

FINAL

2015 PROGRESS REPORT

for the North Indian River Lagoon Basin Management Action Plan

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

in cooperation with the
**North Indian River Lagoon Basin
Technical Stakeholders**

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This 2015 North Indian River Lagoon 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 North Indian River Lagoon Basin stakeholders.



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TABLE OF CONTENTS

SUMMARY	IX
SECTION 1: INTRODUCTION	1
1.1 Purpose of the Report.....	1
1.2 Total Maximum Daily Loads for the North IRL Subbasin	1
1.3 Responsible Parties and Key Stakeholders	5
1.4 BMAP Allocations	6
SECTION 2: ACCOMPLISHMENTS DURING THE REPORTING PERIOD	8
2.1 Activities by Stakeholder	8
2.1.1 Brevard County	8
2.1.2 City of Cocoa.....	12
2.1.3 City of Edgewater.....	12
2.1.4 City of Melbourne	12
2.1.5 City of Rockledge.....	13
2.1.6 City of Titusville	13
2.1.7 FDOT District 5.....	15
2.1.8 Kennedy Space Center	15
2.1.9 Town of Indialantic	15
2.1.10 Town of Palm Shores	16
2.1.11 Volusia County	16
2.1.12 Agriculture	16
2.2 Summary of Accomplishments.....	17
2.3 Street Sweeping.....	18
2.4 Funding.....	21
2.5 Fertilizer Ordinance	21
2.6 Water Quality and Seagrass Monitoring.....	22
SECTION 3: SEAGRASS DEPTH LIMIT TARGET EVALUATION	23
SECTION 4: UPCOMING ACTIVITIES	26
4.1 Activities in the Upcoming Reporting Period	26
4.1.1 Brevard County	26
4.1.2 City of Cocoa.....	27
4.1.3 City of Edgewater.....	27
4.1.4 City of Titusville	27
4.1.5 Agriculture	28
4.1.6 Water Quality and Seagrass Monitoring	28
4.2 Management Strategies for the Second BMAP Iteration	29
4.2.1 Brevard County	29
4.2.2 City of Cocoa.....	29
4.2.3 City of Edgewater	29
4.2.4 City of Melbourne	29
4.2.5 City of Rockledge.....	29

4.2.6 City of Titusville	29
4.2.7 FDOT District 5	30
4.2.8 Kennedy Space Center	30
4.2.9 Town of Indialantic	30
4.2.10 Town of Palm Shores	30
4.2.11 Volusia County	30
APPENDIX A: BMAP PROJECTS.....	31

LIST OF FIGURES

Figure ES-1: Progress Towards the North A Project Zone TN TMDL Through February 28, 2015	x
Figure ES-2: Progress Towards the North A Project Zone TP TMDL Through February 28, 2015	x
Figure ES-3: Progress Towards the North B Project Zone TN TMDL Through February 28, 2015	xi
Figure ES-4: Progress Towards the North B Project Zone TP TMDL Through February 28, 2015	xi
Figure 1: Stakeholders in the North A Project Zone.....	3
Figure 2: Stakeholders in the North B Project Zone.....	4
Figure 3: Brevard County Pine Island Phase II	9
Figure 4: Brevard County Pine Island Phase II	9
Figure 5: USGS Monitoring Station on Plaza Parkway at Bracco Reservoir Outfall	12
Figure 6: City of Edgewater Staff Conducting BMAP Activities	13
Figure 7: City of Titusville Educational and Public Outreach Materials.....	14
Figure 8: City of Titusville Stormwater Pipe Cleaning	15
Figure 9: Progress Towards the North A Project Zone TN TMDL Through February 28, 2015	19
Figure 10: Progress Towards the North A Project Zone TP TMDL Through February 28, 2015	19
Figure 11: Progress Towards the North B Project Zone TN TMDL Through February 28, 2015	20
Figure 12: Progress Towards the North B Project Zone TP TMDL Through February 28, 2015	20
Figure 13: Step 1 Compliance Evaluation for the North A Project Zone for 2007–13	24
Figure 14: Step 1 Compliance Evaluation for the North B Project Zone for 2007–13	24
Figure 15: City of Titusville Inlet Skimmer Boxes	28

LIST OF TABLES

Table 1: TN TMDLs in the North IRL Subbasin.....	5
Table 2: TP TMDLs in the North IRL Subbasin	5
Table 3: TN and TP Required Reductions for the First BMAP Iteration in the North A Project Zone	7
Table 4: TN and TP Required Reductions for the First Iteration in the North B Project Zone.....	7
Table 5: Agricultural Acreage and BMP Enrollment for the North A Project Zone.....	16
Table 6: BMP Enrollment Summary for the North A Project Zone	17
Table 7: Agricultural Acreage, BMP Enrollment, and Future Enrollment Goals for the North B Project Zone	17
Table 8: BMP Enrollment Summary for the North A Project Zone	17
Table 9: Summary of Projects Completed in the Reporting Period (March 1, 2014–February 28, 2015) in the North A Project Zone	18
Table 10: Summary of Projects Completed in the Reporting Period (March 1, 2014–February 28, 2015) in the North B Project Zone.....	18
Table 11: Summary of Fertilizer Ordinance Development During the Reporting Period in the North IRL	22
Table 12: Step 2 Compliance Evaluation for the North IRL Subbasin.....	25
Table A-1: Brevard County Projects in the North A Project Zone.....	32
Table A-2: Brevard County Summary of Project Reductions in the North A Project Zone.....	32
Table A-3: City of Edgewater in the North A Project Zone	33
Table A-4: City of Edgewater Summary of Project Reductions in the North A Project Zone.....	33
Table A-5: City of Titusville in the North A Project Zone.....	33
Table A-6: City of Titusville Summary of Project Reductions in the North A Project Zone.....	34
Table A-7: FDOT District 5 in the North A Project Zone.....	34
Table A-8: FDOT District 5 Summary of Project Reductions in the North A Project Zone.....	35
Table A-9: Kennedy Space Center in the North A Project Zone.....	35
Table A-10: Kennedy Space Center Summary of Project Reductions in the North A Project Zone	36
Table A-11: Volusia County in the North A Project Zone	36
Table A-12: Volusia County Summary of Project Reductions in the North A Project Zone.....	36
Table A-13: Brevard County in the North B Project Zone.....	37
Table A-14: Brevard County Summary of Project Reductions in the North B Project Zone.....	39
Table A-15: City of Cocoa in the North B Project Zone	40

Table A-16: City of Cocoa Summary of Project Reductions in the North B Project Zone.....	40
Table A-17: City of Melbourne in the North B Project Zone.....	41
Table A-18: City of Melbourne Summary of Project Reductions in the North B Project Zone.....	42
Table A-19: City of Rockledge in the North B Project Zone	42
Table A-20: City of Rockledge Summary of Project Reductions in the North B Project Zone.....	44
Table A-21: City of Titusville in the North B Project Zone	44
Table A-22: City of Titusville Summary of Project Reductions in the North B Project Zone.....	44
Table A-23: FDOT District 5 in the North B Project Zone	45
Table A-24: FDOT District 5 Summary of Project Reductions in the North B Project Zone.....	46
Table A-25: Kennedy Space Center in the North B Project Zone.....	47
Table A-26: Kennedy Space Center Summary of Project Reductions in the North B Project Zone	47
Table A-27: Town of Indialantic in the North B Project Zone.....	48
Table A-28: Town of Indialantic Summary of Project Reductions in the North B Project Zone.....	48
Table A-29: Town of Palm Shores in the North B Project Zone.....	48
Table A-30: Town of Palm Shores Summary of Project Reductions in the North B Project Zone	48

LIST OF ACRONYMS AND ABBREVIATIONS

BMAP	Basin Management Action Plan
BMP	Best Management Practice
BRL	Banana River Lagoon
CDS	Continuous Deflective Separation
CCSP	Cooperative Cost-Share Program
Department	Florida Department of Environmental Protection
FDACS	Florida Department of Agriculture and Consumer Services
FDOT	Florida Department of Transportation
FIT	Florida Institute of Technology
F.S.	Florida Statutes
FY	Fiscal Year
FYN	Florida Yards and Neighborhood (Program)
GIS	Geographic Information System
IDDE	Illicit Discharge Detection and Elimination
IRL	Indian River Lagoon
lbs/yr	Pounds Per Year
LID	Low-Impact Development
MAPS	Managed Aquatic Plant Systems
MOA	Memorandum of Agreement
MS4	Municipal Separate Storm Sewer System
N/A	Not Applicable
NASA	National Aeronautics and Space Administration
NPDES	National Pollutant Discharge Elimination System
O&M	Operations and Maintenance
OSTDS	On-Site Treatment and Disposal System
PLSM	Pollutant Load Screening Model
PSA	Public Service Announcement
SJRWMD	St. Johns River Water Management District
SR	State Road
TBD	To Be Determined
TMDL	Total Maximum Daily Load
TN	Total Nitrogen
TP	Total Phosphorus
TSS	Total Suspended Solids
UCF	University of Central Florida
UF	University of Florida
UF–IFAS	University of Florida Institute of Food and Agricultural Sciences
US	United States
USGS	United States Geological Survey
WBID	Waterbody Identification

SUMMARY

TOTAL MAXIMUM DAILY LOADS

The North Indian River Lagoon (IRL) Basin Management Action Plan was adopted in February 2013 to implement the nutrient TMDLs in the watershed. The BMAP includes management strategies or projects to be implemented by the responsible stakeholders. This 2015 Progress Report is the second annual progress report for the North IRL BMAP; it describes the implementation activities that occurred during the reporting period from March 1, 2014, through February 28, 2015.

The total nitrogen (TN) and total phosphorus (TP) TMDLs for the main stem of the IRL Basin were adopted by the Florida Department of Environmental Protection in March 2009. The TMDLs focus on the water quality conditions necessary for seagrass regrowth at water depth limits where seagrass historically grew in the basin, based on a multiyear composite of seagrass coverage. The median depth limits of seagrass coverage in the IRL Basin have decreased over the years due to changes in water quality conditions resulting from human (anthropogenic) influences.

ACCOMPLISHMENTS DURING THE REPORTING PERIOD

During the reporting period, Brevard County completed one project and increased BMP cleanout, the Florida Department of Transportation (FDOT) reimplemented two street sweeping projects, and the city of Titusville increased street sweeping in the basin. In the North A project zone, the additional FDOT street sweeping resulted in an estimated reduction of 71 pounds per year (lbs/yr) of TN and 45 lbs/yr of TP. These reductions are in addition to those projects given credit at BMAP adoption. Therefore, the total reductions to date are 27,902 lbs/yr of TN and 8,626 lbs/yr of TP, or 28% of the TN and 45% of the TP reductions needed to meet the TMDL allocated to the North A project zone. In the North B project zone, the completed Brevard County project and increased BMP cleanout, in addition to the increased street sweeping from the city of Titusville and FDOT, resulted in an estimated reduction of 11,138 lbs/yr of TN and 3,357 lbs/yr of TP. These reductions are in addition to those projects given credit at BMAP adoption. Therefore, the total reductions to date are 43,960 lbs/yr of TN and 14,192 lbs/yr of TP, or 36% of the TN and 43% of the TP reductions needed to meet the TMDL allocated to the North B project zone. **Figure ES-1** and **Figure ES-2** show progress towards the TMDL load reductions in the North A project zone for TN and TP, respectively, and **Figure ES-4** show progress in the North B project zone, respectively.

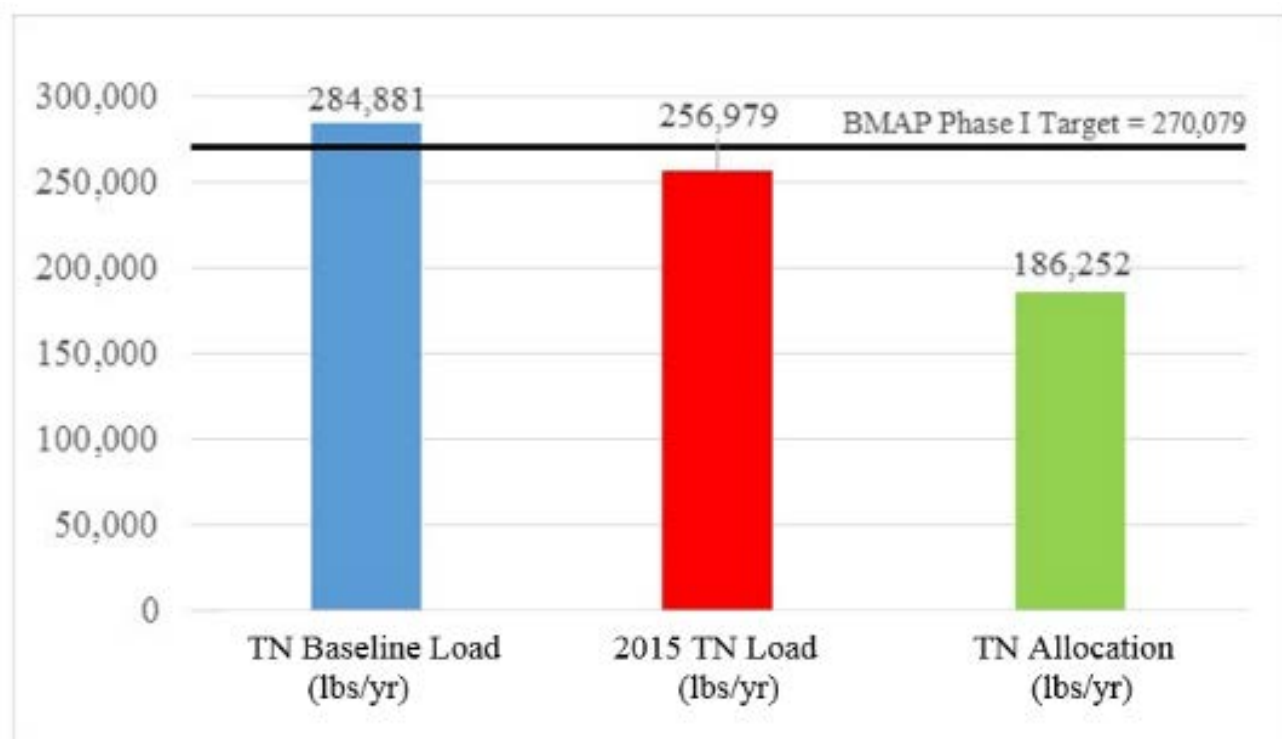


FIGURE ES-1: PROGRESS TOWARDS THE NORTH A PROJECT ZONE TN TMDL THROUGH FEBRUARY 28, 2015

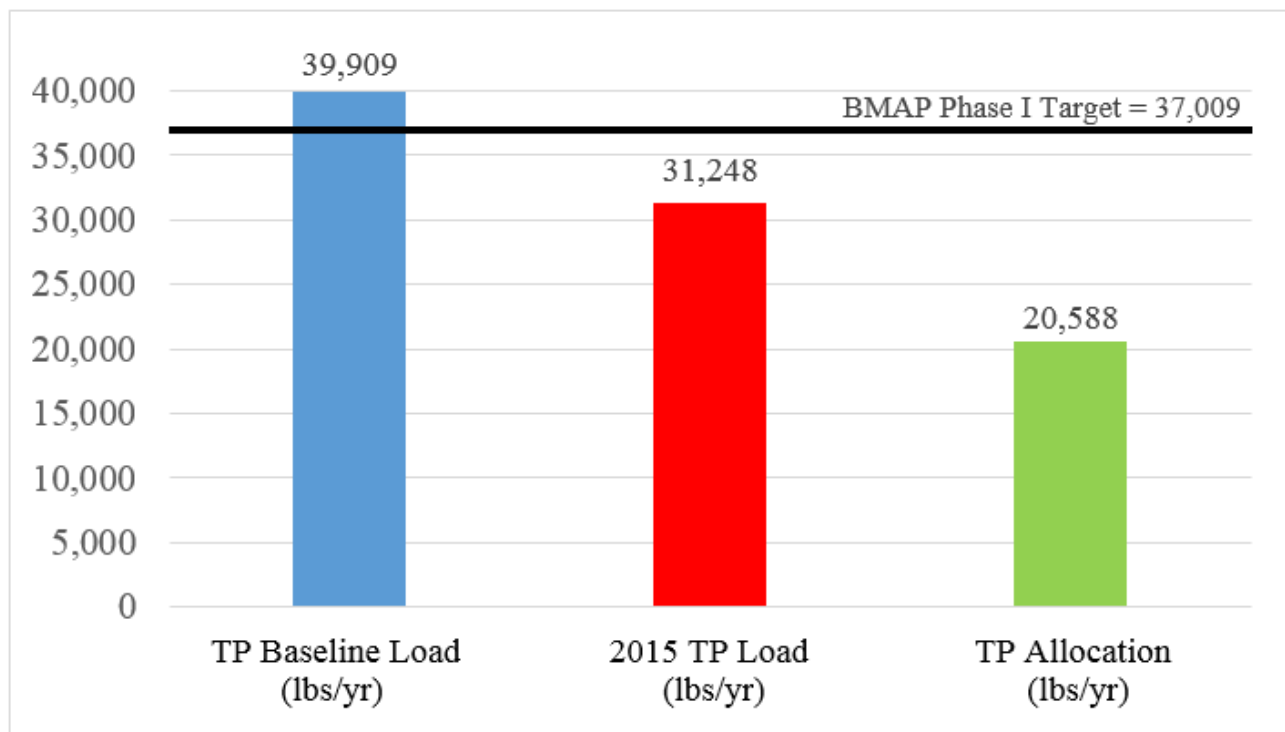


FIGURE ES-2: PROGRESS TOWARDS THE NORTH A PROJECT ZONE TP TMDL THROUGH FEBRUARY 28, 2015

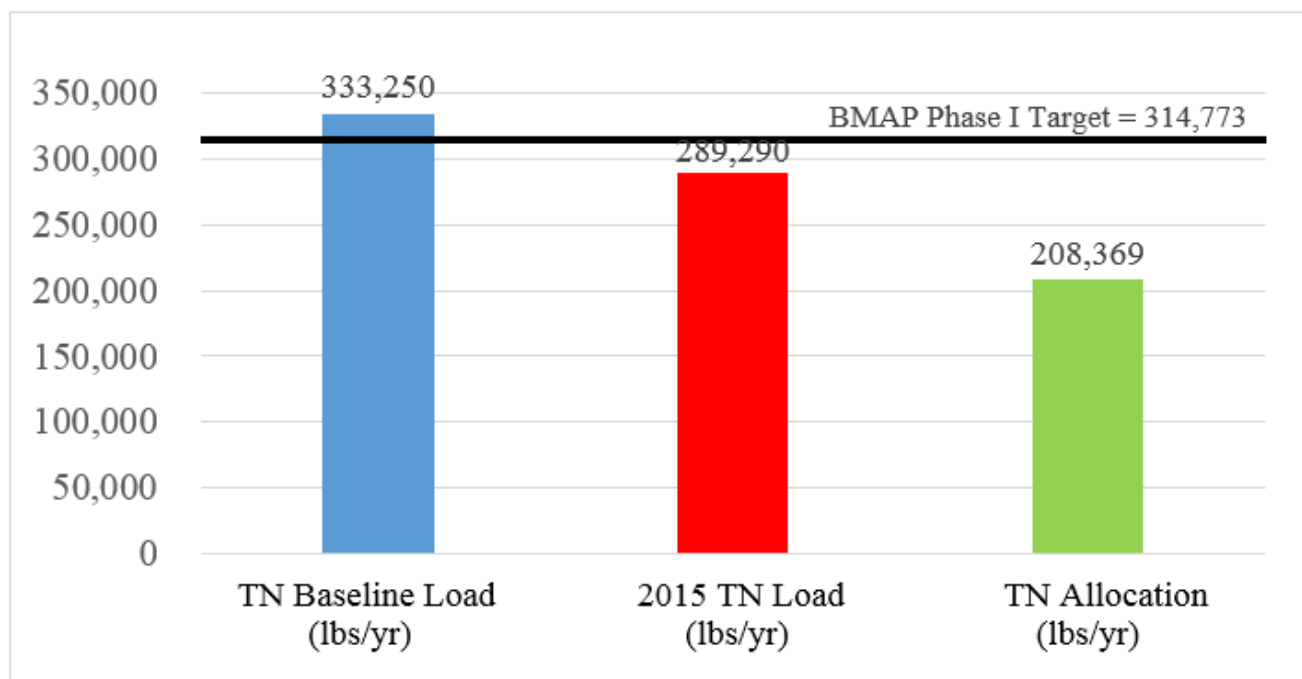


FIGURE ES-3: PROGRESS TOWARDS THE NORTH B PROJECT ZONE TN TMDL THROUGH FEBRUARY 28, 2015

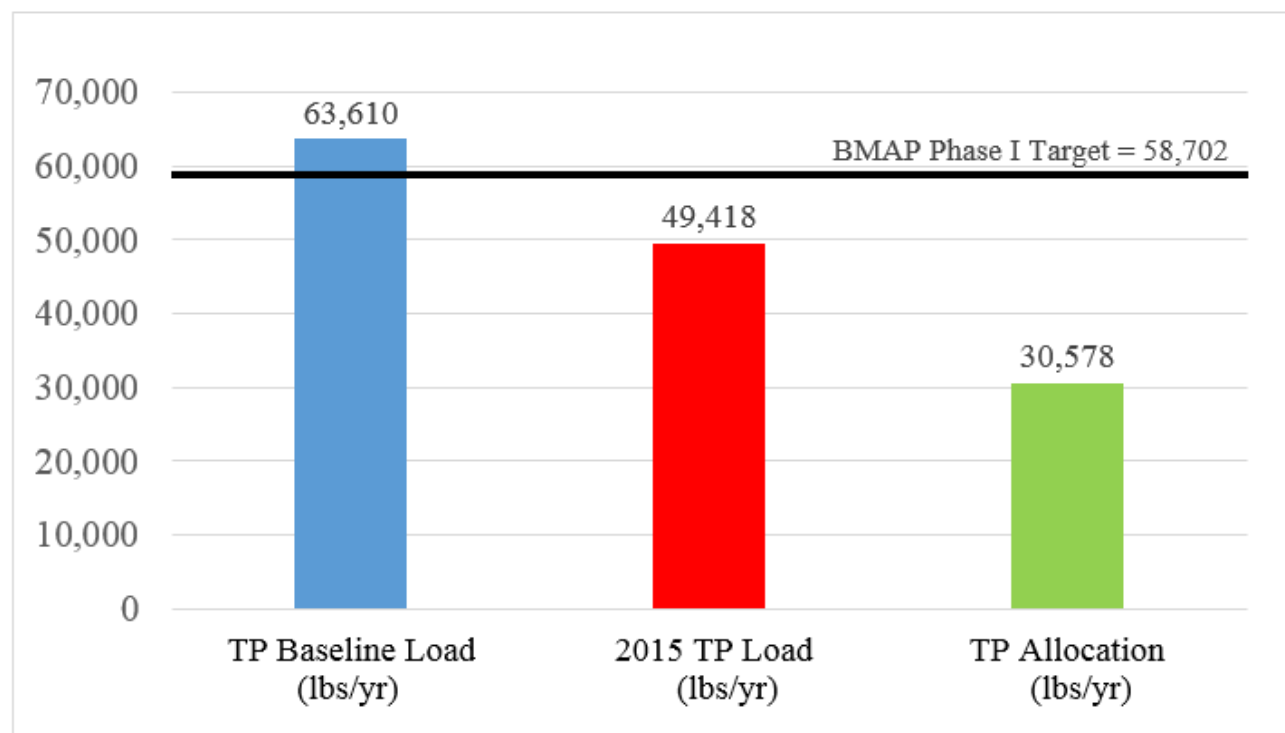


FIGURE ES-4: PROGRESS TOWARDS THE NORTH B PROJECT ZONE TP TMDL THROUGH FEBRUARY 28, 2015

SEAGRASS TARGET EVALUATION

The intent of the IRL Basin TMDLs is to recover the deeper water seagrass habitats, with the biological response of the seagrass being the most important factor in evaluating success in achieving TMDL targets. To assess progress in the IRL towards the median seagrass depth limit target, a two-step process was used. Step 1 is a seagrass frequency distribution analysis, and Step 2 is a median seagrass depth evaluation. If seagrass in a project zone passes both evaluation steps, no further nutrient reductions are required by the stakeholders in that project zone.

The department recently conducted this two-step evaluation using seagrass data from 2007, 2009, 2011, and 2013, which were the latest datasets available at the time of the analysis. Based on the data from this period, the North A and North B project zones were Step 1 noncompliant and Step 2 noncompliant. Therefore, BMAP stakeholders will continue to work towards achieving the seagrass depth limit targets.

Algal blooms have continued to be a problem in the IRL since 2011 and have resulted in a loss of seagrass acreage. The St. Johns River Water Management District started the IRL Initiative in spring 2013 with a series of research investigations into the potential causes of the blooms. The understanding gained through the IRL Initiative is expected to aid in defining the future actions of the BMAP, and future annual updates may include additional information provided from the initiative.

Section 1: INTRODUCTION

1.1 PURPOSE OF THE REPORT

This is the second annual progress report for the North Indian River Lagoon (IRL) Basin Management Action Plan. **Section 2** describes the accomplishments during the period from March 1, 2014, through February 28, 2015. **Section 3** summarizes the evaluation of progress towards the seagrass depth limit targets. **Section 4** includes a summary of efforts for the upcoming year and management strategies for the second BMAP iteration.

Prior to the adoption of the North IRL BMAP in 2013, extended duration algal superblooms were occurring in the IRL. The blooms resulted in large losses of seagrass acreage that are reflected in the 2011 seagrass mapping data. In response, the St. Johns River Water Management District (SJRWMD) began the IRL Initiative in spring 2013 with a series of research and data collection investigations into the causes of the blooms. The understanding gained through the initiative is expected to aid in defining the future direction of the BMAP.

1.2 TOTAL MAXIMUM DAILY LOADS FOR THE NORTH IRL SUBBASIN

Due to the large geographic extent of the IRL Basin and the diversity of hydrologic characteristics throughout the basin, the Florida Department of Environmental Protection divided the watershed into three subbasins: (1) North IRL, (2) Central IRL, and (3) Banana River Lagoon (BRL). Separate BMAPs were developed for each subbasin; this document focuses solely on the North IRL subbasin. The main stem of the North IRL subbasin extends from Turnbull Creek to the Melbourne Causeway. For assessment purposes, the department has divided the North IRL subbasin into water assessment polygons with a unique waterbody identification (WBID) number for each watershed or segment.

In addition to dividing the overall IRL Basin into subbasins, the North IRL was further divided into “project zones,” with boundaries based on the distinct hydrology in different areas of the basin and their corresponding annual residence times. These zones are important because the flushing times vary greatly among locations and consequently affect how nutrient reductions will impact these distinct areas of the basin. The zones identify large areas where projects should be implemented to ensure that the load reductions achieve the desired response for each subbasin. The North IRL subbasin was split into two project zones, as follows:

- **North A** – Turnbull Creek to National Aeronautics and Space Administration (NASA) Causeway (State Road [SR] 405).
- **North B** – NASA Causeway to Melbourne Causeway (United States [US] Highway 192).

Figure 1 and **Figure 2** show the stakeholders in each of these project zones.

The department adopted the total nitrogen (TN) and total phosphorus (TP) TMDLs for the IRL Basin in March 2009. The TMDLs focus on the water quality conditions necessary for seagrass regrowth at depth limits where seagrass historically grew in the basin based on a multiyear composite of seagrass coverage. The median depth limits for seagrass coverage in the North IRL subbasin have decreased over the years due to changes in water quality conditions resulting from anthropogenic influences.

Table 1 and **Table 2** list the TN and TP TMDLs and pollutant load allocations, respectively, adopted by rule for the North IRL subbasin.

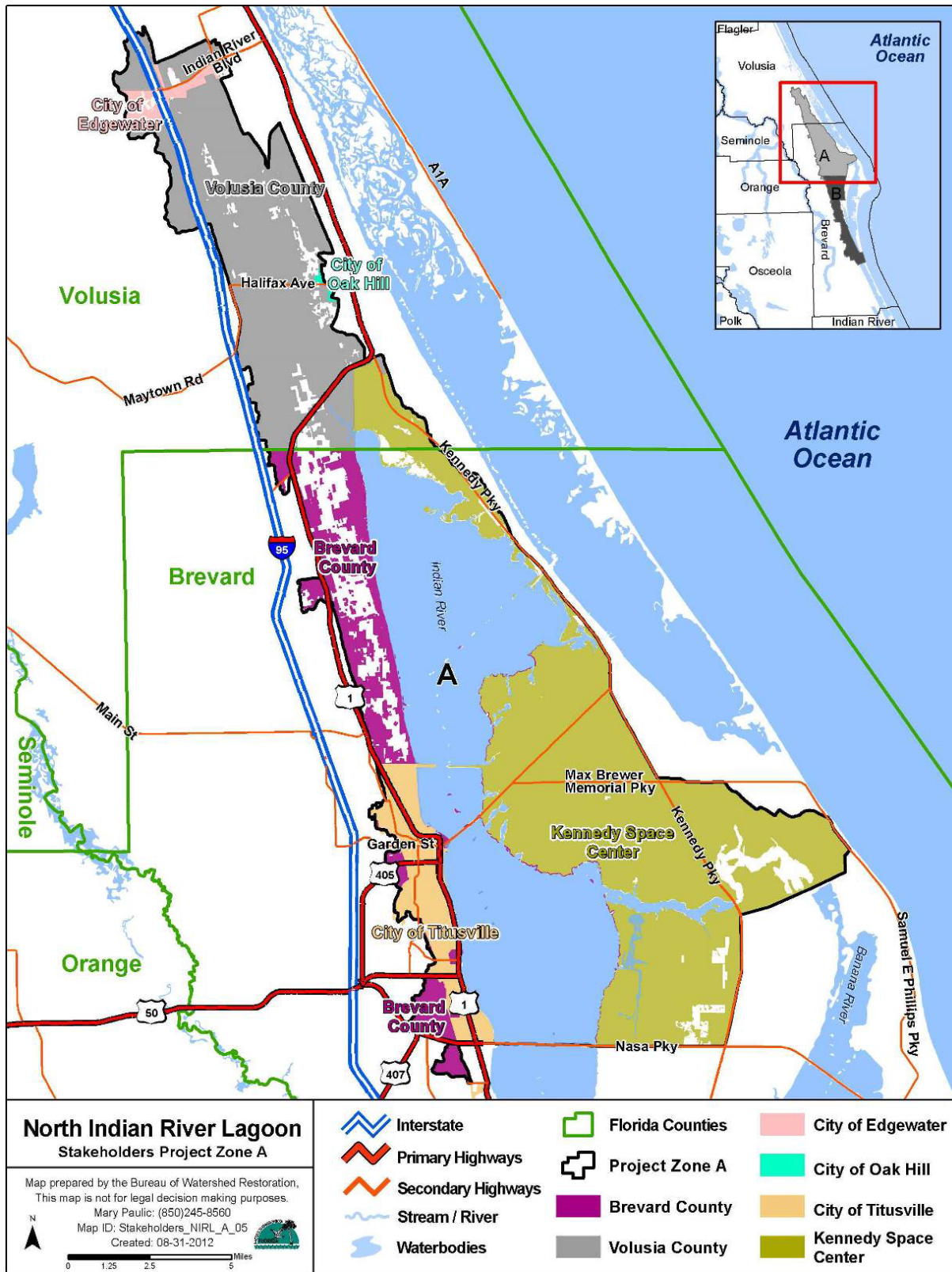


FIGURE 1: STAKEHOLDERS IN THE NORTH A PROJECT ZONE

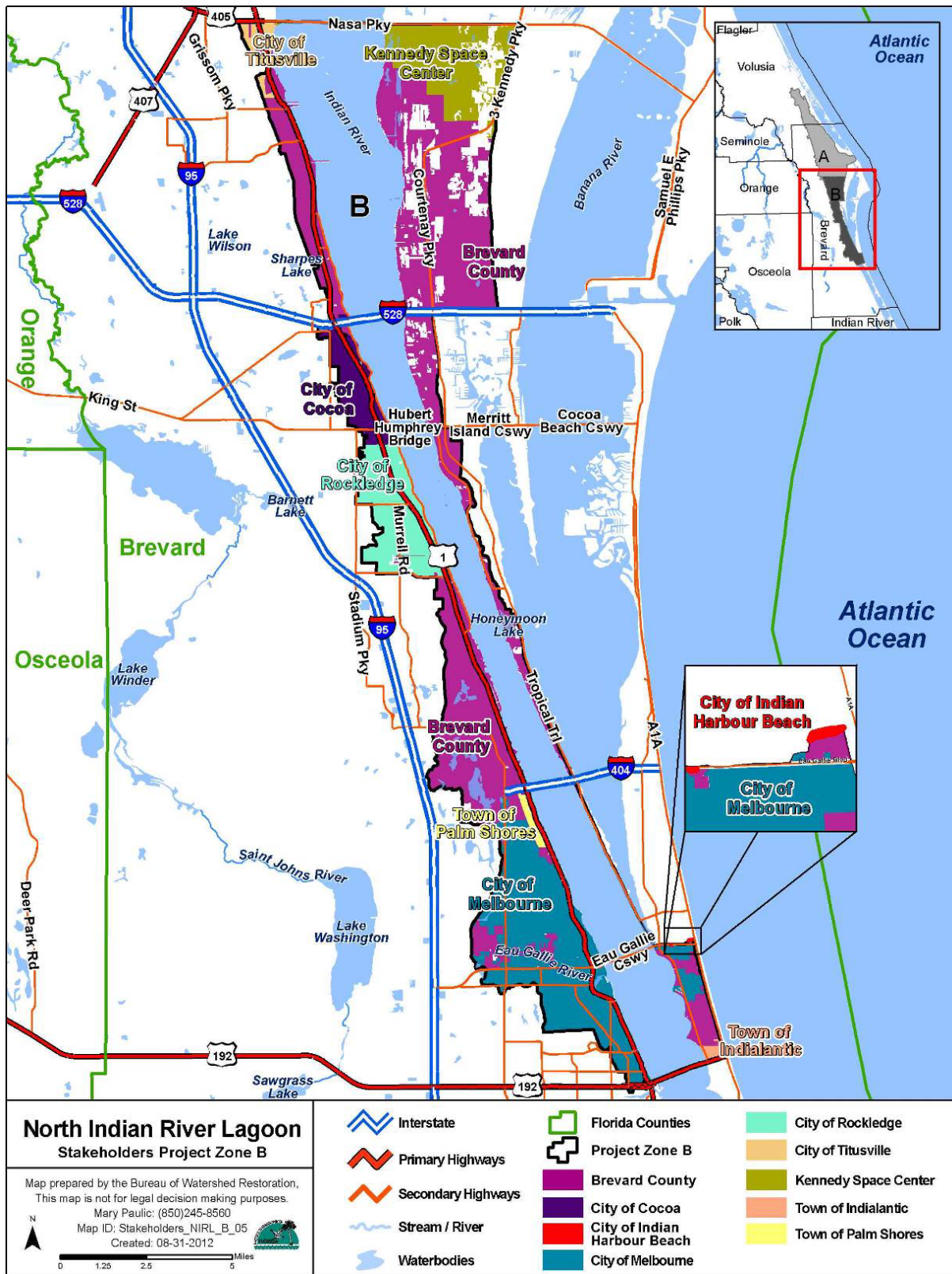


FIGURE 2: STAKEHOLDERS IN THE NORTH B PROJECT ZONE

TABLE 1: TN TMDLS IN THE NORTH IRL SUBBASIN

N/A = Not applicable

WBID NUMBER	WBID NAME	PROJECT ZONE	PARAMETER	TMDL (LBS/YR)	WASTEWATER FACILITIES ALLOCATION (LBS/YR)	STORMWATER ALLOCATION (LBS/YR)	ATMOSPHERIC DEPOSITION ALLOCATION (LBS/YR)
2963F	Indian River above Max Brewer	North A	TN	177,220	N/A	88,322	88,898
2963E	Indian River above NASA Causeway	North A	TN	173,232	N/A	95,932	77,300
2963D	Indian River above 520 Causeway	North B	TN	147,524	8,111	73,882	65,531
2963B+2963C	Indian River above Melbourne Causeway	North B	TN	189,068	9,200	114,458	65,410
TN Total	North IRL TN Total	N/A	TN	687,044	17,311	372,594	297,139

TABLE 2: TP TMDLS IN THE NORTH IRL SUBBASIN

N/A = Not applicable

WBID NUMBER	WBID NAME	PROJECT ZONE	PARAMETER	TMDL (LBS/YR)	WASTEWATER FACILITIES ALLOCATION (LBS/YR)	STORMWATER ALLOCATION (LBS/YR)	ATMOSPHERIC DEPOSITION ALLOCATION (LBS/YR)
2963F	Indian River above Max Brewer	North A	TP	9,320	N/A	7,307	2,013
2963E	Indian River above NASA Causeway	North A	TP	14,793	N/A	13,042	1,751
2963D	Indian River above 520 Causeway	North B	TP	11,845	1,609	8,752	1,484
2963B+2963C	Indian River above Melbourne Causeway	North B	TP	20,592	225	18,886	1,481
TP Total	North IRL TP Total	N/A	TP	56,550	1,834	47,987	6,729

1.3 RESPONSIBLE PARTIES AND KEY STAKEHOLDERS

The North IRL BMAP identified municipal separate storm sewer systems (MS4s), urban nonpoint, and agricultural sources of TN and TP in the basin. The following stakeholders are responsible for achieving the load reductions:

- Agriculture.
- Brevard County.
- Volusia County.
- City of Cocoa.

- City of Edgewater.
- City of Indian Harbour Beach.
- City of Melbourne.
- City of Oak Hill.
- City of Rockledge.
- City of Titusville.
- Florida Department of Transportation (FDOT) District 5.
- Kennedy Space Center.
- Town of Indian River.
- Town of Palm Shores.
- Town of Melbourne Village.

In addition to these stakeholders, the Florida Department of Agriculture and Consumer Services (FDACS), the department, and the SJRWMD are essential to the implementation of BMAP activities.

1.4 BMAP ALLOCATIONS

Stakeholders in the North IRL BMAP determined that assigning detailed allocations was the best approach for achieving the TMDL reductions. The acreage and loading information for each stakeholder was calculated using output from the Pollutant Load Screening Model (PLSM). Each stakeholder's baseline loadings for TN and TP were calculated using information from the PLSM. In the North A project zone, Oak Hill was determined to be *de minimus* because the TN and TP loads were less than 0.1% of the total loads. In the North B project zone, Indian Harbour Beach and Palm Shores were determined to be *de minimus* because the TN and TP loads were approximately 0.5% of the total loads.

For the stakeholders that received allocations, the allowable loadings were calculated using a target load per acre for TN and TP. These were multiplied by each stakeholder's acreage in the basin to determine

the allowable loading. The difference between the baseline loading and the allowable loading resulted in each stakeholder's required reductions.

The BMAP provides for phased implementation, which allows for the implementation of projects designed to achieve incremental reductions, while simultaneously monitoring and conducting studies to better understand the water quality dynamics in the watershed. The total required reductions from the TMDLs are spread over a 15-year period. The first BMAP iteration addresses 15% of the allocated reductions over a five-year period. The North IRL BMAP identified a list of considerations that could be addressed before the second iteration to help improve allocations. These included improvements to the PLSM, the incorporation of more up-to-date land use data, and the refinement of basin boundaries. **Table 3** and **Table 4** show the required reductions in the North A and North B project zones, respectively, for the first BMAP iteration.

TABLE 3: TN AND TP REQUIRED REDUCTIONS FOR THE FIRST BMAP ITERATION IN THE NORTH A PROJECT ZONE

PERMITTEE	BMAP I TN REQUIRED REDUCTIONS (LBS/YR)	BMAP I TP REQUIRED REDUCTIONS (LBS/YR)
Agriculture	5,597	1,029
Brevard County	2,180	282
City of Edgewater	24	0
City of Titusville	6,605	1,448
FDOT District 5	397	142
Kennedy Space Center	0	0
Volusia County	0	0

TABLE 4: TN AND TP REQUIRED REDUCTIONS FOR THE FIRST ITERATION IN THE NORTH B PROJECT ZONE

PERMITTEE	BMAP I TN REQUIRED REDUCTIONS (LBS/YR)	BMAP I TP REQUIRED REDUCTIONS (LBS/YR)
Agriculture	1,097	445
Brevard County	5,299	995
City of Cocoa	2,410	557
City of Melbourne	6,739	1,968
City of Rockledge	2,095	594
City of Titusville	47	0
FDOT District 5	649	319
Kennedy Space Center	0	0
Town of Indialantic	142	30

Section 2: ACCOMPLISHMENTS DURING THE REPORTING PERIOD

During the reporting period, Brevard County completed one project, FDOT reimplemented two street sweeping projects, and the city of Titusville increased street sweeping in the basin. In the North A project zone, the additional street sweeping from FDOT resulted in an estimated reduction of 71 lbs/yr of TN and 45 lbs/yr of TP. These reductions are in addition to those projects given credit at BMAP adoption. Therefore, the total reductions to date are 27,902 lbs/yr of TN and 8,626 lbs/yr of TP, or 28% of the TN and 45% of the TP reductions needed to meet the TMDL allocated to the North A project zone. In the North B project zone, the completed Brevard County project and increased BMP cleanout, in addition to increased street sweeping by the city of Titusville and FDOT, resulted in an estimated reduction of 11,138 lbs/yr of TN and 3,357 lbs/yr of TP. These reductions are in addition to those projects given credit at BMAP adoption. Therefore, the total reductions to date are 43,960 lbs/yr of TN and 14,192 lbs/yr of TP, or 36% of the TN and 43% of the TP reductions needed to meet the TMDL allocated to the North B project zone. **Section 2.1** through **Section 2.6** describe the accomplishments over the past year, and **Appendix A** includes the individual project tables.

2.1 ACTIVITIES BY STAKEHOLDER

2.1.1 BREVARD COUNTY

Brevard County completed the Pine Island Phase I and Phase II Project (BC-24), which improves water quality and reduces the duration of flooding in the North Merritt Island drainage basin. Phase I construction, completed in September 2012, involved expanding and re-grading the north borrow pit, installing the first pump, and fabricating a diversion weir in the Pine Island Road ditch to redirect stormwater runoff into the borrow pit for water quality treatment. Water quality monitoring for Phase I was completed in 2014 and showed an average nutrient removal efficiency of 88% and 94% for TN and TP, respectively. Phase II, completed in 2014, involved expanding and excavating the south borrow pit and installing two more pumps to divert additional flow to the pits from the Pine Island Road drainage ditch (see Figure 3 and **Figure 4**). Water quality monitoring for Phase II is ongoing and will be completed in 2015.



727.520.8181
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Pine Island

Image # 140212 0079
Date 02.12.14

FIGURE 3: BREVARD COUNTY PINE ISLAND PHASE II



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Pine Island

Image # 150112 0063
Date 01.12.15

FIGURE 4: BREVARD COUNTY PINE ISLAND PHASE II

Brevard County continued its educational efforts (BC-3 and B-23) during the reporting period. Stormwater outreach activities are part of the county's efforts to engage the community in activities that prevent and reduce pollution through source control as well as through restoration. Outreach is conducted by the county's in-house Stormwater Outreach Specialist and through a partnership of nine municipalities in the county, the Brevard Zoo, and Good Education Solutions (a contracted public outreach firm). This partnership is known as the "BLUE LIFE" partnership. Outreach conducted countywide during 2014 through the "BLUE LIFE" partnership included the following:

- **Outreach to Children:** 58 presentations to 2,081 children.
- **Outreach to Adults:** 37 presentations to 1,790 people.
- **Outreach at Special Events:** 21 events, 6,381 people.

In 2014, the county strengthened its partnership with the extension service through the creation of the "My Brevard Yard" program, an expansion to the existing Florida Yards and Neighborhoods (FYN) program. "My Brevard Yard" includes hands-on workshops tailored to educate participants about maintaining a healthy lawn while complying with local fertilizer ordinances and to provide information about best management practices (BMPs) for fertilizer and irrigation. Participants learn how to calibrate and use a fertilizer spreader, calculate the correct amount of fertilizer, set irrigation timers, and calibrate an irrigation system. The program also includes follow-up site visits for participants, upon request. During visits, a University of Florida Institute of Food and Agricultural Sciences (UF-IFAS) agent will collect a soils test for lab analysis, test the salt content of on-site wells if used for irrigation, check the irrigation system, and train the homeowner to set the irrigation timer. Based on the results of the soils tests, the UF-IFAS agent will make site-specific recommendations for fertilizer use, irrigation, and Florida-friendly landscaping.

Pre- and post-program tests were administered to 101 "My Brevard Yard" workshop participants. Participants were asked about their knowledge of fertilizer application, irrigation systems, and nonpoint source pollution. After the workshop, test scores were 37% higher than the preprogram scores, indicating that participants knew more about the topics than before attending the workshop. Twenty-three participants in the home site visits completed a follow-up survey. Results show that 39% now irrigate at the recommended time of day; 30% now apply the recommended amount of fertilizer; 17% no longer leave grass clippings on hardscapes or allow the clippings to go into waterways; and 13% use soil test results to determine the correct fertilizer type and amount to apply. Results from working with one

commercial applicator on two residential communities resulted in reductions to the rate of fertilizer application, refined analysis procedures based on BMPs and soil test results, and modified application timing leading to more efficient and/or reduced fertilizer applications.

Brevard County received appropriations of \$410,000 from the state Legislature in 2014 to restore and evaluate oyster reefs in the IRL. During the year, the county, in partnership with the Brevard Zoo, established a citizen science oyster-gardening program where residents with access to the lagoon shoreline volunteered to build oyster gardens (assemble metal enclosures), hang the gardens under their private docks, care for their gardens weekly to propagate and raise juvenile oysters, and collect weekly data. Based on the 2014 Memorandum of Agreement (MOA) for the Indian River Lagoon Oyster Restoration Project, the Brevard Zoo will engage the Brevard County community in a citizen-based oyster propagation program to raise additional juvenile oysters to expand oyster reefs at the three pilot sites in the IRL and BRL. The Desert Research Institute will conduct denitrification measurements. Oyster growth, survival, and recruitment will be measured by the University of Central Florida (UCF). The three pilot oyster reefs in the IRL are anticipated to help reduce nutrient levels, while the data collection efforts are designed to guide future shellfish restoration efforts in the IRL.

Brevard County also received in 2014 an appropriation of \$10 million from the Florida Legislature to remove legacy muck deposits from the lagoon. The county contracted with a team of consultants to identify, design, and permit five high-priority muck removal areas and contracted with a team of researchers at Florida Institute of Technology (FIT), per legislative intent, to document and analyze the ecological responses of the national estuary to muck removal. Five priority muck removal locations were selected: the Mims Boat Ramp, Sykes Creek, Cocoa Beach, Grand Canal, and Turkey Creek. Of these locations, the Mims Boat Ramp is located in the North IRL.

Street sweeping operations continued throughout the county (BC-22). In 2014, 174 miles of road were swept countywide, with an estimated 57 lbs of TP and 61 lbs of TN removed in the North IRL. Brevard County also continued to implement maintenance cleanout operations (BC-47), and an estimated nine lbs of TP and 21 lbs of TN were removed from stormwater treatment units in the North IRL. In early 2015, the county increased the level and frequency of these services by contracting street sweeping and drainage infrastructure cleanout operations to vendors.

2.1.2 CITY OF COCOA

The city of Cocoa has added a United States Geological Survey (USGS) monitoring station on Plaza Parkway at the Bracco Reservoir outfall control structure (CC-1, CC-2, and CC-9) (**Figure 5**). The city also purchased a second street sweeper.



FIGURE 5: USGS MONITORING STATION ON PLAZA PARKWAY AT BRACCO RESERVOIR OUTFALL

2.1.3 CITY OF EDGEWATER

The city of Edgewater continued its public educational and outreach efforts (EW-1) (**Figure 6**). These include utilizing the city newsletter *Edgewater Shorelines* to communicate educational environmental information, inform new businesses of the illicit discharge program through business tax receipts/ certificates to distribute the information as well as to provide environmental education information at public events. Other related efforts include promoting the “Stop the Poo’llution-Scoop the Poop” campaign and the “EnviroScape Educational Program.”

2.1.4 CITY OF MELBOURNE

The city of Melbourne continued its educational efforts (MEL-8) and enhanced street sweeping efforts (MEL-9) by inlet cleaning, which adds the benefit of debris removal. The design phase for the South Croton baffle box (MEL-12) is now 100% complete. The city has also commenced planning and designing four new baffle boxes at Bell Street, Paradise Boulevard, Garfield North Street, and Garfield South Street. The city is working on completing projects that were proposed as part of the Stormwater Quality Master Plan and also raised its stormwater utility fee to \$44 per year.



FIGURE 6: CITY OF EDGEWATER STAFF CONDUCTING BMAP ACTIVITIES

2.1.5 CITY OF ROCKLEDGE

The city of Rockledge continued its street sweeping (ROCK-21) and public educational efforts (ROCK-23).

2.1.6 CITY OF TITUSVILLE

The city of Titusville continued its public educational and outreach activities (TV-7 and TV-9), which provide residents and businesses with information about pollution prevention, new fertilizer application regulations, the benefits of Florida-friendly landscaping, and the importance of water conservation (**Figure 7**). Between February 2014 and February 2015, educational materials—including informational pamphlets, letters, and an annual newsletter that highlights recent water quality projects and educates citizens about the health of the IRL—were provided to the city’s residents. Educational information and materials are also available on the city’s website.

In the past year, the city has also broadcast public service announcements (PSAs) and videos on pollution prevention, proper fertilizer application in accordance with the fertilizer ordinance adopted January 2014, the benefits and “how-to’s” of Florida-friendly landscaping, the benefits of pet waste management, and the importance of water conservation via the city’s government-access television channel. Radio advertisements advocating the reduction of nutrients to the IRL have also been aired on local and national stations, and advertisements have also been placed in a variety of magazines encouraging residents to do their part to help the lagoon.



FIGURE 7: CITY OF TITUSVILLE EDUCATIONAL AND PUBLIC OUTREACH MATERIALS

The city continued its illicit discharge program (TV-9). Approximately 11,525 feet of storm drain pipe were inspected and video-recorded between February 2014 and February 2015 (**Figure 8**). In addition, the city's ditches and canals were inspected at an average rate of every four weeks.

In February 2014, the city also installed one new dog waste station in addition to the 13 stations already established throughout the city as part of the city's "Bag It! Trash It!" pet waste management program.

Street sweeping operations continued throughout the city (TV-8 and TV-10). The city purchased a second street sweeper, which became operational in January 2014. As a result, both the number of miles swept and the amount of debris collected from North B increased. Between February 2014 and February 2015, approximately 2,580 miles of street were swept. Approximately 2,156,364 lbs of debris were removed in North A, and 239,596 lbs in North B.



FIGURE 8: CITY OF TITUSVILLE STORMWATER PIPE CLEANING

2.1.7 FDOT DISTRICT 5

FDOT District 5 continued to implement illicit discharge and stormwater educational programs (FDOT5-1 and FDOT5-20). FDOT also reimplemented its street sweeping program in Brevard County (FDOT5-2 and FDOT5-21). Under the new street sweeping contract, FDOT removed 71 lbs of TN and 45 lbs of TP in North IRL Zone A and 176 lbs of TN and 113 lbs of TP in North IRL Zone B. In addition, FDOT District 5 continued to implement its fertilizer cessation throughout the county (FDOT5-22). In June 2014, FDOT began implementing mandatory illicit discharge detection and elimination (IDDE) training statewide for all staff and contractors working in its rights-of-way.

2.1.8 KENNEDY SPACE CENTER

Kennedy Space Center continued to implement its landscape fertilizer reduction policy (KSC-1 and KSC-11).

2.1.9 TOWN OF INDIALANTIC

The town of Indialantic continued public educational and outreach efforts (TI-3) during the reporting period.

2.1.10 TOWN OF PALM SHORES

The town of Palm Shores continued educational and outreach efforts (PS-1) during the reporting period.

2.1.11 VOLUSIA COUNTY

Volusia County continued educational and outreach efforts during the reporting period (VC-1).

2.1.12 AGRICULTURE

FDACS currently has two field staff and two contracted staff in the SJRWMD, working with adopted BMAPs. There have been few new enrollments in the North IRL subbasin since BMAP adoption. Additionally, the North A project zone shows a loss of enrolled citrus acreage due to the removal of out-of-production groves. Through December 2014, FDACS has enrolled 165 acres in the North A project zone in agricultural BMPs. It has also enrolled 215 acres in the North B project zone. The enrolled acreage is a decrease from 2,576 acres reported in the previous annual update. This decrease is because the previously reported citrus enrolled acreage included groves that have since been taken out of production. **Table 5** and **Table 6** show updates to the total and enrolled citrus acreage for the North A project zone, and **Table 7** and **Table 8** show updates for the North B zone. No new enrollments were completed during the reporting period. FDACS will continue to enroll producers in the North IRL subbasins to meet its five-year enrollment goals.

TABLE 5: AGRICULTURAL ACREAGE AND BMP ENROLLMENT FOR THE NORTH A PROJECT ZONE

N/A = Not applicable

¹ FDACS staff-adjusted acreage for purposes of enrollment is based on a review of more recent aerial imagery in the basin and local staff observations.

² FDACS staff have observed no active poultry operations in the BMAP area but will confirm this.

2000 SJRWMD LAND USE	2000 ACRES	FDACS-ADJUSTED ACRES FOR ENROLLMENT ¹	RELATED FDACS BMP PROGRAMS	ACREAGE ENROLLED	RELATED NOIS
Pasture (2110, 2120, 2130)	1,190.5	1,164.5	Cow/Calf; Future (hay)	0.0	0.0
Row/Field Crops (2140, 2150)	618.1	574.2	Vegetable/Agronomic Crops	0.0	N/A
Fallow Cropland	40.7	40.7	N/A	N/A	N/A
Horse Farms	119.7	111.0	Equine	0.0	N/A
Citrus	5,115.2	3,515.4	Statewide Citrus	163.5	5
Abandoned Groves	936.7	N/A	No enrollment needed	N/A	N/A
Tree Crops	1.7	1.7	Specialty Fruit and Nut	1.0	1
Tree Nurseries	26.5	26.5	Future Nursery; Specialty Fruit and Nut	0.0	N/A
Ornamentals	12.1	12.1	Container Nursery	0.0	0.0
Poultry Feeding ²	8.0	8.0	Conservation Plan Rule	0.0	N/A
Total	8,069	5,454	N/A	165	6

TABLE 6: BMP ENROLLMENT SUMMARY FOR THE NORTH A PROJECT ZONE

CATEGORY	ACRES
Five-Year Enrollment Goal (50%)	2,727
Acreage Enrolled as of March 31, 2015	165
Remaining Acres To Enroll	2,563

TABLE 7: AGRICULTURAL ACREAGE, BMP ENROLLMENT, AND FUTURE ENROLLMENT GOALS FOR THE NORTH B PROJECT ZONE

N/A = Not applicable

¹ FDACS staff-adjusted acreage for purposes of enrollment is based on a review of more recent aerial imagery in the basin and local staff observations.

2000 SJRWMD LAND USE	2000 ACRES	FDACS-ADJUSTED ACRES FOR ENROLLMENT ¹	RELATED FDACS BMP PROGRAMS	ACREAGE ENROLLED	RELATED NOIs
Pasture (2110, 2120, 2130)	164.2	84.8	Cow/Calf; Future (hay)	8.9	1
Row/Field Crops (2140, 2150)	42.9	35.3	Vegetable/Agronomic Crops	0.0	0.0
Tree Crops	2.8	2.8	Specialty Fruit and Nut	0.0	N/A
Citrus	3,364.5	2,339.2	Statewide Citrus	192.2	5
Abandoned Groves	65.7	N/A	No enrollment needed	N/A	N/A
Ornamentals	43.9	43.9	Container Nursery	14.1	4
Specialty Farms	8.0	8.0	Conservation Plan Rule/Equine	0.0	N/A
TOTAL	3,692	2,514	N/A	215	10

TABLE 8: BMP ENROLLMENT SUMMARY FOR THE NORTH A PROJECT ZONE

CATEGORY	ACRES
Five-Year Enrollment Goal (50%)	1,257
Acreage Enrolled as of March 1, 2015	215
Remaining Acres To Enroll	1,042

2.2 SUMMARY OF ACCOMPLISHMENTS

The projects completed during the second annual BMAP reporting period are summarized in Table 9 for the North A project zone and **Table 10** for the North B zone. In the North A zone, these projects resulted in an estimated reduction of 71 lbs/yr of TN and 45 lbs/yr of TP. These reductions are in addition to those projects given credit at BMAP adoption. Therefore, the total reductions to date are 27,902 lbs/yr of TN and 8,626 lbs/yr of TP, or 28% of the TN and 45% of the TP reductions needed to meet the TMDL allocated to the North A project zone. In the North B project zone, these projects resulted in an estimated reduction of 11,138 lbs/yr of TN and 3,357 lbs/yr of TP. These reductions are in addition to those projects given credit at BMAP adoption. Therefore, the total reductions to date are 43,960 lbs/yr of TN and 14,192 lbs/yr of TP, or 36% of the TN and 43% of the TP reductions needed to meet the TMDL allocated to the North B project zone.

Figure 9 and **Figure 10** show progress towards the TMDL load reductions for TN and TP, respectively, in the North A project zone and for the North B zone in **Figure 11** and **Figure 12**, respectively. The first bar in these figures shows the baseline load for stormwater runoff. The second bar shows the current estimated loading with the implementation of projects. The third bar shows the total allocation for stormwater runoff to meet the TMDLs. The black horizontal line shows the reduction target for the first BMAP iteration.

TABLE 9: SUMMARY OF PROJECTS COMPLETED IN THE REPORTING PERIOD (MARCH 1, 2014–FEBRUARY 28, 2015) IN THE NORTH A PROJECT ZONE

N/A = Not applicable

STAKEHOLDER	PROJECT NUMBER	PROJECT NAME	TN REDUCTION (LBS/YR)	TP REDUCTION (LBS/YR)
FDOT	FDOT5-2	Street Sweeping – additional	71	45
TOTAL	N/A	TOTAL REDUCTIONS IN REPORTING PERIOD	71	45

TABLE 10: SUMMARY OF PROJECTS COMPLETED IN THE REPORTING PERIOD (MARCH 1, 2014–FEBRUARY 28, 2015) IN THE NORTH B PROJECT ZONE

N/A = Not applicable

STAKEHOLDER	PROJECT NUMBER	PROJECT NAME	TN REDUCTION (LBS/YR)	TP REDUCTION (LBS/YR)
Brevard County	BC-24	Pine Island Phase I and II	10,948	3,217.90
Brevard County	BC-47	Sediment Trap, Grated Inlet Basket, Inlet Weir Cleaning	14	7
City of Titusville	TV-10	Street Sweeping– additional		19
FDOT	FDOT5-21	Street Sweeping– additional	176	113
TOTAL	N/A	TOTAL REDUCTIONS IN REPORTING PERIOD	11,138	3,357

2.3 STREET SWEEPING

Since the adoption of the BMAP, the methodology for calculating nutrient load reductions using the Florida Stormwater Association’s assessment tool was modified. Most of the street sweeping reductions in the first year of BMAP implementation were reported based on the old methodology. However, for this reporting period most street sweeping calculations were done using the newest methodology, which is available on the department’s [National Pollutant Discharge Elimination System \(NPDES\) Stormwater Program website](#). For the next reporting period, all stakeholders with a street sweeping program will be required to calculate street sweeping reductions based on the updated methodology, which is consistent with the requirements included in the MS4 permits.

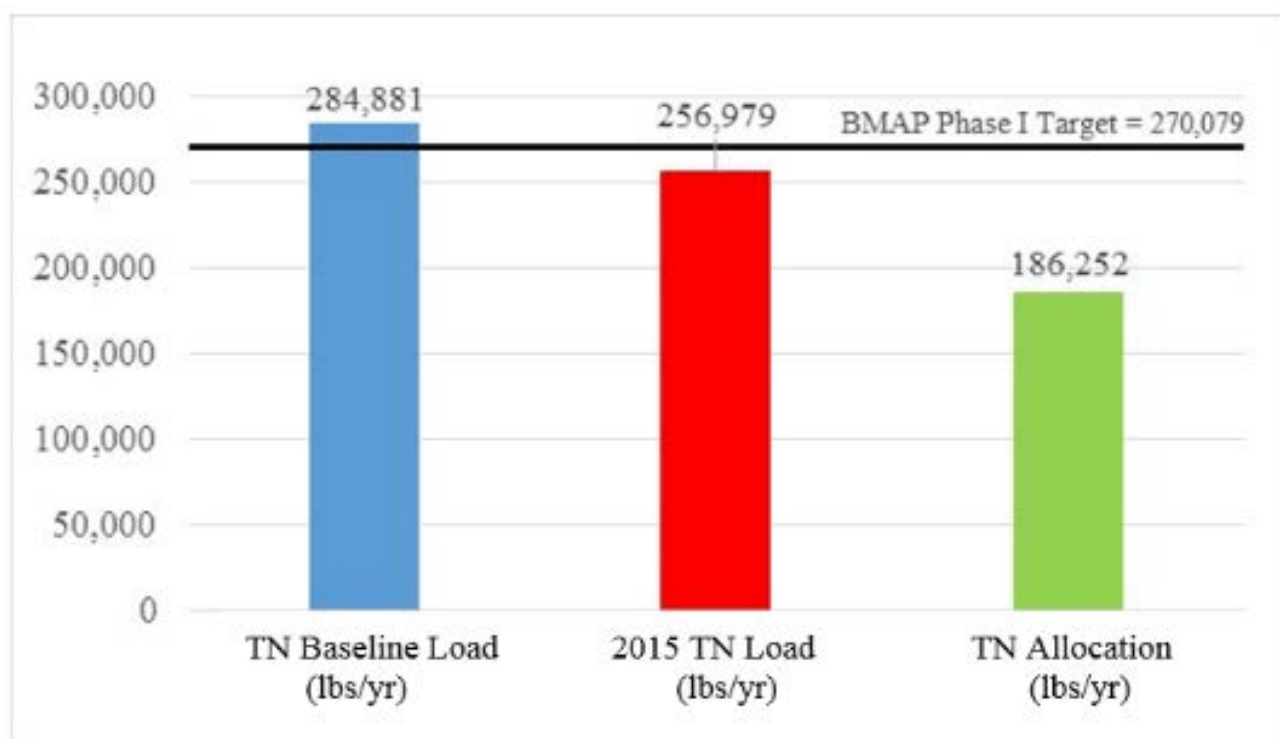


FIGURE 9: PROGRESS TOWARDS THE NORTH A PROJECT ZONE TN TMDL THROUGH FEBRUARY 28, 2015

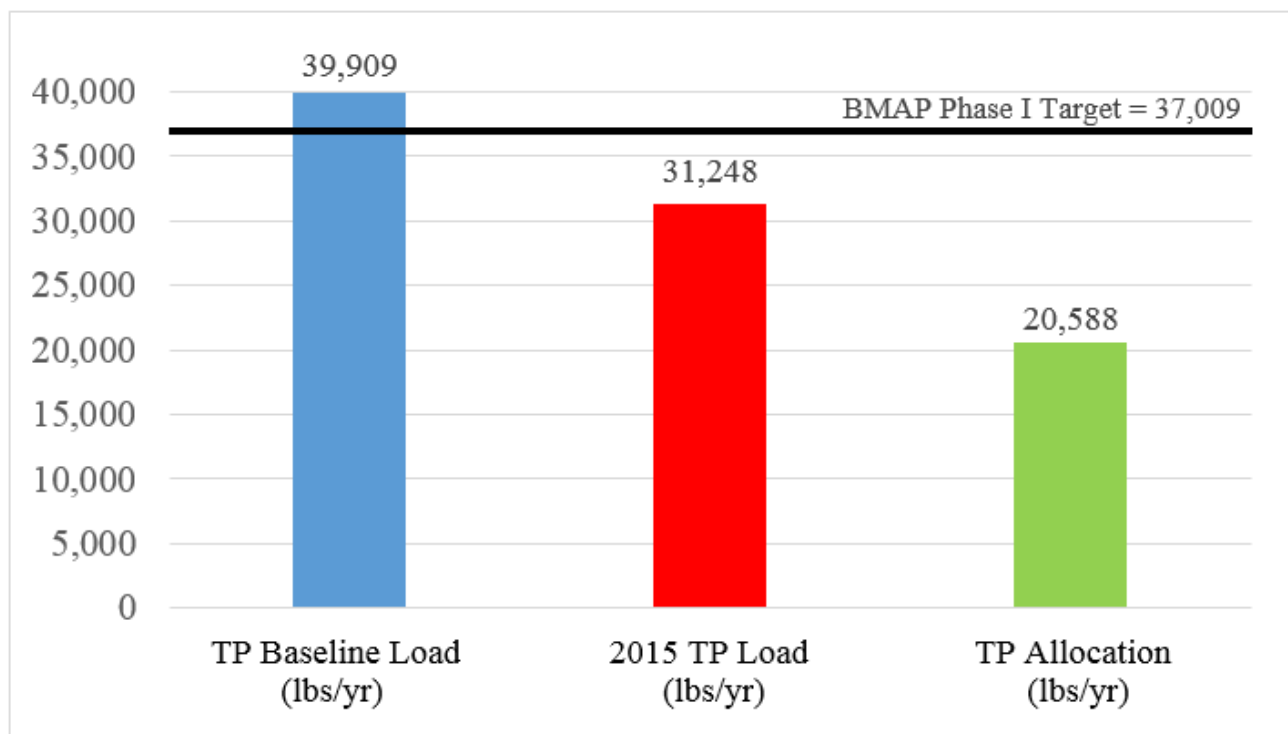


FIGURE 10: PROGRESS TOWARDS THE NORTH A PROJECT ZONE TP TMDL THROUGH FEBRUARY 28, 2015

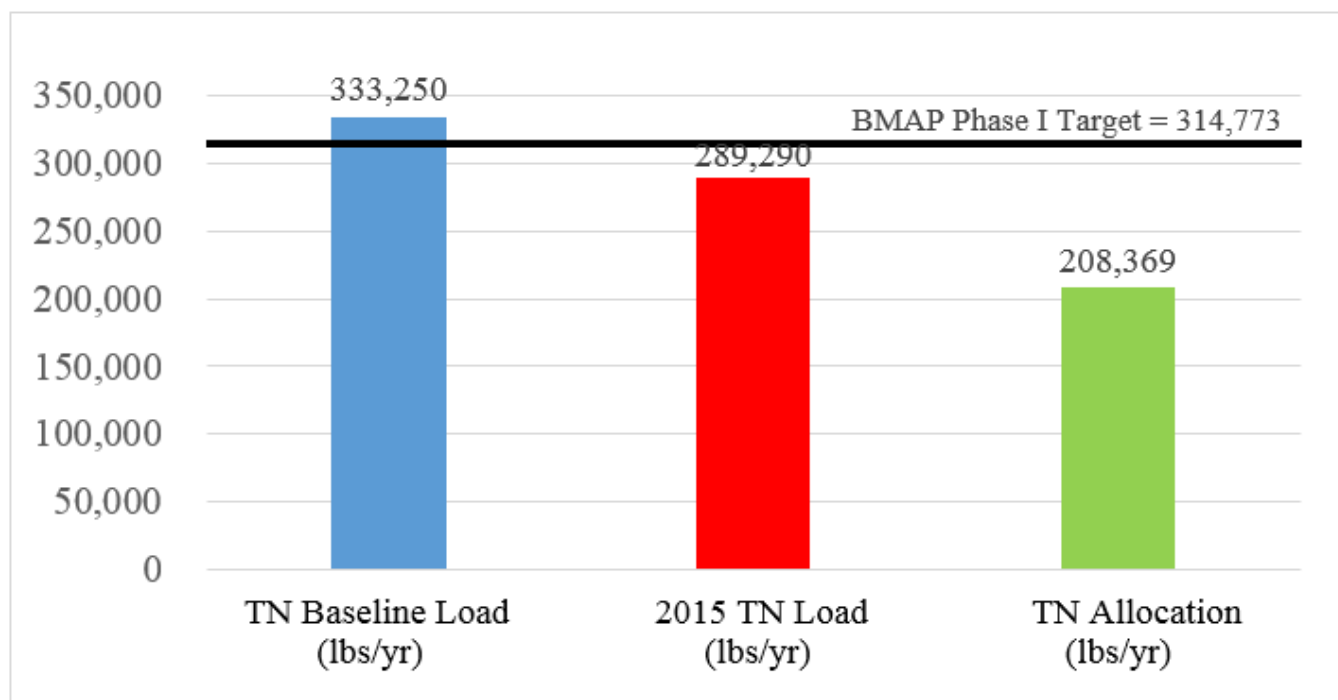


FIGURE 11: PROGRESS TOWARDS THE NORTH B PROJECT ZONE TN TMDL THROUGH FEBRUARY 28, 2015

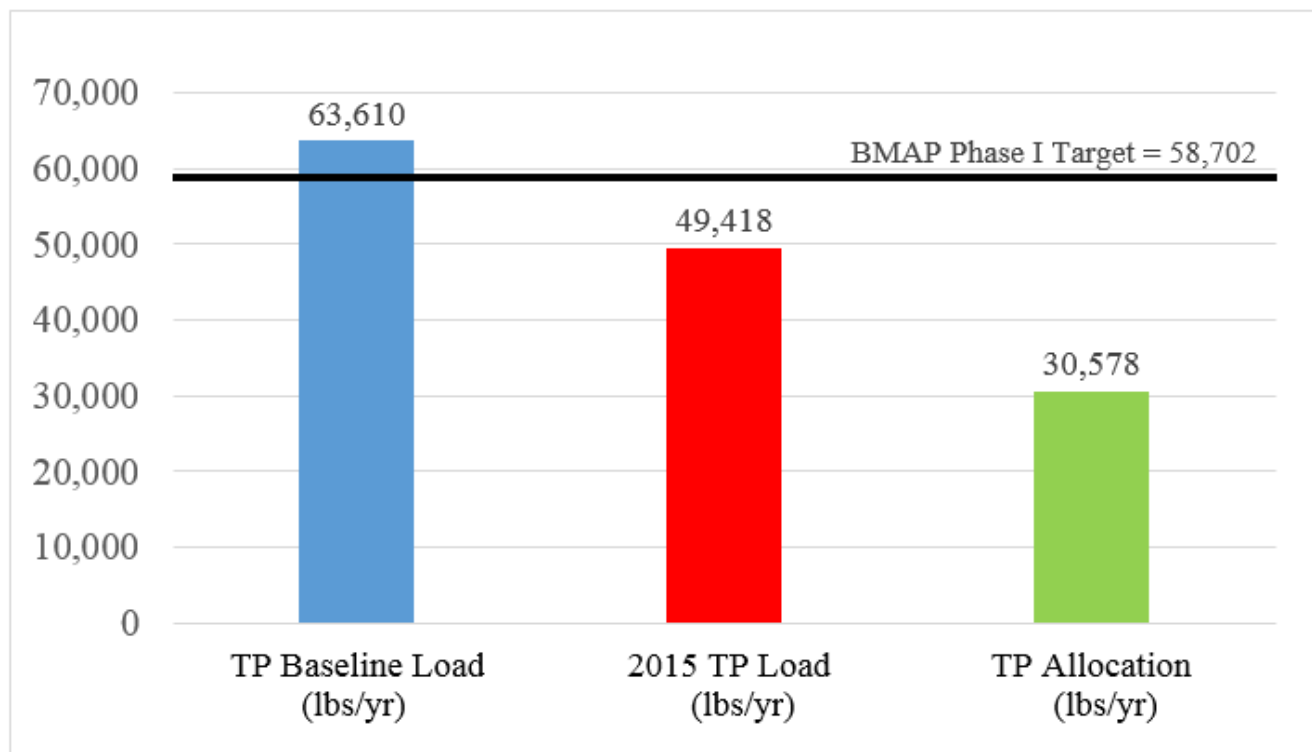


FIGURE 12: PROGRESS TOWARDS THE NORTH B PROJECT ZONE TP TMDL THROUGH FEBRUARY 28, 2015

2.4 FUNDING

Brevard County received countywide appropriations from the 2014 Florida Legislature for \$10 million to remove legacy muck deposits and \$410,000 to restore and evaluate oyster reefs in the IRL. Appropriations were also awarded to the county for \$800,000 (Department S066) for the purchase of an aquatic vegetation harvester and harvesting activities, salary for an equipment operator, toxicity mapping by citizen scientists, and professional consulting and laboratory testing services to measure nutrient reductions. The county received departmental 319(h) grant funding of \$117,000 for the retrofit of 11 Type 1 baffle boxes. The installation of trash screens will convert these to Type 2 baffle boxes. These 11 boxes are part of the countywide project to upgrade multiple baffle boxes. Brevard County was also awarded a TMDL grant of \$116,752 for the Merritt Ridge Pond Floating Vegetative Island project.

The city of Cocoa was awarded one of the two grant proposals it submitted last year for stormwater treatment. The project will be constructed in the next reporting period.

The city of Melbourne applied for and received a departmental 319(h) grant for the Autumn Woods wet detention project. Construction is anticipated to begin after October 2015.

The city of Rockledge received a departmental grant S0538 to complete the final stages of the Huntington Lakes II retention facility, which has a treatment basin of 94 acres. The project should be completed by June 2016. The city also received a grant from the department (LP05040) and a grant from the SJRWMD (#28088) to take 143 septic tanks offline and connect them to central sewer in the Rockwood and Knollwood subdivisions. This project should be completed by September 2016.

The city of Titusville received three grants for the construction of the Draa Field Stormwater Park. The first grant was for \$366,000 from the SJRWMD fiscal year (FY) 2015 Cooperative Cost-Share Program (CCSP). The grant has been finalized and is ready for execution. The second grant, for \$388,825, was awarded through a departmental 319(h) grant. The third grant, for \$800,000, was awarded by the Florida Legislature (LI 1668A FY15) and should be finalized in June 2016.

2.5 FERTILIZER ORDINANCE

Local governments located in the watershed of a waterbody or segment listed as impaired for nutrients are required to adopt, at a minimum, the department's model ordinance for Florida-Friendly fertilizer use on urban landscapes (Section 403.067, Florida Statutes [F.S.]). **Table 11** summarizes the status of ordinance development.

TABLE 11: SUMMARY OF FERTILIZER ORDINANCE DEVELOPMENT DURING THE REPORTING PERIOD IN THE NORTH IRL

STAKEHOLDER	FERTILIZER ORDINANCE STATUS
Brevard County	Adopted
City of Cocoa	Adopted
City of Edgewater	In development
City of Melbourne	Adopted
City of Rockledge	Adopted
City of Titusville	Adopted
Town of Indialantic	Adopted
Town of Palm Shores	Adopted
Volusia County	Adopted

2.6 WATER QUALITY AND SEAGRASS MONITORING

Volusia County continued to monitor its two water quality stations on a monthly basis in the North A project zone. The SJRWMD continued monthly monitoring at 19 water quality stations throughout the North IRL and also continued its seagrass transect monitoring in the North IRL to collect data about the seagrass, phytoplankton, epiphyte coverage, and water quality along each transect. In addition, the department and SJRWMD are working with Dewberry, a consulting firm, to collect the aerial photography for the seagrass imagery analysis in April and/or May 2015. The final mapped seagrass deep edge from the aerial imagery should be available in 2016 to update the seagrass depth limit evaluation.

Section 3: SEAGRASS DEPTH LIMIT TARGET EVALUATION

The goal of the TMDLs is to recover the deeper seagrass habitats, with the biological response of the seagrass being the most important factor in evaluating the success of achieving the TMDL targets. To assess progress for the IRL Basin towards the median seagrass depth limit target, a two-step process is used.

Step 1 in this process is a cumulative frequency distribution analysis. The four most recent mapped seagrass datasets from the SJRWMD are used to create a union coverage of the assessment years with Geographic Information System (GIS) software. Using this union coverage, a 15.8-meter buffer zone is applied to the perimeter of the coverage to establish the deep edge of the seagrass beds. This buffer coverage shows the deepest edge where seagrass grew at any time within the data period, and is used to create a cumulative frequency distribution curve of the depth at which seagrass are present in each project zone in the IRL Basin. This curve is then compared with the union coverage TMDL depth limit target curve. Compliance in Step 1 is achieved when at least 50% or more of the assessment years' frequency distribution curve (including the 50th percentile value) lies on or to the right of the TMDL depth limit target curve.

Step 2 is conducted by calculating the median seagrass depth for each year of the four most recent datasets. Each assessment year median is then compared with the TMDL median depth limit target. Three of the four assessment years' medians must meet or exceed the median TMDL to be Step 2 compliant. If the project zone is both Step 1 and Step 2 compliant, it is considered to be meeting the TMDL seagrass depth limit target. If the basin fails to meet either Step 1 or Step 2, it is not considered to be meeting the TMDL seagrass depth limit target for that set of assessment years.

The department conducted this two-step evaluation process using the 2007, 2009, 2011, and 2013 mapping years, which were the latest datasets available at the time of this analysis. Based on this period, neither the North A nor North B project zones was Step 1 compliant (**Figure 13** and **Figure 14**) or Step 2 compliant (see **Table 12**). Therefore, BMAP stakeholders will continue to work towards achieving the seagrass depth limit targets.

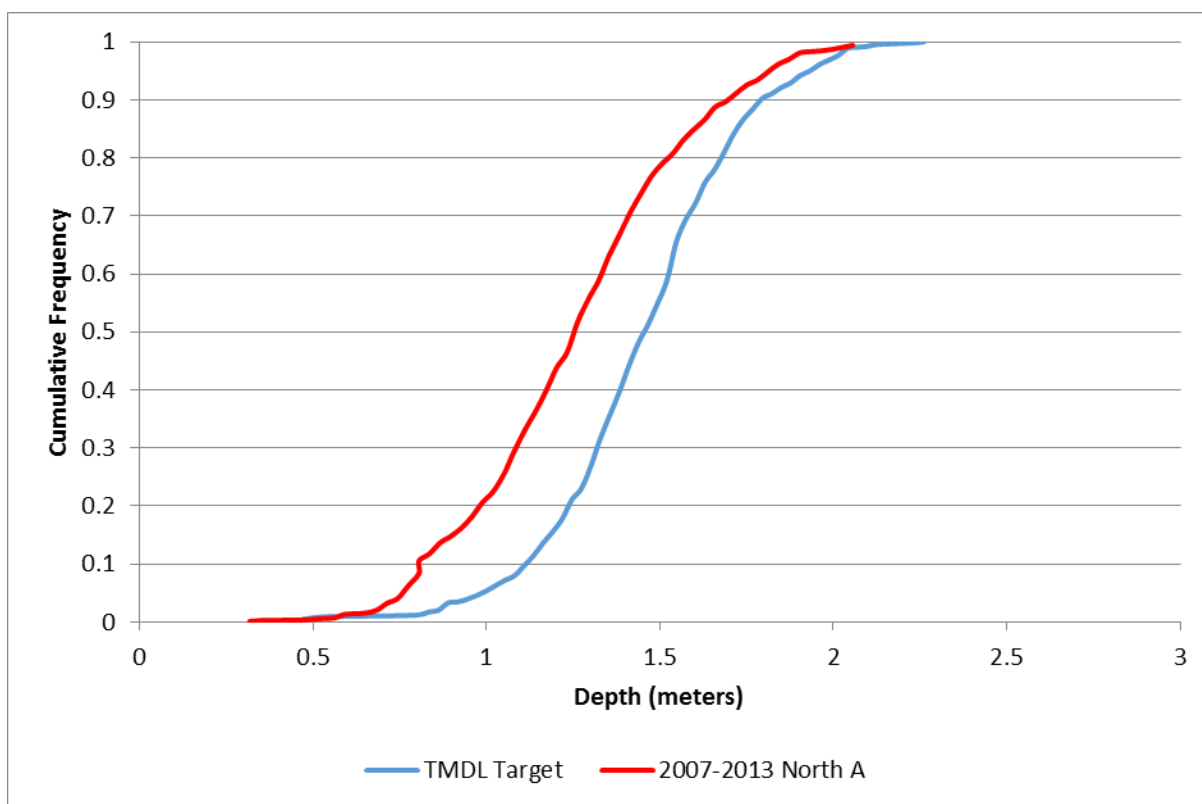


FIGURE 13: STEP 1 COMPLIANCE EVALUATION FOR THE NORTH A PROJECT ZONE FOR 2007-13

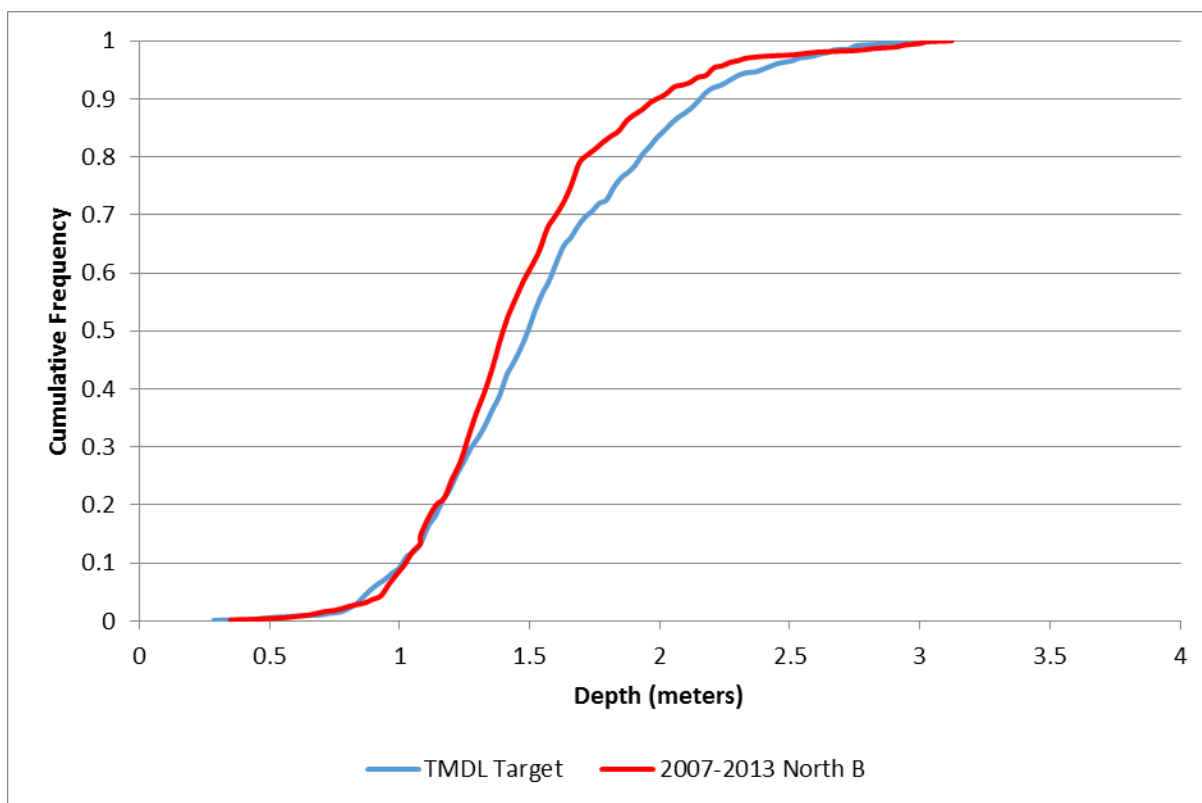


FIGURE 14: STEP 1 COMPLIANCE EVALUATION FOR THE NORTH B PROJECT ZONE FOR 2007-13

TABLE 12: STEP 2 COMPLIANCE EVALUATION FOR THE NORTH IRL SUBBASIN

YEAR	NORTH A MEDIAN DEPTH (METERS)	NORTH B MEDIAN DEPTH (METERS)
TMDL Median	1.44	1.51
2007	1.23	1.39
2009	1.17	1.39
2011	1.05	0.93
2013	1.02	1.17
Step 2 Compliant?	No	No

Section 4: UPCOMING ACTIVITIES

4.1 ACTIVITIES IN THE UPCOMING REPORTING PERIOD

The third annual progress report will encompass the period from March 1, 2015, through February 29, 2016. **Section 4.1.1** through **Section 4.1.6** summarize the activities that will occur during this time.

4.1.1 BREVARD COUNTY

In 2015, the Brevard County muck dredging project will remove up to 350,000 cubic yards of muck soils from sites in the IRL, BRL, and associated tributaries. Major components of the project include the hydroacoustic survey and subsurface mapping of muck, dredging design and permitting, sediment management design and permitting, dredging, sediment management operations, site cleanup, restoration and project closeout. Major project components will be carried out as necessary for each site location selected. Site-specific construction plans will be established to maximize the use of existing data and any previously issued authorizations. Project component costs will vary by location and will depend on muck volume, general local characteristics, and proximity to dewatering sites.

State permits for removing major muck deposits from the Cocoa Beach site have been approved, and federal permits are pending with active dialogue on appropriate permit conditions. State and federal permits have been issued for the Turkey Creek site in Palm Bay. Bid document preparation is under way, with the project award anticipated in June 2015 at Turkey Creek, less than one year after the appropriation. Cocoa Beach is also anticipated to go to bid with environmental dredging to begin in late summer 2015. The existing oyster gardening and reef building project will continue into 2015 and beyond. A SJRWMD grant will provide material costs for incorporating oysters gardened in 2016 and 2017 into living shoreline pilot projects.

The prioritization of the county's outfalls and association of each outfall to its drainage basin will help focus future water quality treatment projects on areas that will result in the highest pollutant removal efficiencies. The county is developing a low-impact development (LID) manual illustrating typical retrofit ideas for commercial and industrial sites in the IRL's BMAP watersheds. The manual will be printed and distributed to local businesses, posted on the county's website, and presented at workshops aimed at a business audience to encourage the reduction of stormwater pollutants at the source. Street sweeping and BMP cleanout operations were contracted to vendors in early 2015 to maximize debris removal from county streets and drainage infrastructure. Managed aquatic plant systems (MAPS)—

specifically, floating islands—will be installed in 10 ponds to enhance the load reductions of existing treatment trains.

Future county projects that have funding or contracts pending include the Pines Industrial Pond with a denitrification bioreactor and phosphorus filter, and the Johnson Junior High School pond retrofit with discharge regulation, phosphorus reduction, and denitrification.

4.1.2 CITY OF COCOA

The upcoming project for next year will treat approximately 14.5 acres of urban runoff flowing into the IRL in Cocoa Village. The project is part of an ongoing effort to treat and reduce overall surface runoff from the Church Street Basin.

4.1.3 CITY OF EDGEWATER

The city of Edgewater has permitted and awarded a bid for the Monson Drive/Riverview Drive stormwater project identified in the Stormwater Master Plan Capital Improvement Project listing. This project includes the installation of roadside swales, exfiltration trenches, and a nutrient-separating baffle box in an area that currently has no stormwater treatment. Also, the Hart Avenue stormwater project and the Lamont Street Stormwater Project are under currently design.

The city has met with Volusia County and neighboring city representatives to initiate a collaborative effort to develop a Reasonable Assurance Plan for the Indian River and Mosquito Lagoons. Volusia County is taking the lead on this project.

Grant funding has been requested from the SJRWMD Cost-Share Program for reclaimed water line extensions to support the city's effort to eliminate treated wastewater discharges to the IRL. The city of Edgewater has also requested grant funding for a project in the area of East Thomas Street to add centralized sewer system and eliminate 34 septic tanks, add a stormwater treatment system where there is currently no treatment, and pave side streets to lessen the impact of shell and other suspended solids in the stormwater system.

4.1.4 CITY OF TITUSVILLE

The city of Titusville implemented a pilot project to determine the effectiveness of inlet skimmer boxes inserted in six inlets located on Brevard Avenue, directly adjacent to the IRL (**Figure 15**). Results from the pilot project will be completed in May 2015 and will be included in the 2016 annual update. The

city also continued to work on Draa Field Stormwater Park (TV-3); the project design is 95% complete and construction is expected to begin in summer 2015.



FIGURE 15: CITY OF TITUSVILLE INLET SKIMMER BOXES

This year the city is also expecting to complete the data collection and monitoring of TN and TP removal efficiencies from the St. Johns Basin stormwater improvements (TV-4). The city will enhance its educational efforts by implementing a pet waste management ordinance that was adopted in May 2015.

4.1.5 AGRICULTURE

FDACS will work to enroll additional producers in the BMP Program.

4.1.6 WATER QUALITY AND SEAGRASS MONITORING

Volusia County will continue to monitor its two water quality stations. The SJRWMD will continue to monitor its 20 water quality stations and carry out seagrass transect monitoring in the basin. The department and SJRWMD will continue to work with their contractor Dewberry on the 2015 seagrass aerial imagery so that the seagrass target evaluation can be updated with the latest data.

4.2 MANAGEMENT STRATEGIES FOR THE SECOND BMAP ITERATION

The North IRL BMAP stakeholders have already begun planning management strategies to achieve additional TN and TP reductions for the second BMAP iteration. **Section 4.2.1** through **Section 4.2.9** summarize the strategies identified to date. It is important to note that the activities listed below are not BMAP requirements at this time, but are listed to show that plans are under way to achieve additional nutrient reductions to benefit the North IRL.

Cost-share funds for projects that reduce nutrient loading are available from the department through the Section 319 and TMDL Restoration Grant Programs. The department announces the availability of these funds to stakeholders and encourages local governments to use the programs to fund BMAP projects.

4.2.1 BREVARD COUNTY

Brevard County will continue to prioritize the county's outfalls and finalize the LID manual, as described in **Section 4.1.1**. The county will work with the department to identify potential nontraditional and cost-effective BMPs and strategies to reduce loading to the lagoon.

4.2.2 CITY OF COCOA

The city of Cocoa will update the department when more information becomes available.

4.2.3 CITY OF EDGEWATER

The city of Edgewater plans to continue its educational efforts and illicit discharge educational program/training (EW-1).

4.2.4 CITY OF MELBOURNE

The city of Melbourne will update the department when more information becomes available.

4.2.5 CITY OF ROCKLEDGE

The city of Rockledge will update the department when more information becomes available.

4.2.6 CITY OF TITUSVILLE

The city of Titusville is considering the installation of several baffle boxes with bioabsorptive activated material and the implementation of an FYN Program/"My Brevard Yard" Program in partnership with UF-IFAS. The city will continue its street sweeping activities and removal of sediment and vegetation from the city's canals. The city is also modeling nutrient loads from its jurisdiction to identify and prioritize the type and placement of future water quality projects that will most efficiently remove

nutrients from land-based sources, and will continue to pursue partnerships with other BMAP stakeholders to implement mutually beneficial projects and programs.

4.2.7 FDOT DISTRICT 5

FDOT District 5 will update the department when more information becomes available.

4.2.8 KENNEDY SPACE CENTER

The Kennedy Space Center will update the department when more information becomes available.

4.2.9 TOWN OF INDIALANTIC

The town of Indialantic will update the Department when more information becomes available.

4.2.10 TOWN OF PALM SHORES

The town of Palm Shores will update the department when more information becomes available.

4.2.11 VOLUSIA COUNTY

Volusia County will update the department when more information becomes available.

APPENDIX A: BMAP PROJECTS

The BMAP project tables in this appendix show the implementation status of the BMAP projects as of February 28, 2015. The tables provide information on the nutrient reduction attributed to each individual project, listed in lbs/yr. These projects were submitted to provide reasonable assurance to the department that each stakeholder has a plan on how it will 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 time frame.

Since the adoption of the BMAP, the methodology for calculating nutrient load reductions using the Florida Stormwater Association assessment tool was modified. Street sweeping reductions in the first year of BMAP implementation were reported based on the old methodology. For this reporting period, street sweeping calculations were recalculated based on the new reporting method.

NORTH A PROJECT ZONE

TABLE A-1: BREVARD COUNTY PROJECTS IN THE NORTH A PROJECT ZONE

N/A – Not applicable; TBD = To be determined; - = Empty cell/no data

PROJECT NUMBER	PROJECT NAME	PROJECT TYPE	TREATMENT ACRES	PROJECT COST	ANNUAL OPERATIONS & MAINTENANCE (O&M) COST	END DATE	STATUS	TN REDUCTION (LBS/YR)	TP REDUCTION (LBS/YR)
BC-1	Old Dixie Highway 601	Sediment trap	N/A	Unknown	Unknown	Unknown	Completed	4	1.2
BC-2	Chain of Lakes Pond	Wet detention pond	1,072.5	\$2,051,405	Unknown	2010	Completed	2,699	1,109.4
BC-3	FYN; Landscape, Irrigation, Fertilizer, Pet Waste Ordinances; PSAs, Pamphlets, Website, Illicit Discharge Program	Education Efforts	N/A	Unknown	Unknown	Ongoing	Ongoing	1,660	214.1
BC-4	Scottsmeer I	Wet detention pond	530.9	\$601,664	\$1,000	2016	Planned, funded	1,013	194.3
BC-5	Chain of Lakes Southern Expansion Phase 1	Wet detention pond	575.2	\$3,200,000	\$1,000	2013	Completed	1,325	440.6
BC-6	Chain of Lakes Reuse	Stormwater reuse	N/A	Unknown	Unknown	2005	Completed	498	63.2
BC-7	Scottsmeer C	Wet detention pond	911	-	-	2016	Planned, funded	TBD	TBD
BC-8	Street Sweeping Increasing to Monthly	Street sweeping	N/A	N/A	N/A	2015	Started	TBD	TBD
BC-9	Baffle Box/Sediment Trap Cleaning Increasing to Quarterly	BMP cleanout	N/A	N/A	N/A	2015	Started	TBD	TBD

TABLE A-2: BREVARD COUNTY SUMMARY OF PROJECT REDUCTIONS IN THE NORTH A PROJECT ZONE

CATEGORY	TN REDUCTION (LBS/YR)	TP REDUCTION (LBS/YR)
Total Project Reductions	7,199	2,022.8
Total BMAP I Required Reductions	2,180	282
Credit for Future BMAPs	5,019	1,741

TABLE A-3: CITY OF EDGEWATER IN THE NORTH A PROJECT ZONE

PROJECT NUMBER	PROJECT NAME	PROJECT TYPE	ANNUAL O&M COST	END DATE	STATUS	TN REDUCTION (LBS/YR)	TP REDUCTION (LBS/YR)
EW-1	FYN; Landscaping, Irrigation, and Pet Waste Ordinances; Pamphlets, Website, Illicit Discharge Program	Educational efforts	\$15,000	Ongoing	Ongoing	84	11.3

TABLE A-4: CITY OF EDGEWATER SUMMARY OF PROJECT REDUCTIONS IN THE NORTH A PROJECT ZONE

CATEGORY	TN REDUCTION (LBS/YR)	TP REDUCTION (LBS/YR)
Total Project Reductions	84	11.3
Total BMAP I Required Reductions	24.3	0.0
Credit for Future BMAPs	60	11

TABLE A-5: CITY OF TITUSVILLE IN THE NORTH A PROJECT ZONE

N/A – Not applicable

PROJECT NUMBER	PROJECT NAME	PROJECT TYPE	PROJECT DETAIL	TREATMENT ACRES	PROJECT COST	ANNUAL O&M COST	END DATE	STATUS	TN REDUCTION (LBS/YR)	TP REDUCTION (LBS/YR)
TV-1	Area 1 Stormwater Improvements	Wet detention pond	Upsize existing storm pipes and enclose Florida Ditch; water directed to TV-2	432.2	\$2,151,510	\$4,797	2010	Completed	1,019	411.8
TV-2	Chain of Lakes Regional Stormwater Pond	Wet detention pond	Construction of regional park, featuring wetlands, treatment ponds, and recreational features	339.8	Unknown	\$15,620	2010	Completed	360	159.6
TV-3	Draa Field Stormwater Park	Wet detention pond	Water quality treatment for Area 2 drainage basin	281.4	\$1,661,443	\$15,000	12/2015	Started	1,598	618.7
TV-4	St. Johns Basin Stormwater Improvements	Wet detention pond	Construction of 3.5-acre wet detention pond to treat runoff from mixed use lands prior to discharge to IRL	882.1	\$1,854,254	\$8,000	05/2013	Completed	79	12.5
TV-5	St. Johns Basin Stormwater Improvements	2 nd generation baffle box	Installation of baffle box downstream of pond to treat runoff from mixed use lands prior to discharge to IRL	882.1	\$167,343	Unknown	2011	Completed	1,495	213.9

PROJECT NUMBER	PROJECT NAME	PROJECT TYPE	PROJECT DETAIL	TREATMENT ACRES	PROJECT COST	ANNUAL O&M COST	END DATE	STATUS	TN REDUCTION (LBS/YR)	TP REDUCTION (LBS/YR)
TV-6	Spaceview Park	Alum treatment	Alum treatment	110.6	\$2,300,000	\$15,000	2007	Completed	1,153	377.9
TV-7	Public Education and Outreach	Educational efforts	Irrigation ordinance, fertilizer ordinance, pamphlets, PSAs, website, newsletter, illicit discharge program	N/A	\$2,500	\$5,000	Ongoing	Ongoing	1,217	234
TV-8	Street Sweeping	Street sweeping	Approximately 2,156,364 lbs of debris removed in North A	N/A	\$188,120	\$63,106	Ongoing	Ongoing	1,214	779

TABLE A-6: CITY OF TITUSVILLE SUMMARY OF PROJECT REDUCTIONS IN THE NORTH A PROJECT ZONE

CATEGORY	TN REDUCTION (LBS/YR)	TP REDUCTION (LBS/YR)
Total Project Reductions	8,135	2,807.7
Total BMAP I Required Reductions	6,604.6	1,447.6
Credit for Future BMAPs	1,530	1,360

TABLE A-7: FDOT DISTRICT 5 IN THE NORTH A PROJECT ZONE

PROJECT NUMBER	PROJECT NAME	PROJECT TYPE	END DATE	STATUS	TN REDUCTION (LBS/YR)	TP REDUCTION (LBS/YR)
FDOT5-1	IDDE Training, Brochures, NDPES Flyer	Educational efforts	Ongoing	Ongoing	39	11.3
FDOT5-2	Street Sweeping	Street sweeping	Ongoing	Ongoing	71	45
FDOT5-3	Fertilizer Cessation	Fertilizer cessation	2005	Completed	595	0.0

TABLE A-8: FDOT DISTRICT 5 SUMMARY OF PROJECT REDUCTIONS IN THE NORTH A PROJECT ZONE

- = Empty cell/no data

CATEGORY	TN REDUCTION (LBS/YR)	TP REDUCTION (LBS/YR)
Total Project Reductions	705	56.3
Total BMAP I Required Reductions	396.6	142.0
Credit for Future BMAPs	308	-

TABLE A-9: KENNEDY SPACE CENTER IN THE NORTH A PROJECT ZONE

N/A = Not applicable

PROJECT NUMBER	PROJECT NAME	PROJECT TYPE	PROJECT DETAIL	TREATMENT ACRES	END DATE	STATUS	TN REDUCTION (LBS/YR)	TP REDUCTION (LBS/YR)
KSC-1	Landscape Fertilizer Reduction	Fertilizer reduction	Fertilizer use reduced from 60 tons/yr in 2000 to 20 tons/yr in 2010; formula changed from rapid nitrogen release 16-4-8 to slow nitrogen release, phosphate free 15-0-15	N/A	Ongoing	Ongoing	312	44.2
KSC-2	Citrus Grove Termination Roberts Road	Fertilizer reduction	Grove lease termination resulted in previously fertilized areas abandoned	418.9	2010	Completed	140	557.2
KSC-3	Citrus Grove Termination Schwartz Road	Fertilizer reduction	Grove lease termination resulted in previously fertilized areas abandoned	216.5	2010	Completed	256	308.1
KSC-4	Storage Building L5-0734	Facility demolition	Demolition of facility resulted in loss of impervious area and change of land use	0.02	2010	Completed	0	0.1
KSC-5	Support Building L5-0683	Facility demolition	Demolition of facility resulted in loss of impervious area and change of land use	0.2	2010	Completed	3	1.0
KSC-6	Shuttle Landing Facility - missing from model	Wet detention pond	Runoff is captured and treated before discharging to IRL	617.8	Unknown	Completed	2,566	1,005.0
KSC-7	Launch Pad 39A	Closed basin	Area is closed basin	456.5	N/A	Completed	1,255	326.3
KSC-8	Launch Pad 39B	Closed basin	Area is closed basin	549.0	N/A	Completed	3,043	588.5
KSC-9	Schwartz Road Drainage System - missing from model	Impoundment	Closed system that ultimately drains to northwest before discharging to impoundment area adjacent to IRL	1,614.1	Unknown	Completed	1,290	270.8

PROJECT NUMBER	PROJECT NAME	PROJECT TYPE	PROJECT DETAIL	TREATMENT ACRES	END DATE	STATUS	TN REDUCTION (LBS/YR)	TP REDUCTION (LBS/YR)
KSC-10	Warehouse/Processing Area - missing from model	Wet detention pond	Receives treatment from permitted stormwater treatment systems	15.2	Unknown	Completed	75	33.2
KSC-18	Demolition of Facility J6-2377	Facility demolition	Demolition of facility resulted in loss of impervious area and change of land use	0.1	02/2013	Completed	1	0.3

TABLE A-10: KENNEDY SPACE CENTER SUMMARY OF PROJECT REDUCTIONS IN THE NORTH A PROJECT ZONE

CATEGORY	TN REDUCTION (LBS/YR)	TP REDUCTION (LBS/YR)
Total Project Reductions	8,941	3,134.7
Total BMAP I Required Reductions	0	0.0
Credit for Future BMAPs	8,941	3,135

TABLE A-11: VOLUSIA COUNTY IN THE NORTH A PROJECT ZONE

PROJECT NUMBER	PROJECT NAME	PROJECT TYPE	END DATE	STATUS	TN REDUCTION (LBS/YR)	TP REDUCTION (LBS/YR)
VC-1	FYN; Landscaping, Irrigation, Pamphlets, Website, Illicit Discharge Program	Educational efforts	Ongoing	Ongoing	515	58.9

TABLE A-12: VOLUSIA COUNTY SUMMARY OF PROJECT REDUCTIONS IN THE NORTH A PROJECT ZONE

CATEGORY	TN REDUCTION (LBS/YR)	TP REDUCTION (LBS/YR)
Total Project Reductions	515	58.9
Total BMAP I Required Reductions	0	0.0
Credit for Future BMAPs	515	59

NORTH B PROJECT ZONE

TABLE A-13: BREVARD COUNTY IN THE NORTH B PROJECT ZONE

N/A = Not applicable; TBD = To be determined

PROJECT NUMBER	PROJECT NAME	PROJECT TYPE	TREATMENT ACRES	PROJECT COST	ANNUAL O&M COST	END DATE	STATUS	TN REDUCTION (LBS/YR)	TP REDUCTION (LBS/YR)
BC-8	Twin Lakes North	Baffle box	7.7	\$20,082	Unknown	2005	Completed	10	1
BC-9	Twin Lakes South	Baffle box	8.5	\$20,082	Unknown	2005	Completed	10	1
BC-10	Lucas Place 640 Baffle Box	Baffle box	5.2	\$36,835	Unknown	2003	Completed	8	0.8
BC-11	Rockledge Drive 2055	Baffle box	2.4	\$61,094	Unknown	2008	Completed	2	0.1
BC-12	Rockledge and Riverwoods Baffle Box	Baffle box	3.8	\$47,686	Unknown	2000	Completed	3	0.3
BC-13	Anchor Lane	Baffle box	29.4	\$49,560	Unknown	2000	Completed	47	5.4
BC-14	Kelmore Baffle Box	Baffle box	9.7	\$21,817	Unknown	2003	Completed	10	1.8
BC-15	Puesta Del Sol 735 Baffle Box	Baffle box	2.2	\$24,953	Unknown	2003	Completed	2	0.2
BC-16	Tequesta Harbor Baffle Box	Baffle box	13.1	\$27,582	Unknown	2009	Completed	21	2.4
BC-17	Broadway Boulevard Pond	Pond	85.7	\$553,169	Unknown	2000	Completed	272	55.7
BC-18	Fairglen Elementary School Pond	Pond	80.2	\$730,869	Unknown	2003	Completed	350	111.1
BC-19	Lake George	Pond	719.0	\$347,255	Unknown	2010	Completed	1,261	414.6
BC-20	Merritt Island Courthouse Pond	Pond	7.0	\$95,584	Unknown	2003	Completed	8	2.5
BC-21	Parkway Drive Phase 2 Pond	Pond	1,796.9	\$1,817,720	Unknown	2004	Completed	4,041	1,598.9
BC-22	Street Sweeping	Street sweeping	N/A	Unknown	Unknown	Ongoing	Ongoing	61	56.6
BC-23	FYN; Landscape, Irrigation, Fertilizer, Pet Waste Ordinances; PSAs, Pamphlets, Website, Illicit Discharge Program	Educational efforts	N/A	Unknown	Unknown	Ongoing	Ongoing	6,339	1,035.0
BC-24	Pine Island Phase I and II	Wet detention pond	6,232.9	\$4,131,255	\$34,705	2015	Completed	10,948	3,217.9
BC-25	Merritt Island Airport	Wet detention pond	49.9	\$652,056	Unknown	2011	Completed	5	1.4
BC-26	Pines Industrial	Wet detention pond	71	\$822,000	Unknown	2016	Planned, funded	801	101

PROJECT NUMBER	PROJECT NAME	PROJECT TYPE	TREATMENT ACRES	PROJECT COST	ANNUAL O&M COST	END DATE	STATUS	TN REDUCTION (LBS/YR)	TP REDUCTION (LBS/YR)
BC-27	Johnson Junior High	Discharge regulation, phosphorus reduction and denitrification	133.4	\$484,200	Unknown	2017	Planned, funded	187. 14	27.04
BC-28	Florida Boulevard	MAPS	88.4	\$40,772	\$18,295	2012	Completed	197	21.0
BC-29	Fairglen Elementary	MAPS	80.2	\$34,996	\$15,703	2014	Planned, funded	123	12.2
BC-30	Port St. John B	MAPS	57.9	\$16,308	\$7,315	2016	Planned, funded	237	41.5
BC-31	Wickham Park North	MAPS	1,796.9	\$75,428	\$33,846	2016	Planned, funded	2,804	597.8
BC-32	West Avenue 6600	Type 1 baffle box retrofit	50.7	\$15,000	Unknown	Unknown	Planned, not yet funded	120	12.0
BC-33	Lucas Place	Type 1 baffle box retrofit	5.2	\$12,507	Unknown	2015	Started	8	0.7
BC-34	Indian River Isles	Type 1 baffle box retrofit	51.5	\$30,844	Unknown	2015	Started	63	7.8
BC-35	Granada Street 1030 East	Type 1 baffle box retrofit	38.6	\$15,000	Unknown	Unknown	Planned, not yet funded	99	16.4
BC-36	Haverhill Avenue	Type 1 baffle box retrofit	47.5	\$35,857	Unknown	2015	Started	80	8.0
BC-37	Manth Avenue	Type 1 baffle box retrofit	69.1	\$12,507	Unknown	2015	Started	226	29.0
BC-38	Rockledge and Riverwoods Boulevard Rockledge	Type 1 baffle box retrofit	3.8	\$15,000	Unknown	Unknown	Planned, not yet funded	3	0.2
BC-39	Alamanda Indian Harbour Beach	Type 1 baffle box retrofit	2.8	\$12,507	Unknown	2015	Started	3	0.3
BC-40	River Shore 1848 Indialantic	Type 1 baffle box retrofit	2.7	\$31,751	Unknown	2015	Started	3	0.3
BC-41	River Shore 1925 Indialantic	Type 1 baffle box retrofit	7.4	\$12,507	Unknown	2015	Started	7	0.8
BC-42	Cedar Lane Indialantic	Type 1 baffle box retrofit	3.8	\$12,507	Unknown	2015	Started	6	0.6
BC-43	Riverview 9856 Indialantic	Type 1 baffle box retrofit	5.7	\$15,000	Unknown	Unknown	Planned, not yet funded	9	0.9
BC-44	Riverview 9864 Indialantic	Type 1 baffle box retrofit	98.5	\$15,000	Unknown	Unknown	Planned, not yet funded	202	33.4
BC-45	Oak Ridge Indialantic	Type 1 baffle box retrofit	126.5	\$15,000	Unknown	2014	Planned, not yet funded	257	38.8
BC-46	Kingsmill-Aurora Phase 2	Wet detention pond	1,220.4	\$1,600,000	\$1,000	2016	Planned, funded	4,059	1,589.8
BC-47	Sediment Trap, Grated Inlet Basket, Inlet Weir Cleaning	BMP Cleanout	N/A	\$392,105	Unknown	Ongoing	Ongoing	21	9
BC-48	Alum Pond MAPS	MAPS	92.6	\$100,362	Unknown	Unknown	Planned, funded	217	22.4

PROJECT NUMBER	PROJECT NAME	PROJECT TYPE	TREATMENT ACRES	PROJECT COST	ANNUAL O&M COST	END DATE	STATUS	TN REDUCTION (LBS/YR)	TP REDUCTION (LBS/YR)
BC-49	Lake George	MAPS	719.0	\$51,200	Unknown	2015	Funded	505	51.3
BC-50	Wickham Park	Stormwater reuse	43.8	Unknown	Unknown	2010	Completed	75	4.6
BC-51	Ellington Park	Stormwater reuse	N/A	Unknown	Unknown	2005	Completed	409	87.0
BC-52	Rockledge Barton Park Reuse	Stormwater reuse	736.6	Unknown	Unknown	2009	Completed	262	24.1
BC-53	Florida Boulevard Pond	Wet detention pond	88.4	\$350,384	N/A	2002	Completed	545	185.4
BC-54	McGiver South	Type 1 baffle box retrofit	2.8	\$12,507	Unknown	2015	Started	6	0.7
BC-55	651 Franklyn	Type 1 baffle box retrofit	13.7	\$12,507	Unknown	2015	Started	15	1.6
BC-56	Fountainhead	Aquatic vegetation harvesting	N/A	\$39,274	TBD	10/2013	Completed	401	64.7
BC-57	Fiske	Type 1 baffle box retrofit	209.9	\$30,352	Unknown	2015	Started	TBD	TBD

TABLE A-14: BREVARD COUNTY SUMMARY OF PROJECT REDUCTIONS IN THE NORTH B PROJECT ZONE

CATEGORY	TN REDUCTION (LBS/YR)	TP REDUCTION (LBS/YR)
Total Project Reductions	35,349	9,497
Total BMAP I Required Reductions	5,298	995.3
Credit for Future BMAPs	30,051	8,502

TABLE A-15: CITY OF COCOA IN THE NORTH B PROJECT ZONE

N/A = Not applicable

PROJECT NUMBER	PROJECT NAME	PROJECT TYPE	TREATMENT ACRES	END DATE	STATUS	TN REDUCTION (LBS/YR)	TP REDUCTION (LBS/YR)
CC-1	Bracco Pond B	Wet detention pond	591.8	Unknown	Completed	2,328	1,049.6
CC-2	Bracco Expansion Area	Wet detention pond	775.2	Unknown	Completed	156	41.8
CC-3	Cocoa Village Park	Dry detention pond	13.5	Unknown	Completed	37	6.9
CC-4	Morris Pond	Wet detention pond	16.2	Unknown	Completed	128	46.7
CC-5	North Brevard Avenue Stormwater Treatment Facility - Continuous deflective separation (CDS) unit	CDS Unit	11.3	Unknown	Completed	0	4.8
CC-6	North Fiske Stormwater Retention Facility	100% on-site retention	33.9	Unknown	Completed	42	2.4
CC-7	Suntree Baffle Box #1	2 nd generation baffle box	5.9	Unknown	Completed	7	0.7
CC-8	Street Sweeping	Street sweeping	N/A	Unknown	Ongoing	310	199
CC-9	Bracco Supplemental Water Supply	Stormwater reuse	N/A	Unknown	Completed	1,102	107.6
CC-10	Diamond Square Stormwater Improvements	Wet detention pond	95.4	2011	Completed	108	0.0
CC-11	Fertilizer Ordinance	Educational efforts	N/A	N/A	Ongoing	128	25.8

TABLE A-16: CITY OF COCOA SUMMARY OF PROJECT REDUCTIONS IN THE NORTH B PROJECT ZONE

CATEGORY	TN REDUCTION (LBS/YR)	TP REDUCTION (LBS/YR)
Total Project Reductions	4,436	1,485.3
Total BMAP I Required Reductions	2,409.5	557.2
Credit for Future BMAPs	1,936	928

TABLE A-17: CITY OF MELBOURNE IN THE NORTH B PROJECT ZONE

N/A = Not applicable

PROJECT NUMBER	PROJECT NAME	PROJECT TYPE	PROJECT DETAIL	TREATMENT ACRES	PROJECT COST	END DATE	STATUS	TN REDUCTION (LBS/YR)	TP REDUCTION (LBS/YR)
MEL-1	Fee & Apollo Drainage Improvements	Wet detention pond	No treatment provided in existing development; complete water quality addition	43.6	\$525,161	2010	Completed	28	78.8
MEL-2	Dove Street Pond	Wet detention pond	No treatment provided in existing development; complete water quality addition	14.9	\$156,164	2003	Completed	69	31.3
MEL-3	Charles Drive Pipe Replacement	Wet detention pond	Replaced failing stormwater pipe and created wet detention pond; little to no treatment provided in existing developments	143.3	\$462,644	2010	Completed	183	161. 6
MEL-4	Wickham Park Pond	Wet detention pond	Ponds along with piping upgrades help eliminate flooding in area along with treatment	1,796.9	\$250,000	Unknown	Completed	627	248.3
MEL-5	Babcock Street Realignment	Retention BMP	Additional treatment provided for adjacent drainage basins	42.3	\$1,757,186	Unknown	Completed	163	41.9
MEL-6	Garfield Street Ponds - Lot 12 (North)	Dry detention pond	Two small dry detention ponds in existing subdivision (with MEL-7)	24.8	\$181,605	2003	Completed	37	9.2
MEL-7	Garfield Street Ponds - Lot 24 (South)	Dry detention pond	Two small dry detention ponds in existing subdivision (with MEL-6)	16.3	Part of MEL-6	2003	Completed	24	6.2
MEL-8	Education	Educational efforts	Irrigation, fertilizer, pet waste management, and landscaping ordinances; pamphlets, presentations, website, illicit discharge program	N/A	Unknown	Ongoing	Ongoing	2,583	587.2
MEL-9	Street Sweeping/Inlet Cleaning	Street sweeping/ inlet cleaning	Street sweeping in basin and debris removal	N/A	Unknown	Ongoing	Ongoing	1,176	743
MEL-10	Autumn Woods	Wet detention pond	Proposed project consists of construction of wet detention pond for water quality treatment	50.7	\$879,220	2017	Conceptual	279	120
MEL-11	Participation in FYN	Educational efforts	Future participation in FYN	N/A	Unknown	2017	Planned	2,583	587.2
MEL-12	South Croton Baffle Box	Dry retention pond and baffle box	Proposed project consists of construction of dry retention area and baffle box	14.8	\$285,000	2017	100% Design	154	29

PROJECT NUMBER	PROJECT NAME	PROJECT TYPE	PROJECT DETAIL	TREATMENT ACRES	PROJECT COST	END DATE	STATUS	TN REDUCTION (LBS/YR)	TP REDUCTION (LBS/YR)
MEL-13	Bell Street Baffle Box	Baffle box	Construction of new baffle box	127	\$300,000	2017	60% Design	TBD	TBD
MEL-14	Paradise Baffle Box	Baffle box	Construction of new baffle box	129.7	\$200,000	2017	Planned	TBD	TBD
MEL-15	Garfield North Baffle Box	Baffle box	Construction of new baffle box	25	\$350,000	2017	60% Design	TBD	TBD
MEL-16	Garfield South Baffle Box	Baffle box	Construction of new baffle box	11.8	\$150,000	2017	60% Design	TBD	TBD

TABLE A-18: CITY OF MELBOURNE SUMMARY OF PROJECT REDUCTIONS IN THE NORTH B PROJECT ZONE

CATEGORY	TN REDUCTION (LBS/YR)	TP REDUCTION (LBS/YR)
Total Project Reductions	7,906	2,643
Total BMAP I Required Reductions	6,738.5	1,968.4
Credit for Future BMAPs	1,168	675

TABLE A-19: CITY OF ROCKLEDGE IN THE NORTH B PROJECT ZONE

N/A = Not applicable; TBD = To be determined

PROJECT NUMBER	PROJECT NAME	PROJECT TYPE	TREATMENT ACRES	PROJECT COST	ANNUAL O&M COST	END DATE	STATUS	TN REDUCTION (LBS/YR)	TP REDUCTION (LBS/YR)
ROCK-1	Orange Avenue Baffle Box	2 nd generation baffle box	10. 4	\$8,600	\$2,555	2009	Completed	17	2.3
ROCK-2	Barton Avenue Baffle Box	2 nd generation baffle box	14. 6	\$9,350	\$2,555	2009	Completed	20	2.9
ROCK-3	Hardee Circle Baffle Box	2 nd generation baffle box	14. 6	\$43,420	\$2,555	2009	Completed	17	2.0
ROCK-4	Rockledge Avenue Baffle Box	2 nd generation baffle box	29. 8	Unknown	\$3,682	2004	Completed	65	13.4
ROCK-5	Bougainvillea Drive Baffle Box	2 nd generation baffle box	27. 9	\$29,495	\$2,566	2000	Completed	69	11.9
ROCK-6	Park Avenue Baffle Box	2 nd generation baffle box	9. 1	\$52,529	\$2,555	2007	Completed	6	0.6
ROCK-7	Little John Lane Baffle Box	2 nd generation baffle box	7. 8	\$60,000	\$2,555	2004	Completed	11	1.3
ROCK-8	Fernwood Drive Baffle Box	2 nd generation baffle box	13. 2	\$55,750	Unknown	Unknown	Completed	14	1.6
ROCK-9	Valencia Drive Baffle Box	2 nd generation baffle box	9. 6	\$58,960	\$2,555	2008	Completed	10	1.2
ROCK-10	Knollwood Baffle Box	2 nd generation baffle box	25. 9	\$68,248	\$3,682	2002	Completed	23	2.6

PROJECT NUMBER	PROJECT NAME	PROJECT TYPE	TREATMENT ACRES	PROJECT COST	ANNUAL O&M COST	END DATE	STATUS	TN REDUCTION (LBS/YR)	TP REDUCTION (LBS/YR)
ROCK-11	Sutton Street Baffle Box	2 nd generation baffle box	5.1	Unknown	Unknown	2011	Completed	6	0.6
ROCK-12	River Groves Baffle Box	2 nd generation baffle box	8.9	Unknown	Unknown	2011	Completed	5	0.5
ROCK-13	Summer Place Baffle Box	2 nd generation baffle box	10.6	Unknown	Unknown	2011	Completed	7	0.7
ROCK-14	Sweet Street Swale	Swales	6.3	Unknown	Unknown	2011	Completed	30	4.3
ROCK-15	Community Park of Rockledge Regional Facility Phase 1	Wet detention pond	37.4	\$50,000	\$23,974	2004	Completed	8	1.3
ROCK-16	Pineland Park Unit Three	Wet detention pond	24.1	\$100,000	\$6,234	2009	Completed	0	0.1
ROCK-17	Barton Park Regional Detention System	Wet detention pond	736.6	\$2,600,000	\$40,000	2010	Completed	2,493	1,136.7
ROCK-18	Florida Avenue Stormwater Facility	Wet detention pond	28.0	\$435,000	\$40,950	2010	Completed	88	64.7
ROCK-19	Police Department Pond	Wet detention pond	5.6	\$350,000	\$7,035	2010	Completed	1	0.1
ROCK-20	Huntington Lakes I	Wet detention pond	37.2	\$950,000	Unknown	Unknown	Completed	1	0.3
ROCK-21	Street Sweeping	Street sweeping	N/A	Unknown	\$54,000	Ongoing	Ongoing	498	319
ROCK-22	Treatment Missing from PLSM	Wet detention ponds – missing from model	383.2	Unknown	Unknown	1986-1999	Completed	1,248.0	477.3
ROCK-23	Irrigation, Landscaping, Fertilizer, and Pet Waste Management Ordinances; Pamphlets, Website, Storm Drain Markings, Illicit Discharge Program	Educational efforts	N/A	Unknown	Unknown	Ongoing	Ongoing	770	173.3
ROCK-24	Huntington Lakes II	Retention facility	98.74	Unknown	Unknown	2016	Started	TBD	TBD

TABLE A-20: CITY OF ROCKLEDGE SUMMARY OF PROJECT REDUCTIONS IN THE NORTH B PROJECT ZONE

CATEGORY	TN REDUCTION (LBS/YR)	TP REDUCTION (LBS/YR)
Total Project Reductions	5,407	2,218.7
Total BMAP I Required Reductions	2,095.4	593.6
Credit for Future BMAPs	3,312	1,625

TABLE A-21: CITY OF TITUSVILLE IN THE NORTH B PROJECT ZONE

PROJECT NUMBER	PROJECT NAME	PROJECT TYPE	PROJECT DETAIL	PROJECT COST	ANNUAL O&M COST	END DATE	STATUS	TN REDUCTION (LBS/YR)	TP REDUCTION (LBS/YR)
TV-9	Education	Educational efforts	Irrigation ordinance, fertilizer ordinance, pamphlets, PSAs, website, newsletter, illicit discharge program	\$2,500	\$5,000	Ongoing	Ongoing	45	4.6
TV-10	Street Sweeping	Street sweeping	Approximately 239,596 lbs of debris removed from North B	\$188,120	\$63,106	Ongoing	Ongoing	135	87

TABLE A-22: CITY OF TITUSVILLE SUMMARY OF PROJECT REDUCTIONS IN THE NORTH B PROJECT ZONE

CATEGORY	TN REDUCTION (LBS/YR)	TP REDUCTION (LBS/YR)
Total Project Reductions	180	91.6
Total BMAP I Required Reductions	46.7	0.0
Credit for Future BMAPs	133	92

TABLE A-23: FDOT DISTRICT 5 IN THE NORTH B PROJECT ZONE

N/A = Not applicable

PROJECT NUMBER	PROJECT NAME	PROJECT TYPE	PROJECT DETAIL	TREATMENT ACRES	END DATE	STATUS	TN REDUCTION (LBS/YR)	TP REDUCTION (LBS/YR)
FDOT5-4	70100-3517-01 French Drains - missing from model	100% on-site retention	French Drain system along SR 5 from University Boulevard to Aurora Road	21.3	1996	Completed	57	34.2
FDOT5-5	70100-3544-01 French Drains- missing from model	100% on-site retention	Add lanes east of H. Humphrey Bridge to Sykes Creek Parkway	7.0	1995	Completed	26	13.6
FDOT5-6	70020-3501-01 Pond 1- missing from model	Wet detention pond	SR 5 -Add lanes and reconstruct from Aurora Road to Post Road	17.1	2004	Completed	38	22.4
FDOT5-7	70020-3501-02A Pond 2A- missing from model	Wet detention pond	SR 5 -Add lanes and reconstruct from Aurora Road to Post Road	12.6	2004	Completed	35	19.2
FDOT5-8	70020-3501-02B Pond 2B- missing from model	Wet detention pond	SR 5 -Add lanes and reconstruct from Aurora Road to Post Road	4.8	2004	Completed	10	5.2
FDOT5-9	70020-3501-03 Pond 3- missing from model	Wet detention pond	SR 5 -Add lanes and reconstruct from Aurora Road to Post Road	8.4	2004	Completed	18	10.4
FDOT5-10	70020-3501-04 Pond 4- missing from model	Dry detention pond	SR 5 -Add lanes and reconstruct from Aurora Road to Post Road	7.9	2004	Completed	17	8.8
FDOT5-11	70020-3549-01 Pond 1- missing from model	Wet detention pond	SR 5 - Add lanes and reconstruct from Post Road to SR 404	9.9	2005	Completed	28	14.2
FDOT5-12	70020-3549-02 Pond 2- missing from model	Wet detention pond	SR 5 - Add lanes and reconstruct from Post Road to SR 404	18.9	2005	Completed	34	18.2
FDOT5-13	70020-3549-03 Pond 3- missing from model	Wet detention pond	SR 5 - Add lanes and reconstruct from Post Road to SR 404	11.2	2005	Completed	32	16.5
FDOT5-14	70020-3549-04 Pond 4- missing from model	Wet detention pond	SR 5 - Add lanes and reconstruct from Post Road to SR 404	3.4	2005	Completed	14	7.0
FDOT5-15	70020-3549-05 Pond 5- missing from model	Wet detention pond	SR 5 - Add lanes and reconstruct from Post Road to SR 404	3.4	2005	Completed	11	6.0
FDOT5-16	70140-3514-01 Pond A- missing from model	Dry detention pond	SR 3 - Replace Christa McAuliffe Bridge	1.5	1997	Completed	4	2.4
FDOT5-17	70140-3514-02 Pond B- missing from model	Wet detention pond	SR 3 - Replace Christa McAuliffe Bridge	5.9	1997	Completed	18	7.5
FDOT5-18	70120-3518-01 Pond 7 - missing from model	Wet detention pond	SR 518 at SR 513	9.9	1984	Completed	45	21.1
FDOT5-19	70008-3505-01 Pond 1 - missing from model	Wet detention pond	From south of SR 518 (Eau Gallie Causeway) to Banana River Drive	2.3	1992	Completed	6	3.4
FDOT5-20	Education	Education Efforts	IDDE training, stormwater brochures, NDPEs flyer	N/A	Ongoing	Ongoing	86	28.0

PROJECT NUMBER	PROJECT NAME	PROJECT TYPE	PROJECT DETAIL	TREATMENT ACRES	END DATE	STATUS	TN REDUCTION (LBS/YR)	TP REDUCTION (LBS/YR)
FDOT5-21	Street Sweeping	Street sweeping	Street sweeping	N/A	Ongoing	Ongoing	176	113
FDOT5-22	Fertilizer Cessation	Fertilizer cessation	Elimination of fertilizer use along rights-of-way	N/A	2005	Completed	1,552	0.0

TABLE A-24: FDOT DISTRICT 5 SUMMARY OF PROJECT REDUCTIONS IN THE NORTH B PROJECT ZONE

CATEGORY	TN REDUCTION (LBS/YR)	TP REDUCTION (LBS/YR)
Total Project Reductions	2,207	351.1
Total BMAP I Required Reductions	649.9	318.9
Credit for Future BMAPs	1,558	32

TABLE A-25: KENNEDY SPACE CENTER IN THE NORTH B PROJECT ZONE

PROJECT NUMBER	PROJECT NAME	PROJECT TYPE	PROJECT DETAIL	TREATMENT ACRES	END DATE	STATUS	TN REDUCTION (LBS/YR)	TP REDUCTION (LBS/YR)
KSC-11	Landscape Fertilizer Reduction	Fertilizer reduction	Fertilizer use reduced from 60 tons/year in 2000 to 20 tons/year in 2010; formula changed from rapid nitrogen release 16-4-8 to slow nitrogen release, phosphate free 15-0-15	155.0	Ongoing	Ongoing	312	44.2
KSC-12	Citrus Grove Termination Jerome Road West	Fertilizer reduction	Grove lease termination resulted in previously fertilized areas abandoned	715.7	2010	Completed	184	850.8
KSC-13	KARS II Racquetball Court M6-0328A	Facility demolition	Demolition of facility resulted in loss of impervious area and change of land use	0.1	2010	Completed	1	0.2
KSC-14	Visitor Center Storage Building M6-0503	Facility demolition	Demolition of facility resulted in loss of impervious area and change of land use	0.1	2010	Completed	1	0.3
KSC-15	Causeway Wetland Mitigation	Wet detention pond	Missing from PLSM - existing permitted stormwater treatment pond	12.6	Unknown	Completed	8	3.8
KSC-16	Visitors Complex/ NASA Badging Center	Wet detention pond	Missing from PLSM - existing permitted stormwater treatment pond	131.7	Unknown	Completed	452	169.4
KSC-17	NASA Parkway West	Swales	Missing from PLSM - ditch along south side of NASA Parkway West, ends before IRL	135.8	Unknown	Completed	239	100.9
KSC-19	Demolition of Facility M5-1546	Facility demolition	Demolition of facility resulted in loss of impervious area and change of land use	5.0	06/2012	Completed	76	15.8

TABLE A-26: KENNEDY SPACE CENTER SUMMARY OF PROJECT REDUCTIONS IN THE NORTH B PROJECT ZONE

CATEGORY	TN REDUCTION (LBS/YR)	TP REDUCTION (LBS/YR)
Total Project Reductions	1,273	1,185.4
Total BMAP I Required Reductions	0	0. 0
Credit for Future BMAPs	1,273	1,185

TABLE A-27: TOWN OF INDIALANTIC IN THE NORTH B PROJECT ZONE

N/A = Not applicable

PROJECT NUMBER	PROJECT NAME	PROJECT TYPE	TREATMENT ACRES	END DATE	STATUS	TN REDUCTION (LBS/YR)	TP REDUCTION (LBS/YR)
TI-1	Swales North of US Highway 192 Causeway	Swales	29.2	2001	Completed	297	51.7
TI-2	100% On-Site Retention	Retention BMP	3.5	2001	Completed	35	6.1
TI-3	Pamphlet, Website, Fertilizer Ordinance	Educational efforts	N/A	Ongoing	Ongoing	18	3.2

TABLE A-28: TOWN OF INDIALANTIC SUMMARY OF PROJECT REDUCTIONS IN THE NORTH B PROJECT ZONE

CATEGORY	TN REDUCTION (LBS/YR)	TP REDUCTION (LBS/YR)
Total Project Reductions	350	61.0
Total BMAP I Required Reductions	142.4	30.1
Credit for Future BMAPs	208	31

TABLE A-29: TOWN OF PALM SHORES IN THE NORTH B PROJECT ZONE

PROJECT NUMBER	PROJECT NAME	PROJECT TYPE	END DATE	STATUS	TN REDUCTION (LBS/YR)	TP REDUCTION (LBS/YR)
PS-1	Fertilizer and Landscaping Ordinances, Pamphlets, Presentations	Educational efforts	Ongoing	Ongoing	21	4.2

TABLE A-30: TOWN OF PALM SHORES SUMMARY OF PROJECT REDUCTIONS IN THE NORTH B PROJECT ZONE

CATEGORY	TN REDUCTION (LBS/YR)	TP REDUCTION (LBS/YR)
Total Project Reductions	21	4.2
Total BMAP I Required Reductions	0	0.0
Credit for Future BMAPs	21	4