lee County contracted with Mitigation Resources, LLC and Eco Planz in August 2015 to design the project. To date, a preliminary concept design has been drafted and mutually agreed on at the city and county staff level.

An interlocal agreement was developed and is up for consideration and approval by the Lee County Board of County Commissioners, and subsequently Bonita Springs. The agreement defines the water quality project as designed by Lee County and both constructed and maintained by Bonita Springs. The

city anticipates meeting the remainder of its first cycle nitrogen reductions with the construction of this project.

The project will rehydrate and reestablish hydraulic connectivity between the Imperial River and the undisturbed Corkscrew Regional Ecosystem Watershed (CREW) wetlands, which lie to the east of the preserve in the Corkscrew Swamp. Currently the 173-acre site, which has 2 shallow lakes on site, is hydraulically disconnected from the wetlands situated to the north and east. The project will redirect flows south from a stormwater ditch on the northern boundary of the property, where the water will be routed through the 2 existing ponds on the property and then into the dry river tributary. In addition, a portion of the current flows from the Kehl Canal will be redirected into the natural flow-way.

3.1.2 Lee County

Lee County increased its street sweeping efforts, collecting 133 tons of material and increasing its credit in the Imperial River Basin by 35 lbs/yr, for a total of 150 lbs/yr. The county also performed proactive inspections to ensure compliance with its fertilizer ordinance. During the reporting period, the county performed 30 inspections that resulted in 3 warning citations and 14 citations with fines.

Lee County rolled out an updated "Fertilize Smart" campaign entitled "Don't Feed the Monster" in 2014, and expanded this campaign in 2015. **Section 2.1.2** provides details on the campaign activity during the reporting period.

3.1.3 Agriculture

In the Imperial River Basin, land uses in agricultural operations include citrus, field and row crops, fallow cropland, pastures (improved, unimproved, and woodland), ornamentals, specialty farms, and tree nurseries. According to 2004 land use data, these land uses comprise 11,600 acres in the Imperial River Basin (**Table 5**).

Not all of the acreage listed as agriculture is included in enrollment calculations, because the NOIs document the estimated total number of acres on which applicable BMPs are implemented, not the land use acreage mapped as agriculture. Land use data can contain nonproduction acres (such as buildings, parking lots, and fallow acres) that are not used in BMAP reduction calculations. There also may be acreage that is not appropriate for enrollment in OAWP BMPs, such as lands not in commercial production. When assessing the portion of the enrolled acreage associated with these agricultural land uses, 4,399 acres were enrolled as of September 30, 2015 (**Table 6** and **Figure 5**). The BMPs implemented on this acreage result in reductions of 10,837 lbs/yr of TN.

Table 5: Agricultural acreage, BMP enrollment, and future enrollment goals for the Imperial River Basin

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

2004 SFWMD Land Use	2004 Acres	FDACS-Adjusted Acres for Enrollment ¹	Related FDACS BMP Programs	Acreage Enrolled	Related NOIs
Pasture	5,076.5	3,245.9	Cow/Calf, Vegetable and Agronomic Crops (hay)	0.0	0
Row/Field/Mixed Crops	5,098.8	2,535.3	Vegetable/Agronomic Crops	5,777.3	6
Fallow Cropland	319.4	N/A	N/A	N/A	N/A
Citrus	944.0	717.8	Statewide Citrus	756.1	2
Tree Nurseries	68.5	23.3	Future Nursery, Specialty Fruit and Nut	0.0	0
Ornamentals	67.7	51.7	Container Nursery	73.5	5
Specialty Farms	29.7	12.1	Conservation Plan Rule	N/A	N/A
Total	11,604.6	6,586.2		6,606.9	13

Table 6: Summary of agricultural enrollment in the Imperial River Basin

Category	Acres
Total Agricultural Acres in BMAP	11,605
FDACS-Adjusted Acres for Enrollment	6,586
BMAP Phase I FDACS Enrollment Goal (50%)	3,293
Enrolled Acres Used for TN Reduction Calculation	4,399
TN Reduction (lbs/yr)	10,837
BMAP Phase I Remaining Acres To Enroll	0
Total Remaining Acres To Enroll	7,286

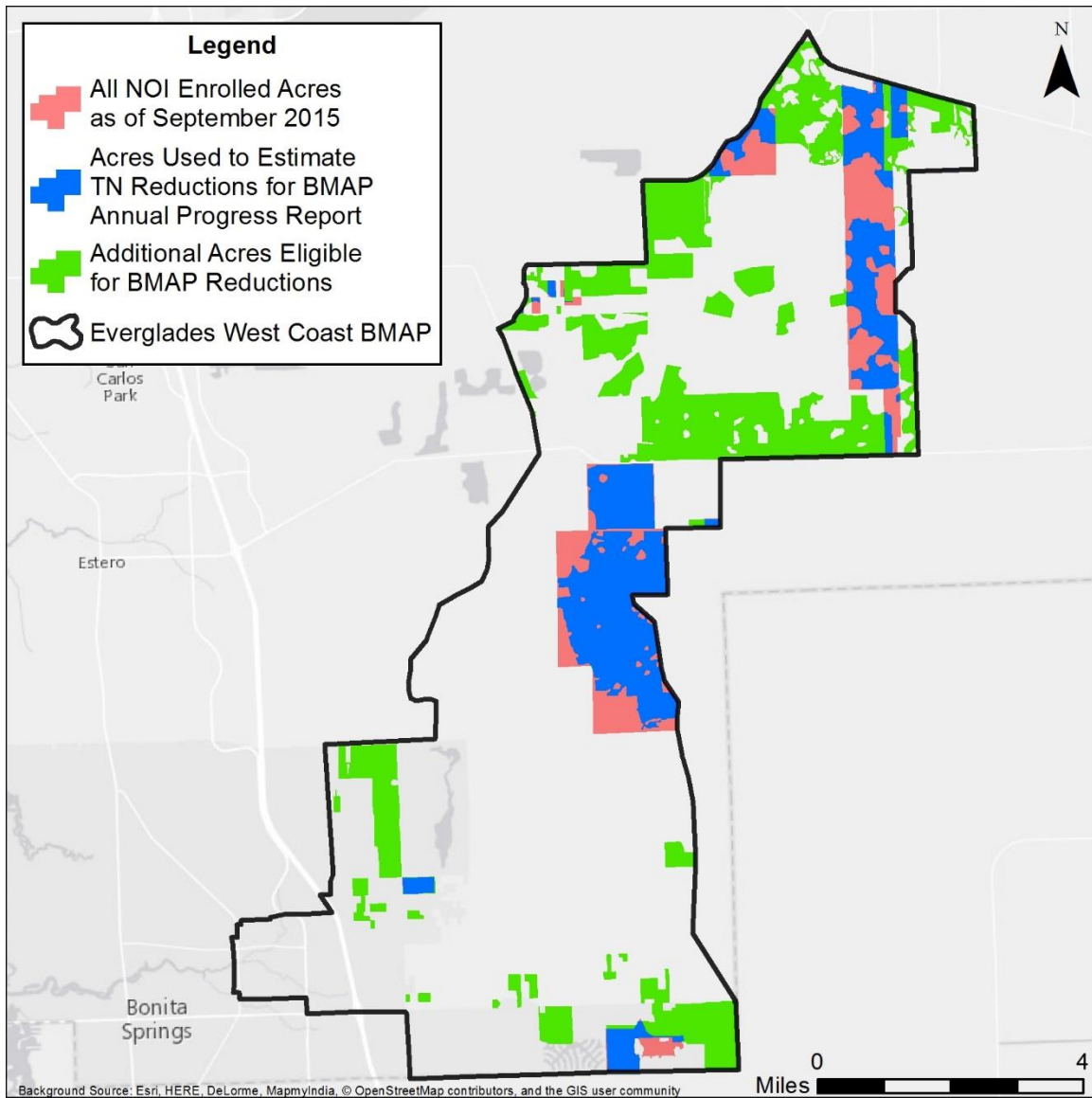


Figure 5: FDACS BMP Program enrollments for the Imperial River Basin as of September 30, 2015

3.2 Summary of Load Reductions in the Imperial River Basin

Table 7 summarizes the projects completed in the Imperial River Basin during the third annual BMAP reporting period. These projects are expected to reduce TN by 917 lbs/yr. The reductions are in addition to those projects given credit before BMAP adoption and listed in the 2013 and 2014 Progress Reports. Therefore, the total reductions to date are 14,513 lbs/yr of TN, or 24% of the reductions needed to meet the TMDL.

Table 7: Summary of projects completed in the reporting period (December 1, 2014–November 30, 2015) in the Imperial River Basin

N/A = Not applicable

Entity	Project Number	Project Name	TN Reduction (lbs/yr)
Lee County	LC-3	Street Sweeping – additional reductions	35
Agriculture	N/A	Agricultural BMPs – additional reductions	882
Total		Total Reductions in Reporting Period	917

Figure 6 shows progress towards the TN TMDL load reductions. The first bar shows the starting load for urban and agricultural stormwater runoff. The second bar shows the current loading based on those projects listed as completed in the BMAP, those completed as part of the 2013 and 2014 Progress Reports, and those listed above. The third bar shows the total allocation for stormwater runoff to meet the TMDL.

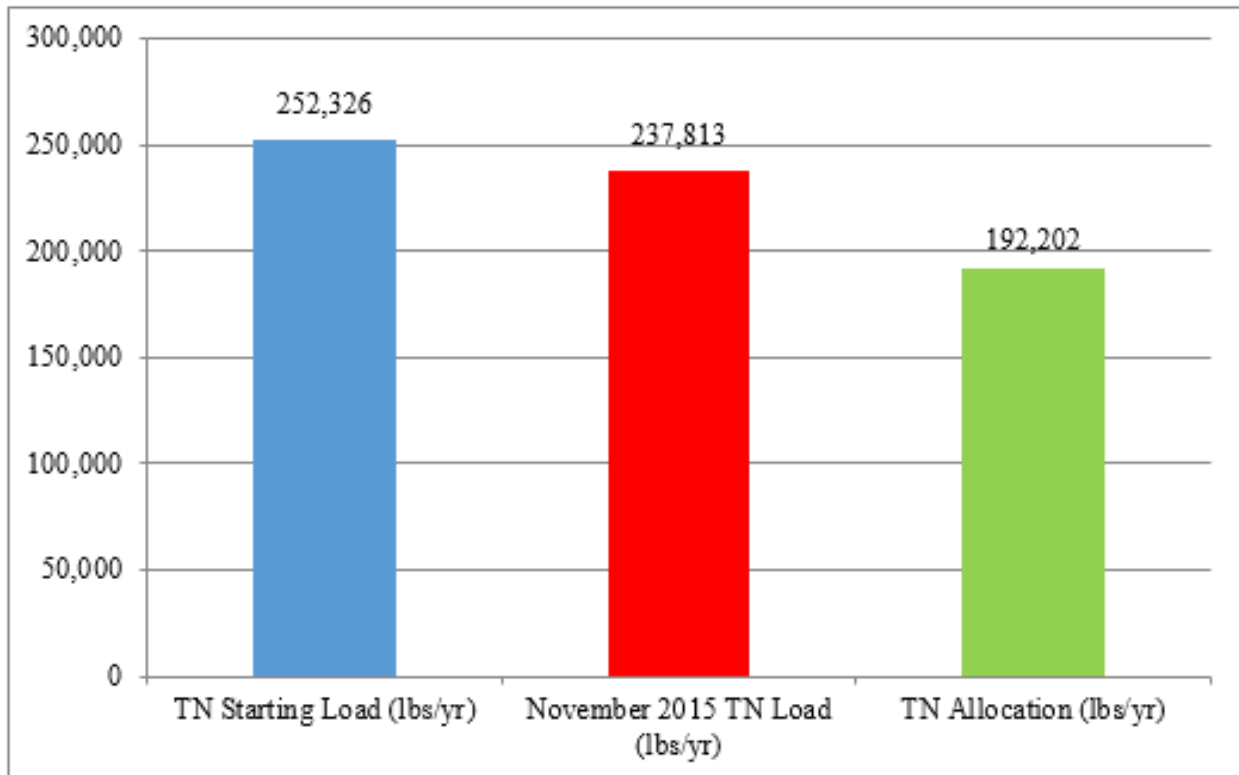


Figure 6: Progress towards the Imperial River TN TMDL through November 30, 2015

Section 4: WATER QUALITY MONITORING

The Everglades West Coast BMAP monitoring plan was designed to enhance the understanding of basin loads, identify areas with high nutrient concentrations, and track water quality trends. The information gathered through the monitoring plan will measure progress towards achieving the TMDL and provide a better understanding of watershed loading. All responsible stakeholders participated in the monitoring plan in the third year of BMAP implementation.

In addition, Lee County, Catalina at Winkler Preserve CDD, Bonita Springs, and FDOT District 1 are regulated under Phase I municipal separate storm sewer system (MS4) permits. The Lee County Environmental Lab performs the ambient water quality monitoring program to support the Lee County Division of Natural Resources Surface Water Master Plan and for NPDES MS4 permit and BMAP compliance. The data are available to the Lee County NPDES co-permittees to use in their respective annual reports. A few highlights of the BMAP monitoring efforts are described below.

4.1 Hendry Creek Water Quality Monitoring

Lee County continued monitoring at 14 water quality stations in the basin, but these data are not yet available in the Florida Storage and Retrieval (STORET) database. In addition, at four of these stations, the DEP South District collected data quarterly. In addition to sampling at stations in the BMAP monitoring network, Lee County increased water quality sampling efforts to further pinpoint areas of nutrient loading.

4.2 Imperial River Water Quality Monitoring

Lee County continued monitoring at five water quality stations in the basin, but these data are not yet available in the STORET database. In addition to sampling at stations in the BMAP monitoring network, the county increased water quality sampling efforts to further pinpoint areas of nutrient loading. Bonita Springs continued monitoring at seven water quality stations in the basin, and these data are uploaded to STORET. During the reporting period, DEP determined that Bonita Springs Stations CBS 5, CBS 6, and CBS 10 are not useful for BMAP monitoring, as the sites are often dry. These three sites were removed from the revised monitoring network shown in **Table** .

4.3 Ground Water Nutrient Study

A study is under way to help understand the sources of nitrogen in the basin, including ground water contribution and source identification. A network of 30 shallow water wells has been established

throughout 4 basins, 2 of which are in the Everglades West Coast BMAP area (see **Table 8**). Quarterly sampling for the parameters listed below has been completed for a 2-year period. The following parameters were included in the study:

- Boron.
- Chloride.
- Ammonia.
- Nitrite and nitrate.
- Potassium.
- Total Kjeldahl nitrogen.
- Sucralose.
- Total phosphorus.
- Depth to water.
- pH.
- Temperature.
- Specific conductance.
- Dissolved oxygen.
- Turbidity.
- Oxidation reduction potential.

One additional sampling event was added in March 2016 to attempt to capture any unique effects of the elevated rainfall that occurred in late 2015 and early 2016. The results are currently being compiled into a report by the DEP Site Investigation Section. Based on the results of these nine sampling events, DEP will determine whether sampling should continue using the same network of sites, whether the network

should be revised and sampling should continue, or whether enough information is currently available and the sampling can be discontinued.

Table 8: Ground water nutrient study well locations

Well Group	Well ID	Latitude	Longitude
Hendry Creek	MW-HC1A	26.54025	-81.8718
Hendry Creek	MW-HC1B	26.54335	-81.8603
Hendry Creek	MW-HC2	26.51708	-81.8734
Hendry Creek	MW-HC3	26.49507	-81.8949
Hendry Creek	MW-HC4A	26.52258	-81.8698
Hendry Creek	MW-HC4B	26.51548	-81.8617
Hendry Creek	MW-HC5	26.53265	-83.8916
Hendry Creek	MW-HC6	26.4955	-81.8664
Imperial River	254725	26.34885	-81.7655
Imperial River	364725	26.33495	-81.7604
Imperial River	MW-IR11	26.34615	-81.7307
Imperial River	MW-IR12	26.32786	-81.7468
Imperial River	MW-IR5	26.33667	-81.7606
Imperial River	MW-IR6	26.33877	-81.7687
Imperial River	MW-IR7	26.35148	-81.7509
Imperial River	MW-IR8	26.35619	-81.7674
Imperial River	MW-IR9	26.3606	-81.7548
Imperial River	HR-3R	26.3279	-81.7464

APPENDICES

APPENDIX A: BMAP PROJECTS

The BMAP project tables in this appendix show the implementation status as of November 30, 2015. The tables provide information on the nutrient reduction attributed to each individual project in pounds per year (lbs/yr). These projects were submitted to provide reasonable assurance to DEP that each entity has a plan on how to meet its allocation. However, this list of projects is meant to be flexible enough to allow for changes that may occur over time, provided that the reduction is still met within the specified period.

Table A-1: Lee County projects in the Hendry Creek Basin

N/A = Not applicable

Project Number	Project Name	Description	Project Type	Project Status	Acres Treated	TN Reduction (lbs/yr)
HC-LC-1	Lakes Park Water Quality Restoration		Hydraulic Restoration	Completed	1,749	4,533
HC-LC-2	Street Sweeping		Street Sweeping	Ongoing	N/A	224
HC-LC-3	Education/ Fertilizer Ordinance		Education Efforts	Completed	N/A	1,980
HC-LC-4	Island Park Filter Marsh		Hydraulic Restoration	Completed		0
HC-LC-5	Lakes Park Littoral Zone Project			Future		0
HC-LC-6	Hendry Creek West Branch Restoration		Filter Marsh	Future	9.3	0

TOTAL TN REDUCTION = 6,737 LBS/YR

TOTAL TN REDUCTION REQUIRED = 10,084 LBS/YR

Table A-2: FDOT projects in the Hendry Creek Basin

* The reductions associated with FDOT street sweeping have not been updated in this report. For details, see Section 2.1.1.

N/A = Not applicable

Project Number	Project Name	Description	Project Type	Project Status	Acres Treated	TN Reduction (lbs/yr)
HC-FDOT-1	Wet Detention Ponds (1, 2, and 3)		Wet Detention Pond	Completed	89	105
HC-FDOT-2	Roadside Swales		Swale with Ditch Blocks	Completed	Not calculated	Not calculated
HC-FDOT-3	Street Sweeping		Street Sweeping	Ongoing	N/A	177*
HC-FDOT-4	Education Efforts	Pamphlets, PSAs, illicit discharge program	Education Efforts	Ongoing	N/A	3

TOTAL TN REDUCTION = 285 LBS/YR

TOTAL TN REDUCTION REQUIRED = 63 LBS/YR

Table A-3: FDACS NOI enrollment reduction in the Hendry Creek Basin as of September 2015

2004 SFWMD Land Use	Acreage	TN Load Delivered (lbs/yr)	TN Reduction (%)	TN Reduction (lbs/yr)
Ornamentals	10	101	25%	25
Row Crops	17	175	30%	53
Total	27	276		78

TOTAL TN REDUCTION REQUIRED = 173 LBS/YR

Table A-4: Lee County projects in the Imperial River Basin

N/A = Not applicable

Project Number	Project Name	Description	Project Type	Project Status	Acres Treated	TN Reduction (lbs/yr)
IR-LC-1	CREW		Conservation	Completed	15	0
IR-LC-2	Pine Lake Preserve		Conservation	Completed	129	1
IR-LC-3	Street Sweeping		Street Sweeping	Ongoing	N/A	150
IR-LC-4	Imperial Marsh		Conservation	Completed	477	1,440
IR-LC-5	Education/Fertilizer Ordinance		Education Efforts	Completed	N/A	6

TOTAL TN REDUCTION = 1,597 LBS/YR

TOTAL TN REDUCTION REQUIRED = 1,556 LBS/YR

Table A-5: Bonita Springs projects in the Imperial River Basin

N/A = Not applicable

Project Number	Project Name	Description	Project Type	Project Status	Acres Treated	TN Reduction (lbs/yr)
BS-1	Education/Fertilizer Ordinance		Education Efforts	Completed	N/A	696
BS-2	Florida Yards and Neighborhoods (FYN) Program		Education Efforts	Ongoing	N/A	835
BS-3	Old 41 Catch Basin Inserts		Catch Basin Inserts	Completed	21	5
BS-4	Residential Dry Detention		Dry Detention Pond	Completed	4	1
BS-5	Morton Avenue Swales			Completed	26	212
BS-6	Marni Fields		Dry Detention Pond	Completed	16	6
BS-7	Felts Avenue Stormwater Treatment		Dry Detention Pond	Completed	31	258
BS-8	Street Sweeping		Street Sweeping	Ongoing	N/A	49
BS-9	Felts Avenue Woodchip Bioreactor Project			Ongoing	40	0
BS-10	Pine Lake Preserve Rehydration Project		Hydraulic Restoration	Ongoing	173	0

TOTAL TN REDUCTION = 2,062 LBS/YR

TOTAL TN REDUCTION REQUIRED = 9,903 LBS/YR

Table A-6: FDOT projects in the Imperial River Basin

N/A = Not applicable

Project Number	Project Name	Description	Project Type	Project Status	Acres Treated	TN Reduction (lbs/yr)
IR-FDOT-1	Wet Detention Ponds (5d, 7C, and 9B)		Wet Detention Pond	Completed	96	18
IR-FDOT-2	Roadside Swales		Swale with Ditch Blocks	Completed	Not calculated	Not calculated
IR-FDOT-3	Public Education	Pamphlets, PSAs, illicit discharge program	Education Efforts	Ongoing	N/A	3

TOTAL TN REDUCTION = 21 LBS/YR

TOTAL TN REDUCTION REQUIRED = 95 LBS/YR

Table A-7: FDACS NOI enrollment reduction in the Imperial River Basin as of September 2015

2004 SFWMD Land Use	Acreage	TN Load Delivered (lbs/yr)	TN Reduction (%)	TN Reduction (lbs/yr)
Citrus	587	6,074	10%	607
Field Crops	40	412	15%	62
Improved Pasture	954	9,870	17%	1,678
Ornamentals	26	265	25%	66
Row Crops	2,663	27,562	30%	8,269
Tree Nurseries	18	185	25%	46
Unimproved Pasture	85	884	11%	97
Woodland Pasture	27	281	4%	11
Total	4,399	45,532		10,837

TOTAL TN REDUCTION REQUIRED = 48,570 LBS/YR

APPENDIX B: BMAP MONITORING NETWORK

The monitoring stations listed in this appendix are separated into a tiered sampling design, as follows:

- **Tier 1:** Stations listed in the BMAP monitoring plan as essential and mandatory for tracking water quality trends in Hendry Creek and stations that document watershed reductions. Stations should be sampled monthly for all core parameters. Sampling stations, parameters, frequency, and other elements of this strategy may be modified as appropriate to match changing environmental conditions and funding resources. However, any modifications made shall not affect the ability of the monitoring network to fulfill its objectives.

- **Tier 2:** Stations that are currently sampled either in the BMAP basin or in a tributary contributing to the overall load. These stations will help in the understanding of the total load in the watershed, and DEP supports the continued monitoring.

Table B-1: Hendry Creek Basin BMAP monitoring network

* Stations that are currently listed as an NPDES outfall station; the station data will not be included in any ambient monitoring analysis.

** Stations will continue to only be sampled every other month.

Agency	Tier	NPDES Outfall*	Type	Station ID	Latitude	Longitude
DEP and Lee County	1	No	River	HENDGR01**	26.487611	-81.882200
DEP and Lee County	1	No	River	HENDGR02**	26.513306	-81.879472
Lee County	1	No	Watershed	ISPARK02	26.487800	-81.868667
Lee County	1	No	Watershed	ISPARK01	26.495382	-81.868251
Lee County	1	No	River	HENDGR30	26.521056	-81.883313
Lee County	1	Yes	Watershed	HENDGR20*	26.527671	-81.875002
Lee County	1	No	Watershed	HENDGR11A	26.520320	-81.868830
Lee County	1	No	Watershed	HENDGR40	26.524912	-81.889642
Lee County	1	No	Watershed	HENDGR41	26.527736	-81.887210
DEP and Lee County	2	No	River-Mullock	MULLGR01**	26.464722	-81.865778
DEP and Lee County	2	No	River-Mullock	MULLGR02**	26.470583	-81.855917
Lee County	2	No	River-Ten Mile	10MIGR10	26.481002	-81.854534
Lee County	2	No	Watershed-Mullock	46B-9GR	26.475382	-81.836718
Lee County	2	No	Estero Bay	EB-12	26.450780	-81.870810

Table B-2: Imperial River Basin BMAP monitoring network

* Stations that are currently listed as an NPDES outfall station. The station data will not be included in any ambient monitoring analysis.

** Stations will continue to only be sampled bi-monthly.

Agency	Tier	NPDES Outfall*	Type	Station ID	Latitude	Longitude
Bonita Springs	1	No	River	CBS 11	26.340214	-81.771017
Bonita Springs	1	Yes	Watershed	CBS 14*	26.342506	-81.777969
Bonita Springs	1	No	River	CBS 18	26.342829	-81.778696
Lee County	1	Yes	River	KEHLGR*	26.338885	-81.738526
Lee County	1	No	Watershed	IMPRGR90**	26.451321	-81.691111
Lee County	1	No	River -Leitner Creek	IMPRGR51	26.343744	-81.777744
Lee County	1	No	River	IMPRGR80	26.335865	-81.749360
Bonita Springs	2	No	River- Marine	CBS 9	26.344014	-81.780656
Lee County	2	No	River -Oak Creek	IMPRGR41	26.338919	-81.786250