



# Stormwater Utility Report (Draft)

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Manatee County Stormwater  
Management System

*Manatee County, Florida*  
November 2020



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# Executive Summary

The purpose of Manatee County's stormwater management system is to regulate, operate, and manage stormwater run-off within unincorporated areas of the County including maintaining, planning for, and constructing stormwater facilities.

The County does not have a dedicated rate to provide revenues for funding stormwater management costs. Instead, the County has funded the operation of its stormwater management system primarily through revenue generated by solid waste tipping fees, the County's gas tax fund, and other minor funding sources including phosphate mining severance fees and general fund revenues.

A dedicated stormwater fee is needed to address the increasing number of intense storms experienced in the region which are making it more difficult to manage localized flooding and pollutant runoff. It is the County's desire to seek the resources necessary to develop a more proactive management operational plan; to produce comprehensive watershed studies to determine the best solutions for both water quality and water management for the county; and to make the well-researched decisions for capital improvements necessary to reduce localized flooding.

The County is expected to benefit from an enhanced stormwater program in many ways, including public safety improvements, reductions in flooding and erosion, transportation and mobility enhancements, pollution reductions, improvements to private and public property protection, and reduced disruption to life and business activities.

This rate study serves the following purposes for Manatee County:

1. To support a dedicated, equitable, transparent, and dependable revenue source to fund the utility's operation
2. To identify the costs of improving the level of service (LOS) necessary to address more frequent and intense flooding
3. To comply with environmental regulatory requirements
4. To support the operation and maintenance of an aging stormwater management system

Note that the intent of this report is to document the methodology by which stormwater rates are established. Although the data for the report was current at the time the report was prepared, budgetary data is updated annually; therefore, the rates presented herein may vary from actual rates at the time the report is being read. This report also sets the basis for a rate structure to be utilized until the County conducts a future review and analysis.



# 1 Introduction

## 1.1 Background

In January 1991, the Manatee County Board of County Commissioners adopted Ordinance 91-27, authorizing the creation of the Manatee County (County) public utilities system consisting of the County's water and sanitary sewer system, solid waste system, and stormwater management system.

The purpose of the stormwater management system is to regulate, operate, and manage stormwater run-off within unincorporated areas of the County including maintaining, planning for, and constructing stormwater facilities. More specifically, the stormwater utility was established to:

1. reduce undesirable stormwater impacts through stormwater runoff reduction and pollution prevention strategies;
2. maintain the integrity of the County's stormwater infrastructure;
3. minimize flooding;
4. plan for and implement future stormwater utility system improvements; and
5. help ensure compliance with federal, state and local stormwater management rules and regulations.

These regulatory requirements include federally mandated National Pollution Discharge Elimination System (NPDES) Municipal Separate Storm Sewer Systems (MS4) permit requirements. The County's NPDES permit regulates what can be discharged into freshwater areas, delegates compliance enforcement to the County, and requires the County control and reduce pollutants entering the stormwater management system from residential and commercial properties.

Since the creation of the public utilities system, the County has charged its customers water, sanitary sewer, and solid waste fees to fund the operation of these utilities. However, the County never implemented a rate to provide revenues to fund stormwater management costs. Instead, the County has funded the operation of its stormwater management system primarily through revenue generated by solid waste tipping fees, the County's gas tax fund and other minor funding sources including phosphate mining severance fees and general fund revenues.

The County's stormwater management system is comprised of:

- 758 acres of maintained/permitted ponds,
- 2,961 total miles of roads in County,
- 181 miles of maintained canals,
- 190 miles of streams,
- 655 miles of roadside ditches,
- 503 miles of storm pipes, and
- 14,669 inlets.





Under the existing funding structure, the County has managed to build, operate, and maintain its stormwater system, while also complying with environmental regulatory requirements. However, given increased frequency and severity of flooding within the County in recent years, the County has recognized the need for a dedicated revenue source for capital improvements necessary to address flooding issues, for continued compliance with environmental regulatory requirements, and for the continued operation and maintenance of its stormwater management system.

In 2018, the County hired HDR and its subconsultant, Raftelis (formerly Public Resources Management Group), to provide rate and utility consulting services to assist the County in developing a proposed stormwater utility financial plan and rates for fiscal year (FY) 2020 through FY 2024. The financial plan and rates recommended herein were developed based on information and data provided by the County, including annual budgetary reports, property and parcel information from the County’s property tax records, the proposed FY 2019 operating budget for certain departments that provide stormwater services, and the projected capital improvements expenditure plan. To the extent the analyses use certain data and information obtained from the County in the preparation of this report, HDR has relied upon such information to be accurate. This report summarizes the results of the investigations and analyses and outlines recommendations and conclusions for the County’s consideration.

## 1.2 Stormwater Utility System Objectives and Goals

The County’s stormwater management system includes essential functions such as stormwater operations and maintenance activities, regulatory compliance related to water quality initiatives, administrative, management, and support activities, and capital reinvestment to preserve, renew and replace stormwater system assets.

The objectives of the stormwater utility financial plan and rate study are the following:

1. To establish a dedicated, equitable, transparent, and dependable revenue source to fund the utility’s operation
2. To identify the costs of improving the level of service (LOS) necessary to address more frequent and intense flooding
3. To comply with environmental regulatory requirements
4. For the operation and maintenance of its aging stormwater management system

By meeting these objectives, the County aims to achieve the following LOS goals:

- Public safety improvements
- Reductions in flooding and erosion
- Transportation and mobility enhancements
- Pollution reductions
- Improvements to private and public property protection
- Reduced disruption to life and business activities



## 1.2.1 Desired Stormwater Program

### 1.2.1.1 SHORT-TERM STORMWATER PROGRAM

In order to meet the County's objective of providing an improved LOS provided by the stormwater management system, the County should, at a minimum, increase the frequency of its maintenance activities, as well as implement capital reinvestment and improvements with County-wide benefits. In the future; however, it is anticipated that basin-specific capital improvements will be required to provide the LOS expected by the County's residents.

### 1.2.1.2 LONG-TERM STORMWATER PLANNING

To further improve the County's LOS, it is recommended that the County develop a long-term stormwater plan because it will enable the County to make proactive infrastructure decisions that will mitigate flooding and improve water quality.

Long-term planning would allow the County to integrate certain stormwater projects with other projects defined in the County's capital improvement plan and other master plans. A stormwater master plan can also help define innovative technologies, including green infrastructure, which can generate many benefits ranging from improved air and water quality to cost savings to more community amenities.

## 1.2.2 Why Stormwater Fee is Needed

The increasing number of intense storms experienced by the region exacerbates the challenge to manage localized flooding and pollutant runoff. It is the County's desire to seek the resources necessary to develop a more proactive management operational plan; to produce comprehensive watershed analysis to determine the best solutions for both water quality and water management for the county; and, to make the well-researched decisions for capital improvements necessary to reduce localized flooding. Furthermore, the County's existing stormwater program is funded, in part, by solid waste funds and phosphate mining fees. The County may seek to replace these funding sources, as the it will need to expand its landfill in the future and phosphate mining fees are expected to decrease in coming years. The stormwater fee would also provide a dedicated and reliable funding source for the program to offset the potential loss of these existing funding sources.

The recommended rates set forth in this report are intended to fund capital enhancements along with the projected costs of operating and maintaining the system and water quality program for FY 2020-2024. The costs to be recovered through the proposed stormwater utility rates are referred to herein as the system revenue requirements. The proposed rates should:

- comply with the County's financial policies,
- promote financial sustainability of the system, and
- be equitable, defensible and aligned to a defined level of service.

It is important to note that the stormwater fees being proposed can only be used for maintenance enhancements and capital reinvestment related to asset renewal and replacement for which there is a County-wide benefit.



### 1.2.3 Funding Alternatives

There are various funding options that can also be considered as follows.

- **Maintain status quo.** Keep doing best as possible with existing funding and look for ways to gain efficiencies.
- **Increase Solid Waste Tipping Fees.** This option would continue to use the current funding source but increase the fee to address the existing or additional needs of the stormwater program. As mentioned in the 2019 Manatee County Solid Waste Master Plan, “...consider adjusting solid waste landfill tipping fees to account for increase in monies necessary for stormwater and ensure Solid Waste has monies.” However, this could impact the utilities rate payers that pay for solid waste. Unincorporated County homeowners, businesses and the other jurisdictions that use the Lena Road Landfill could see an increase in the amount they pay for solid waste services.
- **Dedicated Stormwater Millage.** Establish stormwater as a dedicated millage as a portion of the property taxes. The countywide millage is 6.4326, and as an example, Parks has a dedicated millage of 0.3040. That portion of the property tax revenue goes specifically to parks (and must be used for parks) instead of the general fund. Property tax revenues generally increase with more residences and business paying property taxes due to population growth (assuming no changes in Homestead Exemption). A specific millage could be added and dedicated to stormwater with limited impacts to other programs. It would have to be determined as to what millage would be appropriate initially and if it would it fully replace the existing solid waste monies or supplement them.
- **Implement Stormwater Utility Fee Discussed in this Study.** Implement one of the options for the draft stormwater utility fee as discussed in this study. Implementing a stormwater utility fee would make the County eligible for related state grants it is currently ineligible for.
- **Implement Stormwater Utility Fee (Limited Funding Option).** Another option is to consider adoption of the fee as a minimal amount. As an example, the County could adopt a \$1 per eligible parcel fee on the annual property tax bill. This would bring a potential positive return on investment in the form of eligibility for grants for stormwater improvements from other agency funding sources that we are currently ineligible without an adopted stormwater utility fee.
- **Southwest Tax Increment Financing (SW TIF) District Funds for Projects in that Area.** Some monies associated with this district could be spent to address some stormwater-related projects and maintenance issues if potential projects met the intent of the adoption ordinance and plan associated with the district. A significant portion of this area was developed prior to 1985 regulation changes and most property owners do not have their own on-site stormwater infrastructure. This would not cost taxpayers any additional monies but again, improvements would be limited to this geographic area only.

There are numerous variations and option combinations that could be possible. As one example, the stormwater utility fee could be implemented for \$1 per eligible parcel, allowing the



County to then apply for grant resources to help address stormwater issues. The match for the grant could come from the SW District, if the specific project was in that area.

A second example is that the solid waste tipping fees could be increased to an amount to cover half of the existing budgeted stormwater operations. The dedicated stormwater millage could be incorporated to cover half of the existing budgeted stormwater operations. Alternatively, the specific amounts of any these could all vary to cover costs of the existing program or increase fees in order to cover the costs of increasing the level of service of maintenance or address additional related capital projects.

#### **1.2.4 Other Stormwater Utilities in Florida**

There are several utilities in Florida that help fund their respective stormwater programs through a stormwater fee. Each utility is different in how the rate is structured and how the customers are billed. Refer to Section 7 for more information on billing and collection methodologies, and Table 7.2 for specific examples of stormwater utilities in Florida.

## **2 Review of Existing Stormwater Program**

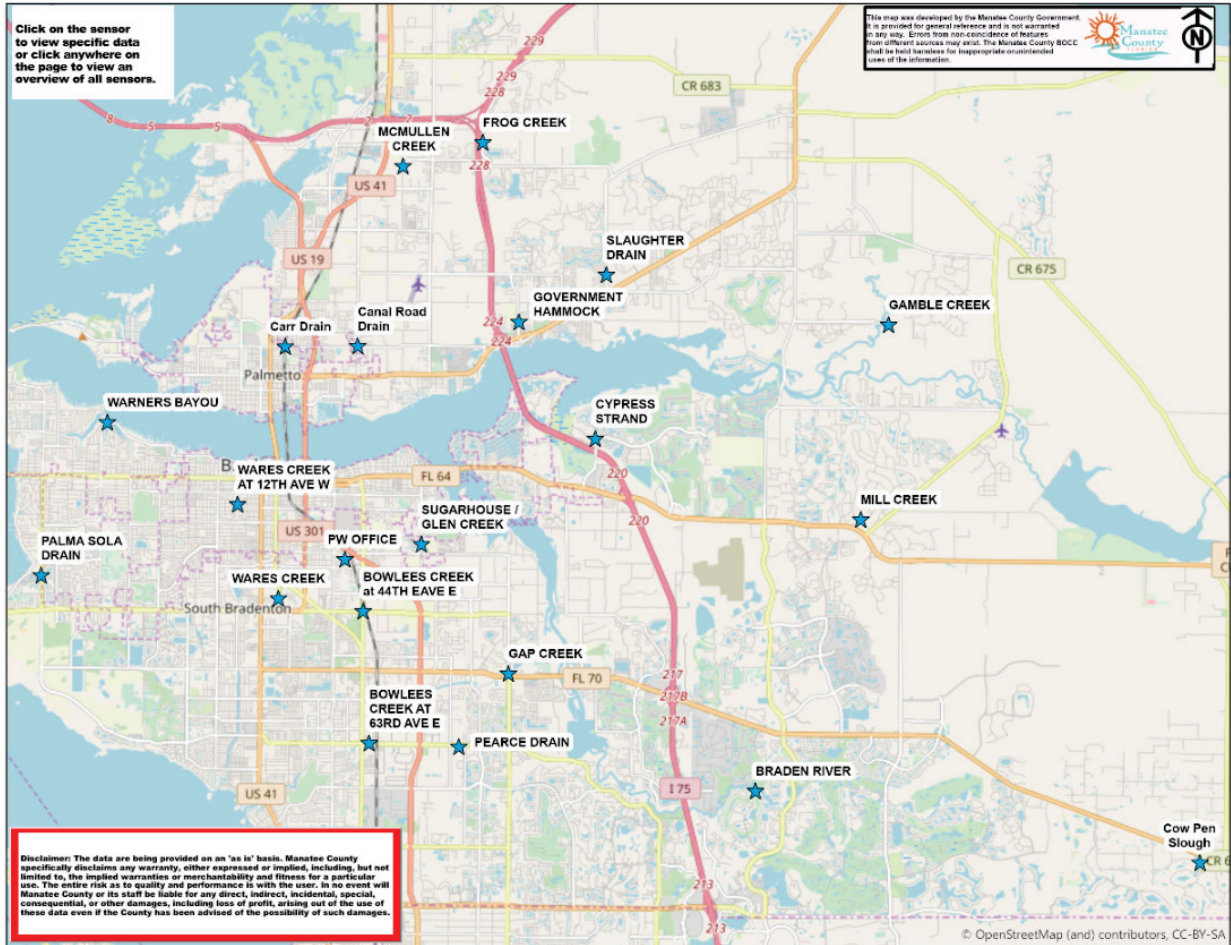
### **2.1 Existing Stormwater Organization**

Stormwater drainage in the County is managed by the Public Works Department. The Field Maintenance Division is responsible for general maintenance and repair of the drainage system. Through the County's stormwater management program, the Public Works Department performs the maintenance, rehabilitation, and construction of the local stormwater conveyance and storage systems to provide public safety, asset preservation, and regulatory compliance.

The Engineering Division has a broader responsibility for stormwater management. This division monitors and improves Manatee County's stormwater system, while ensuring Federal Emergency Management Agency floodplain compliance. The Stormwater Engineering Division is involved with capital improvement projects, including state and federal grant writing. This section is responsible for inspecting and reporting of County-maintained stormwater facilities for the NPDES MS4 permit compliance for the Environmental Protection Agency.

Stormwater Engineering reviews No-Rise Certificates and floodplain compensation calculations. Stormwater Engineering also conducts floodplain studies with Southwest Florida Watershed Management District and oversees the floodplain map revisions prepared for and adopted by the Board of County Commissioners. On average, Stormwater Engineering provides 300 drainage-related engineering reviews annually.

Stormwater Engineering maintains a near real time stream elevation and rain sensor system. There are 18 locations throughout the County where data is collected in 15-minute intervals.



**Figure 2-1 Manatee County rain and stream sensor system**

The Parks and Natural Resources Department has specific responsibility for water quality related to stormwater runoff. The Air and Watershed Management program is responsible for:

1. monitoring the air and water quality of the County to meet various regulatory requirements;
2. coordinating compliance with the County's municipal separate storm sewer permit (also known as the MS4 permit) and implementing the County's stormwater ordinance;
3. implementing the County's biosolids landspreading ordinance; and
4. evaluating waterbody impairments and watershed management plans.

The Air and Watershed Management program also investigates citizen complaints related to water quality, stormwater systems, algae blooms, fish kills, and landspreading.

Manatee County has a permit from the Florida Department of Environmental Protection and the Environmental Protection Agency to operate its municipal separate storm sewer system. This permit, known as a MS4 permit, requires the county to regulate the types of discharges that go into the storm sewer system using pollution control measures.

The County has a variety of responsibilities under its MS4 permit. These include, but are not limited to:

- Inspecting and maintaining all components of the municipal separate storm sewer system
- Reviewing plans for public and private construction projects of all types to ensure compliance with local stormwater requirements
- Implementing a local stormwater regulatory authority which the County can use to regulate discharges to the municipal storm sewer system
- Implementing an approved stormwater management program to reduce stormwater pollution from urbanized Manatee County
- Inspecting certain industries and construction sites for compliance with local discharge regulations
- Inspecting the municipal storm sewer system itself for non-complying discharges and connections from any source
- Responding to citizen complaints on issues affecting the storm sewer system
- Monitoring county receiving waters to demonstrate the effectiveness of the stormwater management program

The County is also required to prepare an annual report summarizing activities during one permit year.

The annual report and supporting documentation are audited annually by Florida Department of Environmental Protection representatives.

## **2.2 Existing Maintenance Level of Service**

### **2.2.1 Overview of Existing Maintenance Activities**

The County is committed to maintaining a sustainable LOS regarding stormwater quantity, stormwater quality, and stormwater management system maintenance throughout unincorporated Manatee County. The County is committed to continuing to meet and enhance this LOS on an aging and increasingly stressed stormwater system. Maintenance activities and ongoing improvements to the stormwater system provide a direct benefit to existing residents and the local economy.

The existing stormwater program consists of a number of maintenance activities, but only those most closely related to flood protection and water quality are being considered. The following table summarizes the frequency of these maintenance activities.

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**Table 2.1 Overview of existing pipe and drainage maintenance activities**

Task	Asset	Quantity	Unit	4 Year average (units/year)	Frequency <sup>[1]</sup>
Canal cleaning	canals	181	miles	12.1	14.9
Ditch cleaning	ditches	655	miles	31.7	20.7
Pond spraying	ponds	758	acres	635.0	1.2
Pipe cleaning	pipes	503	miles	29.0	17.3
Inlet cleaning	inlets	14669	each	1552.7	9.4
Street sweeping	curb miles	1219	miles	8083.0	0.2

[1] Estimated number of years before all assets cleaned at least once



**Canal cleaning**



**Inlet cleaning**

### 2.2.2 Estimated Cost

The estimated cost for funding the existing stormwater operations and pipe and drainage maintenance activities is approximately \$7.5 million per year. This includes approximately \$4.5 million in stormwater operations and \$3.0 million in pipe and drainage maintenance. This is further discussed in Section 2.4, Existing Funding Sources.

## 2.3 Existing Capital Improvement Program

### 2.3.1 Basin Studies

A watershed, also known as a drainage basin, is an area of land where all water drains to a central point like a lake, river, or stream. When rain sweeps over a surface, it will eventually make its way to that central point. The speed the water drains to the central point depends on various factors such as type of soil, amount of plant life, and the steepness of the terrain. The boundary of a watershed is drawn by the natural landscape. Gravity pushes water from the higher areas toward the lower areas.

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There are 35 watersheds within Manatee County. A list of the County's watersheds is provided below:

- |                              |                              |
|------------------------------|------------------------------|
| 1) Anna Maria Isl. Basin     | 19) Lower Manatee Dir. Basin |
| 2) Big Chimney Drain Basin   | 20) Manatee Mouth Dir. Basin |
| 3) Big Slough Basin          | 21) Manatee River W Basin    |
| 4) Bowlees Creek Basin       | 22) McMullen Creek Basin     |
| 5) Canal Rd Drain Basin      | 23) Middle Braden Basin      |
| 6) Carr Drain Basin          | 24) Middle Manatee R Basin   |
| 7) Cedar Creek Basin         | 25) Mill Creek Basin         |
| 8) Cedar Hammock Basin       | 26) Myakka Basin             |
| 9) Cooper Creek Basin        | 27) Palma Sola Drain Basin   |
| 10) Frog Creek Basin         | 28) Pearce Drain Basin       |
| 11) Gamble Creek Basin       | 29) Rattlesnake Slough Basin |
| 12) Glen Creek Basin         | 30) Sarasota Bay Basin       |
| 13) Government Hammock Basin | 31) Sugar House Creek Basin  |
| 14) Horse Creek Basin        | 32) TPA Gap Drain Basin      |
| 15) Lake Manatee Basin       | 33) TPA Terra Direct Basin   |
| 16) Little Manatee R Basin   | 34) Upper Braden River Basin |
| 17) Longboat Key Basin       | 35) Williams Creek Basin     |
| 18) Lower Braden River Basin |                              |

Studies for Bowlees Creek Basin Study (9 square miles) and Pearce Drain Basin Study (14 square miles) have been completed to date, but studies for the remaining basins have yet to be completed. Thorough research and planning within these basins ensure appropriate levels of investment and service.

In the FY 2020-2024 Capital Improvement Plan, funding for the following studies were requested but have yet to be appropriated:

1. Bid Chimney/Canal Road/Carr
2. Cypress Stand
3. Gates Creek
4. Government Hammock
5. McMullen Creek
6. Slaughter Canal
7. Sugar House/Glenn Creek
8. Williams Creek

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### 2.3.2 Capital Projects

In the FY 2020-2024 Capital Improvement Plan<sup>1</sup> funding for the following stormwater-related capital projects have been appropriated:

1. 34<sup>th</sup> W. Street at 53<sup>rd</sup> Avenue W. storm pipe repair
2. 6920 26<sup>th</sup> Street W. storm pipe outfall replacement
3. CR675 Canal piping
4. Coquina Beach drainage improvements
5. GT Bray drainage pipe
6. Gateway East outfall replacements
7. Pipe lining – neighborhood specific – Whitfield Alderwood
8. Ponce De Leon Avenue
9. Stormwater pipe replacement – County-wide
10. Tuttle Avenue



Capital project example



Construction storm pipe

Additionally, the following stormwater-related capital projects have been identified in the FY 2020-2024 Capital Improvement Plan, but funding has not yet been appropriated:

1. 87<sup>th</sup> Street NW storm sewer replacement
2. Bayshore Gardens storm sewer rehabilitation
3. Culvert upsizing/designs
4. Harvard Avenue seawall repair at Bayshore Drain/Cedar Hammock
5. Hawthorne Park sediment basin installation
6. Lake Brendan dredging
7. Longbay Area drainage improvements
8. Mockingbird Hill/Samoset Canal improvements at 27<sup>th</sup> Street E/34<sup>th</sup> Avenue E
9. Polynesian Village discharge to Pittsburg drain
10. Reconstruct storm water outfall to Braden River

<sup>1</sup> retrieved from [https://www.mymanatee.org/departments/financial\\_management/capital\\_improvement\\_program](https://www.mymanatee.org/departments/financial_management/capital_improvement_program) in December 2019



11. Sunniland stormwater outfall replacement
12. Tallevast Road storm pipe replacement
13. Woods of Whitfield storm sewer rehabilitation

It is contemplated the proposed County-wide stormwater fee assessments could fund future capital projects identified as having County-wide benefits.

### 2.3.3 Estimated Cost

In the FY 2020-2024 Capital Improvement Plan, the total budget for approved capital projects is approximately \$7.1 million. The total estimated cost for unfunded capital projects is approximately \$25.6 million.

## 2.4 Existing Funding Sources

The County’s stormwater management program currently relies on the following primary sources of revenue:

- Transfers from the County's solid waste fund
- County gas tax fund

In FY 2019, these funding sources accounted for approximately 92 percent of total stormwater management costs. Other minor sources utilized to fund the County’s stormwater needs include:

- Phosphate mining fees
- Unincorporated County ad valorem taxes and general fund revenues

Based on the FY 2019 operating budget, the stormwater program expenditures and funding levels by revenue source are provided in the following table and graph.

**Table 2.2 Stormwater program expenditures (FY 2019 budget)**

Cost center	FY 2019
Stormwater operations (460)	\$4,473,865 <sup>[1]</sup>
Pipe/drainage maintenance (101,199)	\$3,004,628
Stormwater engineering (460)	\$1,982,024 <sup>[1]</sup>
Natural resources (607,950)	\$607,950 <sup>[1]</sup>
Natural resources (001)	\$471,143
Phosphate severance	\$594,662
<b>Total FY 2019 operating budget</b>	<b>\$11,134,272</b>
Capital projects from CIP	\$2,537,500 <sup>[1]</sup>
<b>Total stormwater expenditures</b>	<b>\$13,671,772</b>

[1] Expenditures for Stormwater Operations, Stormwater Engineering, Natural Resource Management (Dept. 607, 950) and Capital Improvement Projects are funded from the Solid Waste Fund in the amount of \$9,601,339.

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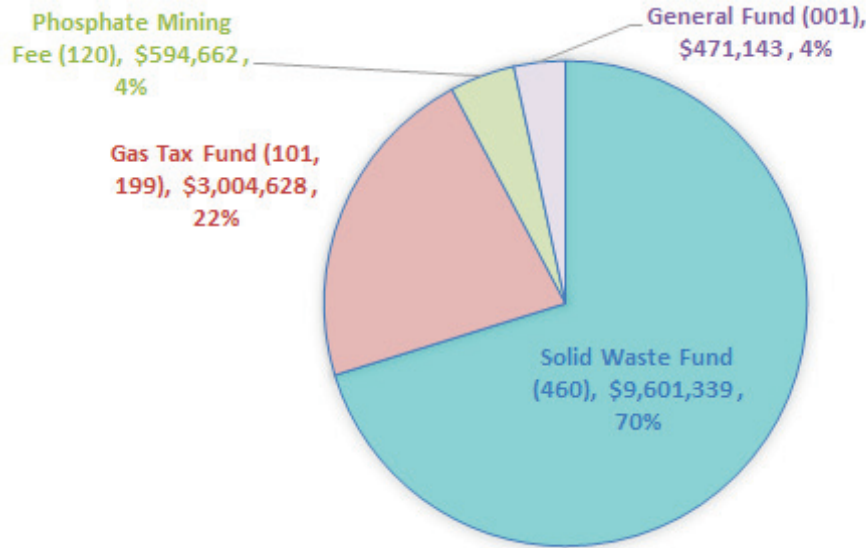


Figure 2-2 Existing baseline stormwater program funding sources (FY 2019)

## 3 Summary of Existing and Proposed Stormwater Program Costs

### 3.1 Costs of Existing Stormwater Program

As presented in Section 2, revenue requirements for the existing, or baseline, stormwater program for FY 2019 based on current levels of service associated with operations and maintenance activities, existing water quality initiatives, and capital expenditures are equal to \$13.7 million. By FY 2023, revenue requirements for the baseline stormwater program current level of service are projected to increase to \$17.1 million based on labor cost increases and inflationary pressures. The projections of the baseline stormwater program costs are discussed further in Section 4.

### 3.2 Costs of Proposed Stormwater Program Options

#### 3.2.1 Option 1 – Enhanced Maintenance

In order to meet the County’s objective of providing an improved LOS for the stormwater management system associated with maintenance activities, it is recommended that the County continue its existing stormwater program and also increase the frequency of its maintenance activities. In response to this recommendation, the County has developed a conceptual plan of operation that would increase many of the existing maintenance activities. It is anticipated that positive benefits will result from enhancing the operational conditions of the storm drainage system to reduce localized flooding and thereby also improving water quality degradation that occurs from stormwater runoff. However, in order to measure the effectiveness of the enhanced maintenance program, performance metrics will need to be established to evaluate the improvements expected to result from these increased activities. It is important to note that by implementing a proactive maintenance program with increased resources, fewer staff resources



will need to be diverted to respond to extreme storm events. For example, under the existing maintenance program, the County dedicated 3.7 full-time equivalent employees to address Hurricane Hermine in 2016 and 9.4 full-time equivalent employees to address Hurricane Irma in 2017, staff who could otherwise be working on routine maintenance activities. A system inspected and cleaned more often (routinely) will perform at a higher level during extreme events, thus requiring less staff to react to these untimed activities.

The following table summarizes the recommended frequency of maintenance activities under the proposed enhanced maintenance program. Note there is no proposed change for street sweeping activities.

**Table 3.1 Proposed enhanced maintenance program LOS**

Task	Existing frequency	Proposed frequency
Canal cleaning	14.9	7.0
Ditch cleaning	20.7	10.0
Pond spraying	1.2	1.2
Pipe cleaning	17.3	6.5
Inlet cleaning	9.4	4.5
Street sweeping	0.2	0.2

The estimated cost for the enhanced maintenance program is approximately \$7.4 million, as shown in Table 3.2, in addition to the current \$13.7 million budget. Therefore, the total revenue requirements to maintain existing activities and add an enhanced maintenance program is \$21,107,802 at FY 2019 cost levels. The cost of the enhanced stormwater maintenance program was developed in conjunction with County’s Department of Public Works staff based on an analysis of historical activity levels and the associated unit costs including direct labor costs and overheads. These unit costs were then applied to the desired level of maintenance activities to estimate the cost of the enhanced maintenance program of approximately \$3.44 million. The additional cost associated with the enhanced level of maintenance activities equates to approximately 42 additional maintenance personnel and 7 additional supervisors. In addition to increasing the stormwater maintenance activities the enhanced operating and maintenance program also includes increases of approximately \$2 million to fund water quality initiatives, outfall cleaning and expenditures for watershed studies to help identify and prioritize futures stormwater improvements as provided by the County’s Department of Natural Resources. Finally, the County’s stormwater engineering staff recommend an increase in stormwater pipe replacement and maintenance of \$2 million annually which is approximately double the level of recent annual expenditures for pipe replacement.

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**Table 3.2 Cost of stormwater program enhancements, FY2019**

Maintenance activities	\$3,444,515
Water quality	\$991,515
Watershed studies	\$500,000
Outfall cleaning program	\$500,000
<b>O&amp;M Subtotal</b>	<b>\$5,436,030</b>
Pipe maintenance	\$2,000,000
<b>Total annual costs</b>	<b>\$7,436,030</b>
Plus one-time equipment purchases: \$8,960,000	

As noted in Table 3.2 above, the enhanced maintenance program will also require a significant one-time investment in new equipment to support the increased maintenance levels. The type of equipment and estimated cost is shown in Table 3.3.

**Table 3.3 Cost of additional maintenance equipment**

Description	Unit Cost	Quantity	Recommended Cost
<b>Ditch Cleaning:</b>			
Dump Trucks	\$160,000	9	\$1,440,000
Pick-up Trucks	35,000	9	315,000
Gradal	400,000	9	3,600,000
Total			\$5,355,000
<b>Canal Cleaning:</b>			
Menzi	\$400,000	2	\$800,000
Dump Truck	160,000	8	1,280,000
1 Ton Truck	60,000	4	240,000
Pick-up Trucks	35,000	2	70,000
Trailer	15,000	4	60,000
Skid Steer	65,000	4	260,000
Total			\$2,710,000
<b>Pipe Cleaning:</b>			
Star-Vaccon Truck (Flush Truck)	\$225,000	1	\$225,000
Trailer	15,000	1	15,000
Mini Excavator	90,000	3	270,000
Supervisor Truck	35,000	1	35,000
Total			\$545,000
<b>Inlet Cleaning:</b>			
Star-Vaccon Truck (Flush Truck)	\$225,000	1	\$225,000
Rubber Tire Backhoe	125,000	1	125,000
Total			\$350,000
Total			\$8,960,000

**3.2.2 Option 2 – Enhanced Maintenance and Capital Betterments**

To further improve the LOS provided by the stormwater management system, it is recommended that, in conjunction with the enhanced maintenance program, the County implement certain capital betterments, or new/improved constructed projects to restore the infrastructure’s original capacity or increased LOS needs. As these capital betterments would be funded by a County-wide fee, the capital betterments should provide County-wide benefits. For



the purposes of this study, it was estimated that \$5 million<sup>2</sup> would be required annually to fund the capital betterment projects. The estimated cost of the enhanced service levels including both operating expenditures (\$7.4 million) and capital expenditures (\$5 million) is estimated to be \$12.4 million.

## 4 Financial Forecast to Support Stormwater Management Program

The financial forecast developed as part of the Stormwater Rate Study provides the basis for the proposed stormwater fee options set forth in Section 6 and funding alternatives discussed in this section.

The proposed stormwater fee options are generally calculated as follows:

$$\frac{\text{Cost of Service (LOS)} - \text{Other Funding Sources}}{\text{Total Residential ERUs} + \text{Total Non Residential ERUs}} = \text{Stormwater Fee per ERU}$$

In developing the proposed stormwater fee options, a five-year financial forecast was developed to project the cost of stormwater service and required funding levels:

### 4.1 Five-Year Financial Forecast

The County's stormwater management program is currently funded from multiple funding sources as discussed previously in this report. In preparing the 5-year financial forecast, a major objective is to identify the stormwater management program revenue requirements to estimate the stormwater fee levels that would be required to fund the stormwater management program costs for various expenditure and funding options.

The expenditures associated with operating and maintaining a stormwater utility system, as well as the cost of financing capital improvements, are generally referred to as the utility revenue requirements. The sum of these cost components, including alternatives related to enhancing current maintenance activities and capital projects less other funding sources such as those currently used to fund the stormwater program such as gas tax revenue, general funds, phosphate mining severance taxes, and contributions from the solid waste fund, represents the rate revenue requirements to be recovered from stormwater fees. The revenue requirements evaluated in this financial forecast are predicated on an analysis of the stormwater costs for the five fiscal year period beginning with the fiscal year period ending October 1, 2018 and ending September 20, 2023 (the Forecast Period). The projected alternative stormwater fee revenue requirements include the various general cost components described below:

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<sup>2</sup> Equivalent to 20% of \$25.6 million, the estimated cost of unfunded capital projects in FY 2020-2024 Capital Improvement Plan. It assumed that \$5 million of capital betterments will yield a system-wide benefit.



- Operating Expenses: These expenses include the cost of labor, materials, supplies, utilities, and other items necessary for the operations, maintenance, and management of the stormwater system.
- Debt Service: Debt service includes the principal and interest on current and future obligations payable from the net operating revenues of the stormwater system. The County does not have any currently outstanding debt and does not currently anticipate issuing any debt during the Forecast Period.
- Other Revenue Requirements: This component of cost includes, in general, any ongoing capital improvements (capital outlay) to be funded from revenues for ongoing stormwater system renewals and replacement and system betterments.

The projected alternative stormwater system revenue requirements for the Forecast Period are summarized in Table 4.1 and include the baseline operating and capital maintenance costs and the additional costs associated with the enhanced operations and maintenance activities and capital betterment projects. The projected revenue requirements associated with stormwater operations for all of the options that are evaluated reflect certain assumptions, considerations and analyses as follows:

1. As shown in Appendix A, the adopted FY 2019 operating budget associated with stormwater system activities serves as the basis for the operating expenditure projections for the Forecast Period. Unless otherwise noted, the underlying assumptions and expenditure amounts included therein are assumed to be reasonable.
2. The baseline operations and maintenance expenses associated with current operations of the stormwater system were based on the current operating budget for FY 2019 and are projected for the remaining 4 years of the Forecast Period. The following summarizes the general cost escalation factors used to project future expenses:
  - a. Labor-related increases = 3.0 percent annually
  - b. Health insurance = 10 percent annually
  - c. Property and general liability insurance = 5.0 percent annually
  - d. Fuel costs = 5.0 percent annually
  - e. Utilities costs = 3.25 percent annually
  - f. Repairs and maintenance expenses = 4.0 percent annually
  - g. Professional services = 3.0 percent annually
  - h. All other costs based on projected inflation of 2.5 percent per year on average
3. The financial forecast task includes development of a five-year financial forecast based on the cost of service associated with the operations and maintenance and capital expenditure options related to enhancing the Stormwater System level of service as discussed in Section 3.
4. Projected stormwater ERUs are increased at 0.5 percent annually.
5. The capital expenditures for the stormwater system that are included in the baseline stormwater cost projections are based on estimated project costs included in the County's current stormwater system capital improvement program (CIP). A detailed listing of the planned stormwater capital projects for the five-year Forecast Period is shown in Table 4.2. In general, the major expenditures in the CIP include renewal and

replacement and capital maintenance projects related to the repair and replacement of stormwater, pipes, drains, and outfalls.

## 4.2 Alternative Stormwater Revenue Requirements

The following stormwater expenditure and funding alternatives have been evaluated to develop projected stormwater fee revenue requirements including a calculation of the average cost per equivalent residential unit (ERU). (See Section 5 for a discussion of the ERU methodology.)

Baseline Stormwater Costs at Existing Levels of Service – These costs are based on the FY 2019 stormwater budget of \$13,671,773 projected through FY 2023. As discussed in Section 3, these baseline stormwater costs are currently funded from multiple sources including the solid waste fund, the gas tax fund, the general fund and the phosphate mine severance tax. Based on the assumptions discussed herein regarding future cost inflation, the baseline stormwater costs are projected to increase to \$17,078,958 by FY 2023. As shown in Table 4.1, line 12, the baseline stormwater cost per equivalent residential unit (ERU) is estimated at \$73.20 per ERU annually in FY 2019 and is projected to increase to \$89.64 per ERU annually by FY 2023.

As set forth in the formula above, the calculated stormwater fee reflects the cost of service less other non-fee funding sources. Considerations related to maintaining or adjusting the level of service for the stormwater program and the use of non-fee funding sources can result in a number of fee/funding options. Table 4.1 shows the calculation of five stormwater fee/funding options:

Option 1: Enhanced Maintenance Expenditure – Stormwater fee levels associated with only funding the cost of the enhanced maintenance program discussed in Section 3. This option assumed that existing funding sources would continue to be used to fund the Baseline Stormwater Costs at current maintenance levels. As discussed in Section 3 and as shown on Table 4.1, line 13, the enhanced maintenance program is estimated to cost \$7,436,430 in FY 2019 and these costs are projected to increase to \$9,469,861 by FY 2023. The projected annual stormwater fee per ERU associated with funding enhanced maintenance and operating cost is estimated to be \$39.81 per ERU annually in FY 2019 increasing to \$49.70 per ERU annually by FY 2023.

Option 2: Enhanced Capital Expenditure – Stormwater fee levels associated with only funding the enhanced cost of system capital betterment projects as discussed in Section 3. This option assumes that existing funding sources would continue to be used to fund the Baseline Stormwater Costs at current maintenance levels and program enhancements would only include the capital expenditures associated with \$5 million annually of stormwater system betterments. Under this option, the stormwater fee per ERU as shown in Table 4.1, line 20, would range from \$26.77 per ERU annually to \$26.44 per ERU annually from FY 2019 through FY 2023. In order to fund both the enhanced maintenance program and system capital betterments, the stormwater fee would be the sum of the fees calculated for Option 1 and Option 2.

Options 3 through 5 as shown in Table 4-1 consider the impact on the stormwater fee per ERU associated with incremental changes to existing funding sources. Option 3 shows the additional





fee amount that would be needed to cap the existing funding sources at FY 2019 funding levels such that an increase in the baseline stormwater costs beyond FY 2019 would be paid by stormwater fees rather than funded from existing funding sources. Option 4 shows the additional fee amount that would be needed to eliminate the general fund and phosphate mining severance tax fund sources. Option 5 shows the additional fee amount that would be required to eliminate gas tax funding.

**Table 4.1 Proposed stormwater system revenue requirements**

Line no.	Description	2019	2020	2021	2022	2023
<b>1</b>	<b>Operating expenses based on current level of service</b>	\$11,134,273	\$11,929,820	\$12,635,665	\$13,384,534	\$14,179,611
2	Stormwater engineering – additional employee	-	78,380	80,713	83,046	85,575
3	Total operating expenses based on current level of service	\$11,134,273	\$12,008,200	\$12,716,378	\$13,467,580	\$14,265,186
<b>Other System Costs</b>						
4	Transfer to operating reserves	\$0	\$0	\$0	\$0	\$0
5	Capital improvements projects	\$2,537,500	\$2,936,530	\$2,652,250	\$2,731,818	\$2,813,772
6	Total other system costs	\$2,537,500	\$2,936,530	\$2,652,250	\$2,731,818	\$2,813,772
7	Baseline stormwater system costs @ current LOS [1]	\$13,671,773	\$14,944,730	\$15,368,628	\$16,199,398	\$17,078,958
8	Baseline stormwater program funding at FY2019 levels	\$13,671,773	\$13,671,773	\$13,671,773	\$13,671,773	\$13,671,773
9	Funding deficit with current funding capped at FY2019 levels	\$-	\$1,272,957	\$1,696,855	\$2,527,625	\$3,407,185
10	Projected equivalent residential units (ERU) [2]	186,768	187,702	188,641	189,584	190,532
11	Monthly baseline stormwater cost per ERU (Current LOS)	\$6.10	\$6.63	\$6.79	\$7.12	\$7.47
12	Annual baseline stormwater cost per ERU (Current LOS)	\$73.20	\$79.62	\$81.47	\$85.45	\$89.64
<b>Option 1 – Fund only enhanced maintenance program</b>						
13	Maintenance program cost – enhanced LOS [3]	\$7,436,030	\$7,967,337	\$8,438,736	\$8,938,868	\$9,469,861
14	Total Option 1 – revenue requirements	\$7,436,030	\$7,967,337	\$8,438,736	\$8,938,868	\$9,469,861
<b>Option 1 – Proposed rates</b>						
15	Monthly stormwater fee per ERU	\$3.32	\$3.54	\$3.73	\$3.93	\$4.14
16	Annual stormwater fee per ERU	\$39.81	\$42.45	\$44.73	\$47.15	\$49.70
<b>Option 2 – Enhanced capital/betterment projects</b>						
17	Annual betterment projects [4]	\$5,000,000	\$5,000,000	\$5,000,000	\$5,000,000	\$5,000,000
18	Total Option 2 – revenue requirements	\$5,000,000	\$5,000,000	\$5,000,000	\$5,000,000	\$5,000,000
<b>Option 2 – Proposed rates</b>						
19	Monthly stormwater fee per ERU	\$2.23	\$2.22	\$2.21	\$2.20	\$2.19
20	Annual stormwater fee per ERU	\$26.77	\$26.64	\$26.51	\$26.37	\$26.24



Line no.	Description	2019	2020	2021	2022	2023
<b>Option 3 – Increase in baseline stormwater costs over FY2019 funding level</b>						
21	Increase in baseline stormwater costs [5]	N/A	\$1,272,957	\$1,696,855	\$2,527,625	\$3,407,185
<b>Option 3 – Proposed rate impact</b>						
22	Monthly stormwater fee per ERU	N/A	\$0.57	\$0.75	\$1.11	\$1.49
23	Annual stormwater fee per ERU	N/A	\$6.78	\$9.00	\$13.33	\$17.88
<b>Option 4 – Eliminate general fund and phosphate severance tax funding</b>						
24	General fund and phosphate severance tax funding [6]	\$1,065,805	\$1,065,805	\$1,065,805	\$1,065,805	\$1,065,805
<b>Option 4 – Proposed rate impact</b>						
25	Monthly stormwater fee per ERU	\$0.48	\$0.47	\$0.47	\$0.47	\$0.47
26	Annual stormwater fee per ERU	\$5.71	\$5.68	\$5.65	\$5.62	\$5.59
<b>Option 5 – Eliminate gas tax funding</b>						
27	Gas tax funding [7]	\$3,004,628	\$3,004,628	\$3,004,628	\$3,004,628	\$3,004,628
<b>Option 5 – Proposed rate impact</b>						
28	Monthly stormwater fee per ERU	\$1.34	\$1.33	\$1.33	\$1.32	\$1.31
29	Annual stormwater fee per ERU	\$16.09	\$16.01	\$15.93	\$15.85	\$15.77

[1] Based on FY2019 stormwater system adopted operating and capital budget.

[2] ERUs based on the methodology described in Section 5. ERUs projected to grow at 0.5% annually.

[3] Reflects the cost of the enhanced stormwater system maintenance program discussed in Section 3.

[4] As discussed in Section 3, this amount reflects 25% of the currently unfunded stormwater system betterment projects that have a County-wide benefit.

[5] Projected inflationary increase in Baseline Stormwater Program costs above FY2019 funding levels.

[6] Represents FY2019 Baseline Stormwater Program funding from General Fund and Phosphate Severance Taxes.

[7] Represents FY2019 Baseline Stormwater Program funding from Gas Taxes.

**Table 4.2 Summary of current capital improvement program**

Summary of current capital improvement program							
Line no.	Description	2019	2020	2021	2022	2023	Total
1	Stormwater pipe replacement		-	\$742,630	\$2,731,818	\$2,813,772	\$6,288,220
2	Tallevast Road storm pipe replacement	35,000	-	1,909,620	-	-	1,944,620
3	Harvard Ave seawall repair at Bayshore Drain/ Cedar Hammock South	520,000					520,000
4	Tuttle Ave	650,000					650,000
5	Gateway East outfall replacements	390,000					390,000
6	34 <sup>th</sup> St W at 53 <sup>rd</sup> Ave W, storm pipe repair	286,000					286,000
7	Ponce DeLeon	357,500					357,500
8	6920 26 <sup>th</sup> St W, storm pipe outfall replacement	299,000					299,000
9	Polynesian Village discharge to Pittsburg Drain		1,004,250	-	-	-	1,004,250
10	Sunniland stormwater outfall replacement		401,700	-	-	-	401,700
11	Mockingbird Hill/Samoset Canal improvements at 27th St E/43th Ave E		669,500	-	-	-	669,500
12	Reconstruct storm water outfall to Braden River		459,380	-	-	-	459,380
13	Hawthorne Park sediment basin installation		401,700	-	-	-	401,700
<b>14</b>	<b>Total</b>	<b>2,537,500</b>	<b>\$2,936,530</b>	<b>\$2,652,250</b>	<b>\$2,731,818</b>	<b>\$2,813,772</b>	<b>\$13,671,870</b>

## 5 Stormwater Rate Structure Analysis

Traditionally in Florida, stormwater rates have been based on proxies for stormwater runoff generation because the runoff represents the contribution to the stormwater system; this contribution is considered a measure of benefit from the stormwater system. Fees are based on a parcel's impervious area since impervious surfaces generate more runoff than non-impervious surfaces—this is considered the fairest way to distribute stormwater management costs. Examples of impervious surfaces include rooftops, parking lots, paved plazas and walkways.

*The base billing unit for stormwater fees is called an equivalent residential unit (ERU). ERUs are based on the amount of impervious land cover on the average single family residential (SFR) parcel within a given service area. The total number of ERUs are then determined for all residential and non-residential parcels within the service area.*

Some communities are dominated by SFR parcels, but in cases like Manatee County, which has a considerable number of non-SFR parcels (such as apartments, mobile homes, and commercial properties), there is a wide variability in the amount of impervious area between parcels. These parcels are often divided into classes so that ERUs can be assigned in a more equitable fashion to each class, as opposed to applying a flat rate across all classes.

For Manatee County, due to the wide variability, it is recommended to classify each parcel as either SFR, multi-family residential (MFR) or non-residential (NR). It is further recommended to break the SFR parcels into four tiers, or groupings, based generally on a home's area under roof. In this analysis, Tier 1 represents the grouping of the County's smallest homes, followed by Tiers 2 and 3, and finally Tier 4, which represents the County's largest homes. This methodology is explained in further detail later in this section.

A listing of Manatee County's land use classifications is provided in Appendix B.

There were 113,274 parcels in unincorporated Manatee County at the time of this analysis. The County's parcel distribution by type is depicted on Figure 5-1.

Figure 5-2 illustrates parcel type distribution in unincorporated Manatee County by subclass.

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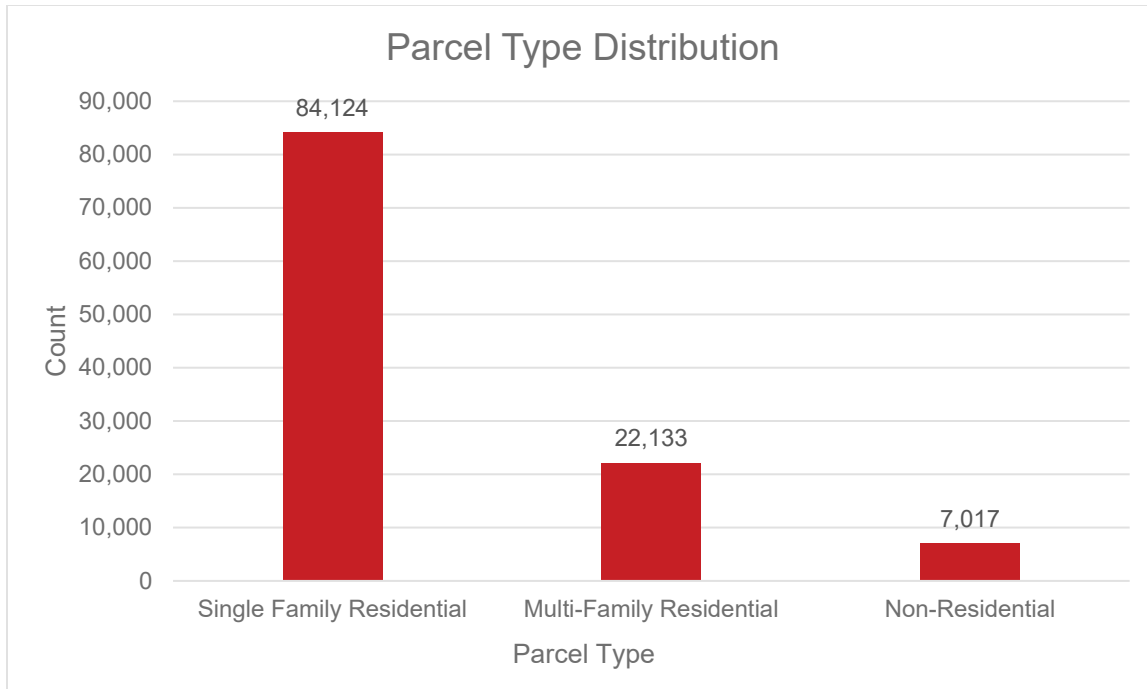


Figure 5-1 Parcel type distribution in unincorporated Manatee County by class

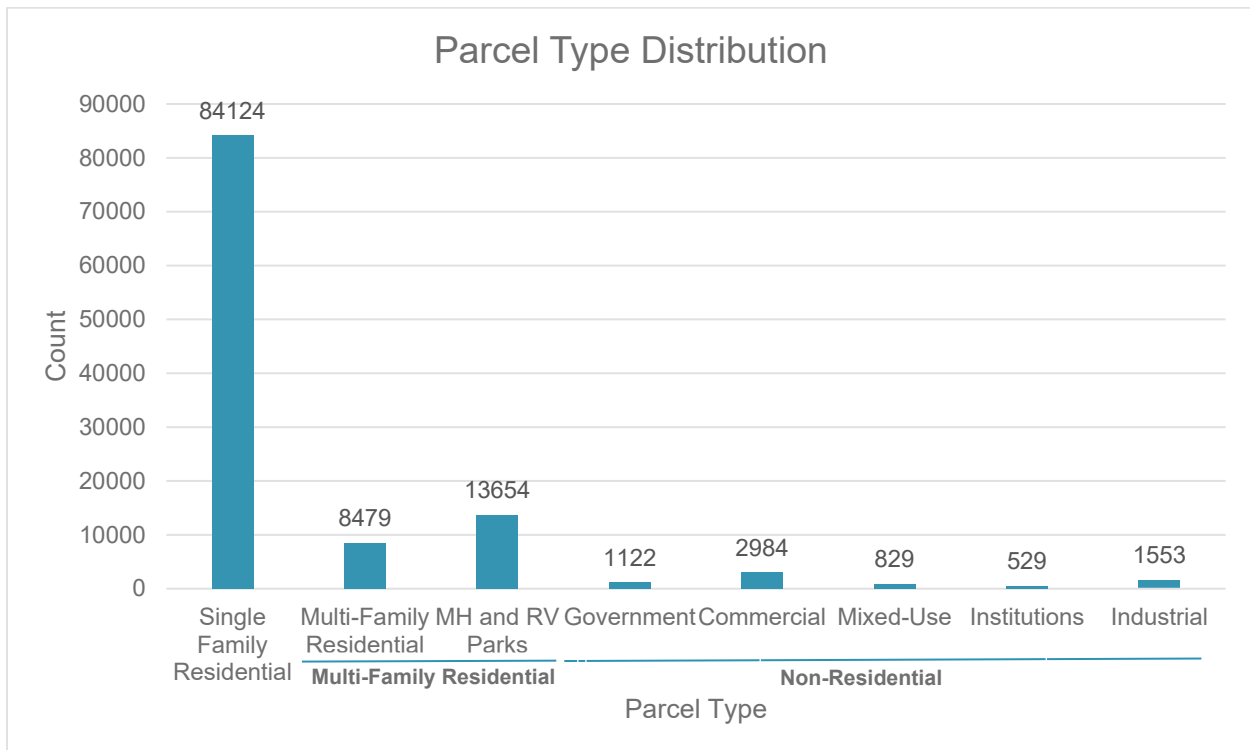


Figure 5-2 Parcel type distribution in unincorporated Manatee County by subclass



## 5.1 Data Source

The impervious area data utilized for the SFR portion of the analysis was provided by the Manatee County Property Appraiser’s Office (PAO) through their data files – called “Jelly\_Roll” – sent to the County’s GIS department nightly. This data source was selected because it is regularly maintained and is publicly accessible. PAO data, or Jelly\_Roll, is imported daily to the County’s GIS department to help ensure the most recent information is displayed on the County’s interactive map feature.

The Jelly\_Roll data consists of real estate property information associated with Manatee County parcels. The field within the Jelly\_Roll that is used to determine the first floor area of all residential buildings is called “BLDGS\_SQFT\_RESFL1” (abbreviated as “BLDGS\_SQFT” in Figure 5-3). Similarly, the field that is used to determine the impervious area (as defined by BOCC) in all features and outbuildings (if applicable) is called “FEATS\_SQFT\_IMPRV” (abbreviated as “FEATS\_SQFT” in Figure 5-3). For the remainder of this report, the area obtained when the first floor area and the outbuildings area are added, using the two data fields noted above, will be referred to as the “Structure Ground Cover”.

OWN_ST	OWN_ZIP	OWN_CNTRY	BLDG_R1_SQ	BLDGS_SQFT	FEATS_SQFT
FL	34219-4441	USA	2191	2191	352
FL	34221-8759	USA	2462	2462	448
NY	12845-5224	USA	1884	1884	0
FL	34217	USA	0	0	0
FL	34208-6067	USA	1110	1110	242
FL	34219-4524	USA	1694	1694	120
FL	34243-2941	USA	2590	2590	672
TX	75201	USA	1860	1860	120
FL	34219	USA	2195	2195	0
FL	34203-7980	USA	3139	3139	0
FL	34243-4323	USA	2170	2170	0
FI	34243-5103	USA	3007	3007	720

Figure 5-3 Jelly Roll data file fields example

From here the real property data (Jelly\_Roll) is associated to the PAO’s spatially-mapped parcels (shapefiles)

([https://www.mymanatee.org/departments/information technology services/geographic information systems](https://www.mymanatee.org/departments/information_technology_services/geographic_information_systems)) within ArcMap using their Parcel ID. At this point, parcels that fall into incorporated jurisdictions were removed from the data. In addition, duplicative Parcel IDs were removed to avoid counting parcels multiple times.

The MFR and NR portions of the analysis were completed using the building footprints shapefile, maintained by Manatee County’s Public Safety Department, and retrieved on June 19, 2019 from the Manatee County GIS website ([https://www.mymanatee.org/departments/information technology services/geographic information systems](https://www.mymanatee.org/departments/information_technology_services/geographic_information_systems)). This information geographically maps building footprints throughout Manatee County using visual roof extents on an aerial. This information was used for this part of the analysis instead of the PAO data due to the significant decrease in number of MFR and NR

parcels compared to SFR, inconsistencies associated with how MFR parcels are recorded in the PAO data, and higher relevance of ancillary impervious areas than building footprint.

## 5.2 Single Family Residential Rate Structure

The SFR classification includes homes that are categorized per the County's records as SFR, these include the following land use (LU) classifications that indicate a relationship to a SFR property (also shown in Appendix B):

- Single Family Residential
- SFR - Model Home
- Single Family Res/10+ Ac
- Uninhabitable Res
- Single Family Homes/Condominia
- Single Family Homes/Land Condo
- Vacant Residential Platted
- Vacant Residential w/Site Amen
- Vacant Residential Tract/Unusable
- Res Related Amenities
- Res Amenities on 10+ Ac
- Non-Commercial Boat Slips
- Vacant Residential Common Area
- Improved Residential Common Area
- Vacant Res. Tract/Unusable 10+ Ac

The above LU classifications were separated from the other classifications to create a pool of 101,009 spatially-mapped SFR parcels in ArcMap. After associating the real property data (Jelly\_Roll) to the SFR parcels, then removing duplicative and city-jurisdiction parcels, there were a total of 84,124 SFR parcels at the time of this study. See Figure 5-1 and Figure 5-2.

### 5.2.1 Single Family Residential Tier Methodology

For this analysis, four tiers were developed to group SFR parcels having similar Structure Ground Cover (impervious building areas). This approach allows for a more equitable allocation of stormwater fees, i.e., a tier representing parcels with smaller impervious areas would pay less than tier representing parcels with a larger impervious area.

The four tiers were obtained by determining the data quartiles outliers.

- Structure Ground Cover falling between 0 and the 25<sup>th</sup> percentile was assigned to Tier 1
- Structure Ground Cover between the 25<sup>th</sup> and 75<sup>th</sup> percentiles was assigned to Tier 2
- Structure Ground Cover between the 75<sup>th</sup> percentile and the upper outlier boundary was assigned to Tier 3
- Structure Ground Cover between the upper outlier boundary and the 100<sup>th</sup> percentile was assigned to Tier 4.

To identify the outliers in the SFR dataset, the following steps are taken:

1. Find the Interquartile Range (IQR)<sup>3</sup>, which is calculated by subtracting the 1<sup>st</sup> quartile (2,231 sq. ft.) from the 3<sup>rd</sup> quartile (3,973 sq. ft.), resulting in an IQR of 1,742 sq. ft.
2. Multiply the IQR by 1.5, giving 2,613 sq. ft. To find the lower outliers, subtract 2,613 sq. ft. from the 1<sup>st</sup> quartile (2,231 sq. ft.) which gives a negative value, meaning there are no outliers on the lower end of the dataset. To find the higher outliers, add 2,613 sq. ft. to the 3<sup>rd</sup> quartile (3,973 sq. ft.) which gives 6,586 sq. ft., meaning any values above 6,586 sq. ft. are considered outliers of the dataset.

Based on these steps, four tiers were created as follows:

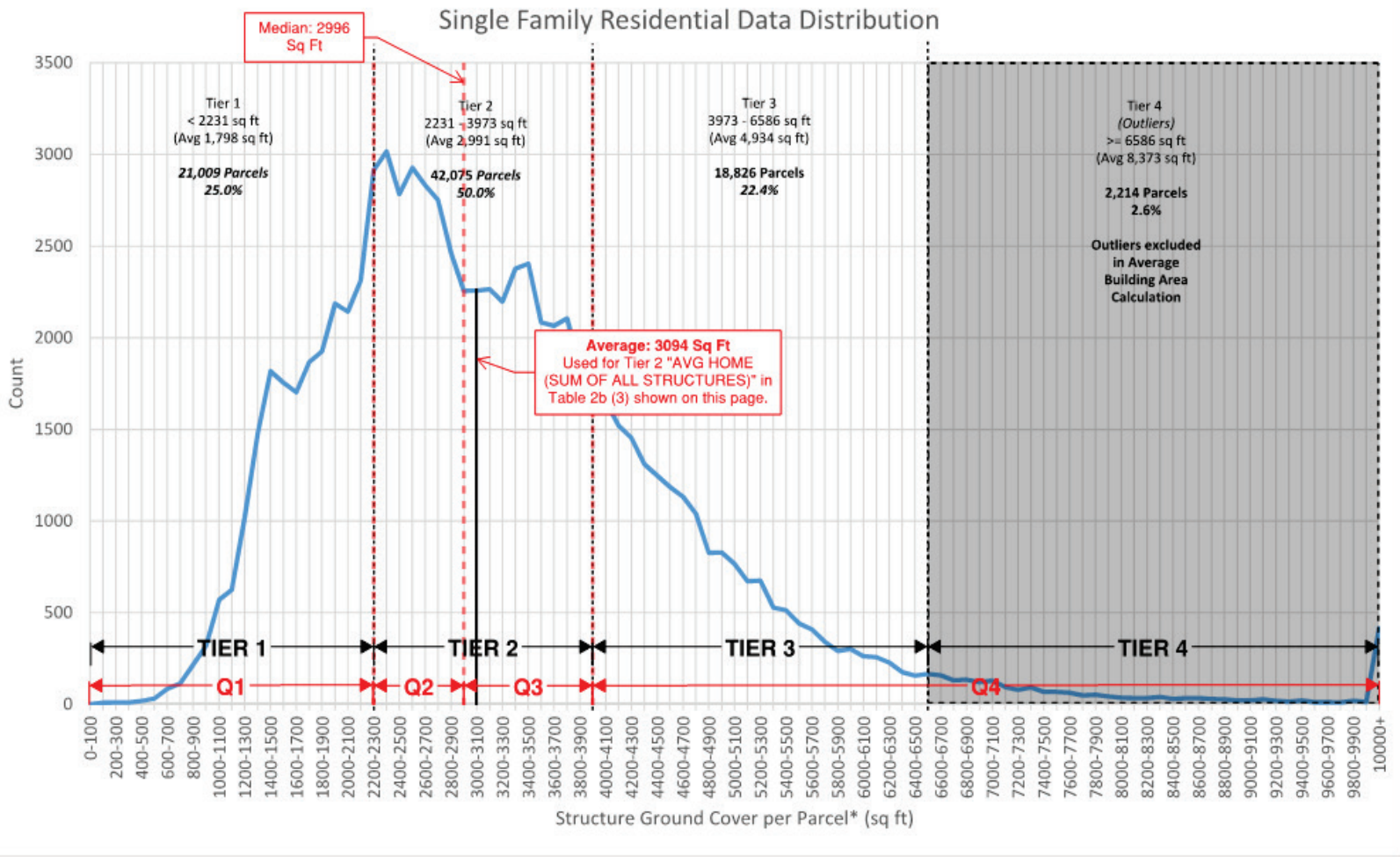
- Tier 1 – <2,231 sq. ft.
- Tier 2 – ≥2,231 sq. ft. and <3,973 sq. ft.
- Tier 3 – ≥3,973 sq. ft. and <6,586 sq. ft.
- Tier 4 – ≥6,586 sq. ft.

The SFR data distribution and Tier information is shown on Figure 5-4.

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<sup>3</sup> IQR is a commonly used statistical formula to detect the presence of outlying data



- Tier Breakline
- - - - - Quartiles (25 - 50 - 75 Percentiles, 50 Percentile = Median)
- Average Structure Ground Cover per Parcel
- ▨▨▨▨▨▨ Outliers (Tier 4)

\*  $BLDGS\_SQFT\_RESFL1 + FEATS\_SQFT\_IMPERV = \text{Structure Ground Cover}$ .  
 $BLDGS\_SQFT\_RESFL1 = \text{Total First Floor Area for All Residential Buildings}$ .  
 $FEATS\_SQFT\_IMPERV = \text{Total Impervious Area (as defined by BOCC) in all Features and Out Buildings}$ .  
 Data provided by Manatee County Property Appraiser's Office.  
 Tier Breaklines were determined using Quartiles 1 and 3 of the full Structure Ground Cover per Parcel data (includes outliers) and the Outlier Breakline.

Figure 5-4 Single family residential data distribution





### 5.2.2 Single Family Residential Total Impervious Area Determination

In addition to the Structure Ground Cover, which is used to breakup SFR parcels into tiers, the ancillary impervious area (impervious areas besides the Structure Ground Cover, such as sidewalks, driveways, roofless patios, pool decks and unrecorded outbuildings) is needed to determine the total impervious area. The total impervious area is then used to establish a weighting factor for each tier that is representative of how much impervious area exists in respect to the ERU.

For each SFR tier, a statistically significant sample of parcels (resulting in 300 total parcels) for ancillary impervious areas were measured using aerial photography.

The following is the SFR sample spread:

- Tier 1: 47.5 percent (143 parcels)
- Tier 2: 24.5 percent (74 parcels)
- Tier 3: 22.5 percent (68 parcels)
- Tier 4: 5.5 percent (16 parcels)

The average ancillary impervious area for each tier was then added to the average Structure Ground Cover for each tier to determine the total impervious area for each tier.

In this analysis, one ERU equals 4,443 sq. ft. because the total impervious area for Tier 2, which represents the average single-family home, was 4,443 sq. ft. Refer to Table 5.1 for the calculation. *This ERU value serves as the basis for allocating the stormwater fee for all properties in unincorporated Manatee County.*

### 5.2.3 Single Family Residential Weighting Factors

Weighting factors are then applied to the other tiers so that SFR within each tier pay a proportional amount of stormwater fees based on Structure Ground Cover relative to other SFR in other tiers. The total impervious area for each tier is divided by the area associated with one ERU to obtain the weighting factor. For example, Tier 1 total impervious area of 2,386 sq. ft. is divided by one ERU (4,443 sq. ft.) which results in a weighting factor of 0.5 (when rounded to the nearest tenth). Total ERUs for SFR are then determined by multiplying the parcel count within said tier by the weighting factor.

**Table 5.1 Single family residential ERU breakdown**

Tier	Parcel Count	Average Structure Ground Cover (sq. ft.)	+	Average Ancillary Impervious Area (sq. ft.)	=	Total Impervious Area (sq. ft.)	Weighting Factor Calculation	Weighting factor	Total ERUs
1	21,009	1,798	+	588	=	2,386	2,386 / 4,443	0.5	10,505
2	42,075	3,094*	+	1,349	=	4,443	4,443 / 4,443	1.0	42,075
3	18,826	4,934	+	2,609	=	7,543	7,543 / 4,443	1.7	32,004
4	2,214	8,373	+	6,836	=	15,209	15,209 / 4,443	3.4	7,528
<b>Total</b>	<b>84,124</b>								<b>92,111</b>

\*Tier 2 Average Structure Ground Cover of 3,094 sq. ft. is the average of the entire SFR dataset, excluding outliers

### 5.3 Single Family Residential ERU Results

As shown in Table 5.2, the total ERUs for the SFR parcels is 92,111. In reviewing the relation between the parcel count and the total ERUs, the importance of the weighting factors is illustrated – Tier 1 parcel count is about the same as Tier 3's parcel count, however, because the Tier 3's total impervious area is about three times larger than Tier 1's, the resultant total ERUs for Tier 3 is about three times larger than Tier 1.

### 5.4 Multi-Family Residential Rate Structure

The MFR classification includes homes that indicate a relationship to an MFR parcel, such as mobile homes, mobile home parks, RV parks, condos, townhouses, trailers and duplexes. Due to the number of various LU classifications with an MFR relation, please refer to Appendix B for the full list.

The MFR classifications were separated from the other classifications to create a pool of spatially-mapped MFR parcels in ArcMap. After associating the Building Footprints shapefile to the MFR parcels, the Building Footprints were cut using the parcel boundaries and each parcel was assigned the building footprint area that fell into each one. After removing duplicative and city-jurisdiction parcels, there were a total of 22,133 MFR parcels at the time of this study.

#### 5.4.1 Multi-Family Residential Impervious Area Determination

For each of the MFR subclasses described above, the average building footprint was determined using the County's dataset. Similar to SFR, a statistically significant sample of parcels for ancillary impervious areas for each subclass was then measured using aerial photography. The average ancillary impervious area was then added to the average building footprint for each subclass to determine the total impervious area for each subclass. Given the number of parcels in each subclass and the building footprints variability, the statistically significant sample sizes were as follows; Condos 30-100 parcels, Mobile Homes 403 parcels, Apartments 30-100 parcels, Duplexes 170 parcels, Townhouses 30-100 parcels, Two or More Houses 30-100 parcels, MH Parks 3-8 parcels, and RV Parks 6-8 parcels.

#### 5.4.2 Multi-Family Residential Weighting Factors

After obtaining total impervious areas per parcel for each subclass, the number of family units found on a single parcel within that subclass was used to determine average total impervious area per unit. The average number of units per parcel was taken into account to generalize the area per family unit for that subclass. Measured weighting factors are shown on Figure 5-5, which use the average total impervious area per unit and divide by one ERU (4,443 sq. ft.). However, due to inconsistencies of how the data is broken up into dwelling units and potential inaccuracies of the building footprints shapefile, all MFR parcels are attributed a 0.4 weighting factor based on dividing total ERUs obtained by the measured weighting factors by the total units.

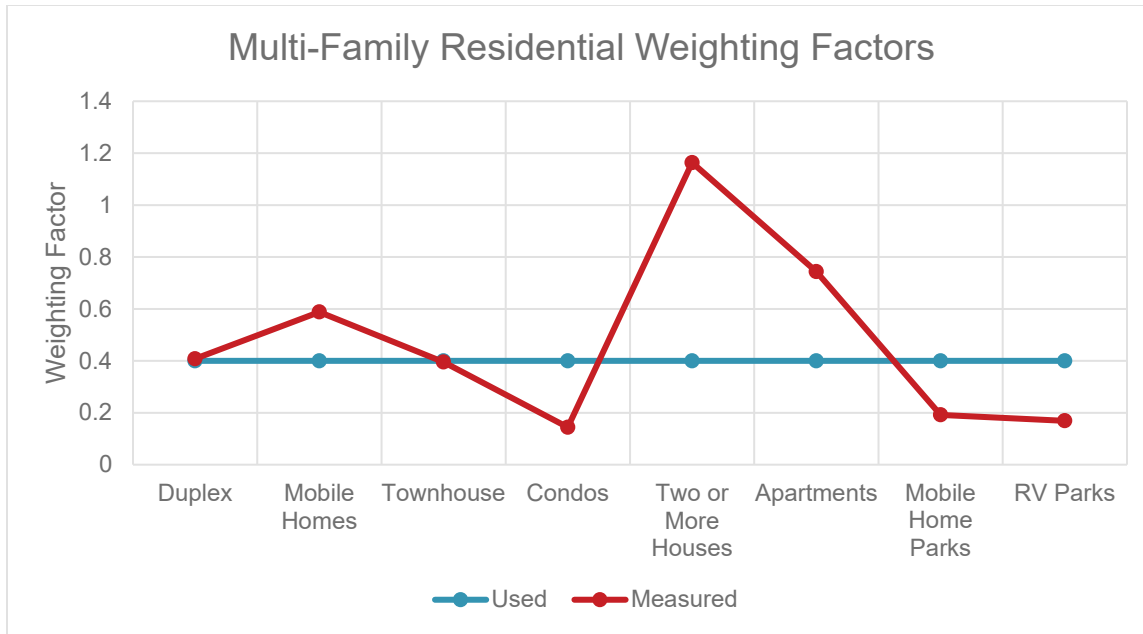


Figure 5-5 Multi-family residential weighting factors

### 5.4.3 Multi-Family Residential ERU Results

As shown in Table 5.2, the MFR total ERUs is 26,688, which is about 29 percent of the SFR total ERUs.

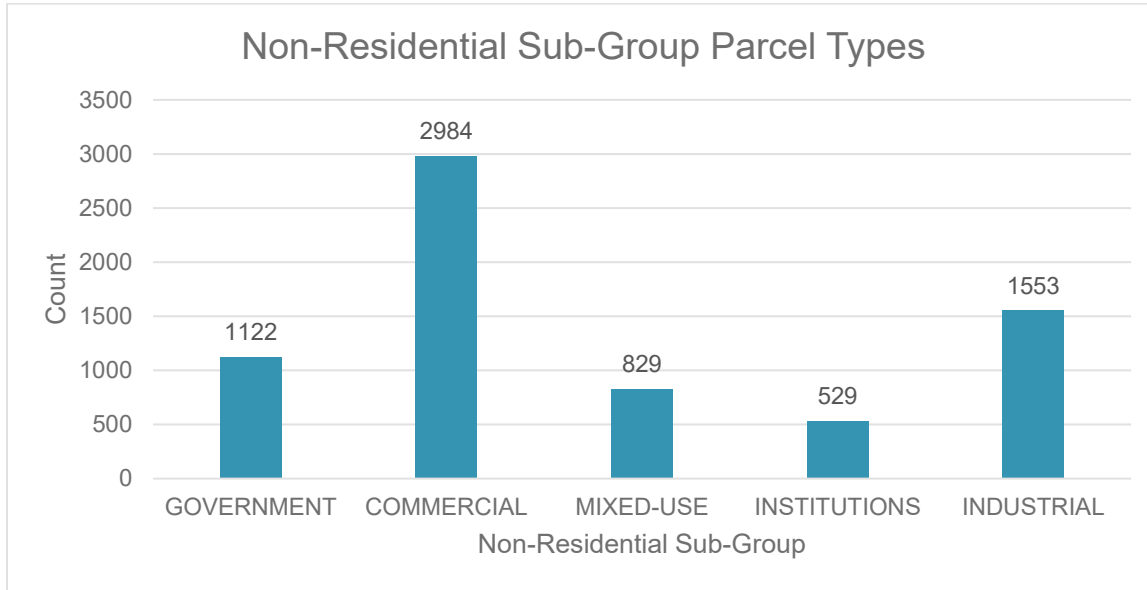
Table 5.2 Multi-family subclass ERU breakdown

Subclass	Parcel Count	Total impervious area (sq. ft.)	Average number of units per parcel	Average total impervious area per unit (sq. ft.)	Weighting factor	Total units	Total ERUs
Duplex	4,113	2,718	1.5	1,812	0.4	6,367	2,547
Mobile homes	13,579	2,613	1.0	2,613	0.4	14,490	5,796
Townhouse	1,398	1,756	1.0	1,756	0.4	1,398	559
Condos	2,047	8,320	13.0	640	0.4	20,690	8,276
Two or more houses	475	6,721	1.3	5,170	0.4	611	244
Apartments	446	125,509	38.0	3,303	0.4	11,171	4,468
Mobile home parks	59	139,697	163.7	853	0.4	9,660	3,864
RV parks	16	154,320	205.4	751	0.4	2,334	934
<b>Total</b>	<b>22,133</b>				<b>0.4</b>	<b>66,721</b>	<b>26,688</b>

## 5.5 Non-Residential Rate Structure

Non-residential (NR) parcels include all other categories not listed under SFR and MFR, including commercial, industrial, educational, government and religious classifications. The NR classification includes all other LU classifications (except Agriculture classifications) that are not residential. Due to the number of various LU classifications that fall under NR classification, please refer to Appendix B for the full list.

The NR classifications were separated from the other classifications to create a pool of spatially-mapped NR parcels in ArcMap. After associating the Building Footprints shapefile to the NR parcels, the Building Footprints were cut using the parcel boundaries and each parcel was assigned the building footprint area that fell into each one. After removing duplicative and city-jurisdiction parcels, there were a total of 7,017 NR parcels at the time of this study.



**Figure 5-6 Non-residential sub-group parcel types**

All parcels associated with the Agricultural LUCs 5000-6900s were omitted in the analysis. There is a total of 2,244 Agricultural parcels at the time of this study.

### 5.5.1 Non-Residential Impervious Area Determination

For all non-residential parcels, the average building footprint was determined using the County’s Public Safety-maintained Building Footprints dataset. Unlike the SFR and MFR methods, due to the varying amounts of impervious areas per NR parcel, all NR parcels were measured for ancillary impervious area. The ancillary impervious areas for each parcel were measured using 2017 aerial photography and added to the building footprint for that parcel. This methodology provides a unique total impervious area, which is critical given the wide variability of impervious area within the County’s non-residential parcels.

### 5.5.2 Non-Residential Weighting Factors

Since impervious areas are determined for each non-residential parcel individually, it is not necessary to use weighting factors to determine ERUs for non-residential parcels.

### 5.5.3 Non-Residential ERU Results

Total impervious area for each non-residential parcel is divided by the factor of one ERU (4,443 sq. ft.) to arrive upon 68,903 total ERUs. See comparison of parcel types on Figure 5-7.

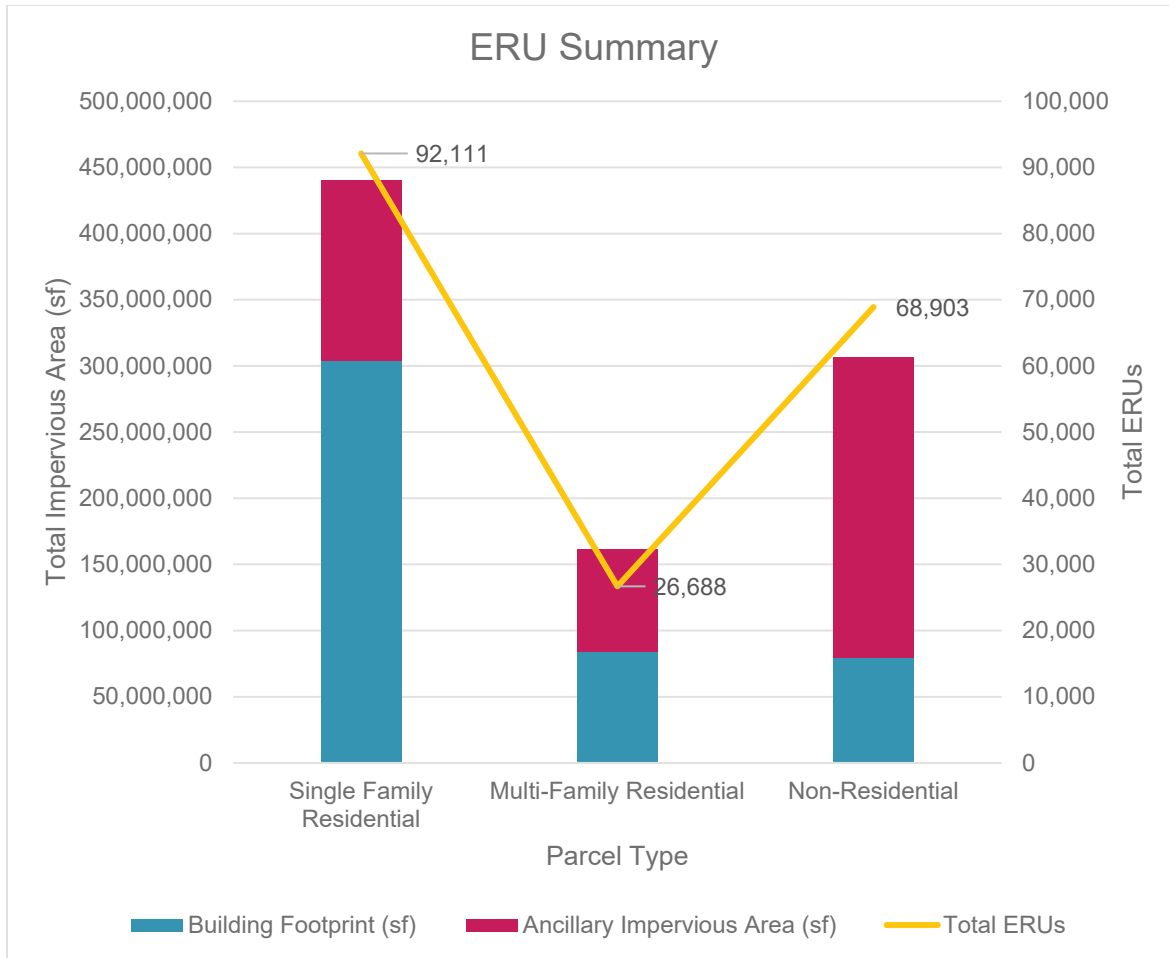


Figure 5-7 ERU summary with building and ancillary impervious areas

## 6 Proposed Stormwater Fee Options

### 6.1 Proposed Stormwater Fee Calculations

Based on the various stormwater workshops held with the Board of County Commissioners, proposed stormwater fees by rate classification were developed for Options 1 and 2 as discussed in Section 4. The proposed Stormwater Fee Option 1 will only provide revenues to fund enhanced stormwater maintenance costs. The proposed Stormwater Rate Option 2 only provides revenues to fund enhanced capital betterment projects of \$5 million annually. The stormwater fee calculations herein are based on the impervious area method, which was used to develop the rate structure relationships among customer classifications as discussed in Section 5. As presented in Section 4, stormwater fees are calculated as follows:

$$\frac{\text{Cost of Service (LOS)} - \text{Other Funding Sources}}{\text{Total Residential ERUs} + \text{Total Non Residential ERUs}} = \text{Stormwater Fee per ERU}$$



### 6.1.1 Proposed Stormwater Fees

For the residential single-family rate classification (SFR) based on a tiered billing method summarized in Section 5, the proposed stormwater fees are as follows:

**Table 6.1 Projected SFR stormwater fees per single-family parcel**

	Single family rate per month		Single family annual rate	
	Option 1 Enhanced maintenance LOS	Option 2 Enhanced capital betterments	Option 1 Enhanced maintenance LOS	Option 2 Enhanced capital betterments
<b>Fiscal Year 2019:</b>				
Tier 1	\$1.66	\$1.12	\$19.91	\$13.39
Tier 2	\$3.32	\$2.23	\$39.81	\$26.77
Tier 3	\$5.64	\$3.79	\$67.68	\$45.51
Tier 4	\$11.28	\$7.59	\$135.37	\$91.02
<b>Fiscal Year 2020:</b>				
Tier 1	\$1.77	\$1.11	\$21.22	\$13.32
Tier 2	\$3.54	\$2.22	\$42.45	\$26.64
Tier 3	\$6.01	\$3.77	\$72.16	\$45.28
Tier 4	\$12.03	\$7.55	\$144.32	\$90.57
<b>Fiscal Year 2021:</b>				
Tier 1	\$1.86	\$1.10	\$22.37	\$13.25
Tier 2	\$3.73	\$2.21	\$44.73	\$26.51
Tier 3	\$6.34	\$3.75	\$76.05	\$45.06
Tier 4	\$12.67	\$7.51	\$152.10	\$90.12
<b>Fiscal Year 2022:</b>				
Tier 1	\$1.96	\$1.10	\$23.57	\$13.19
Tier 2	\$3.93	\$2.20	\$47.15	\$26.37
Tier 3	\$6.68	\$3.74	\$80.15	\$44.84
Tier 4	\$13.36	\$7.47	\$160.31	\$89.67
<b>Fiscal Year 2023:</b>				
Tier 1	\$2.07	\$1.09	\$24.85	\$13.12
Tier 2	\$4.14	\$2.19	\$49.70	\$26.24
Tier 3	\$7.04	\$3.72	\$84.49	\$44.61
Tier 4	\$14.08	\$7.44	\$168.99	\$89.22

Note that these fees account for an assumed 0.5 percent ERU increase per year, resulting in fee decreases each year for Option 2.

### 6.1.2 Multi-Family Residential Proposed Stormwater Fees

Based on the analysis of the proposed stormwater rate structure relationships and impervious area calculations developed in Section 5, the multi-family stormwater fees are based on an ERU factor of 0.4 per multi-family unit.

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**Table 6.2 Projected MFR stormwater rates per unit**

	Multi family monthly rate per unit		Multi family annual rate per unit	
	Option 1 Enhanced maintenance LOS	Option 2 Enhanced capital betterments	Option 1 Enhanced maintenance LOS	Option 2 Enhanced capital betterments
Fiscal Year 2019:				
Per unit	\$1.33	\$0.89	\$15.93	\$10.71
Fiscal Year 2020:				
Per unit	\$1.41	\$0.89	\$16.98	\$10.66
Fiscal Year 2021:				
Per unit	\$1.49	\$0.88	\$17.89	\$10.60
Fiscal Year 2022:				
Per unit	\$1.57	\$0.88	\$18.86	\$10.55
Fiscal Year 2023:				
Per unit	\$1.66	\$0.87	\$19.88	\$10.50

As noted previously, these fees account for an assumed 0.5 percent ERU increase per year, resulting in fee decreases each year for Option 2.

**6.1.3 Non-Residential Proposed Stormwater Fees**

The projected non-residential rate options are based on the square feet of impervious area for each non-residential parcel. Based on the impervious area relationships discussed in Section 5, the non-residential stormwater fees are based on the average dollar amount per square foot associated with one ERU of 4,443 square feet.

**Table 6.3 Projected non-residential stormwater rates per square foot of impervious area**

	Non residential Monthly rate per sq. ft. of impervious area		Non residential Annual rate per sq. ft. of impervious area	
	Option 1 Enhanced maintenance LOS	Option 2 Enhanced capital betterments	Option 1 Enhanced maintenance LOS	Option 2 Enhanced capital betterments
Fiscal Year 2019				
Per sq. ft.	\$0.000748	\$0.000503	\$0.008981	\$0.006039
Fiscal Year 2020				
Per sq. ft.	\$0.000798	\$0.000501	\$0.009575	\$0.006009
Fiscal Year 2021				
Per sq. ft.	\$0.000841	\$0.000498	\$0.010091	\$0.005979
Fiscal Year 2022				
Per sq. ft.	\$0.000886	\$0.000496	\$0.010636	\$0.005949
Fiscal Year 2023				
Per Sq. Ft.	\$0.000934	\$0.000493	\$0.011212	\$0.005920

## 7 Billing and Collection Methodologies

### 7.1 Alternative Billing Methods

Stormwater utilities in Florida typically bill for services through the application of either a stormwater user fee as part of the utility bill or through a non-ad valorem special assessment. Generally, based on Florida statutes, in order to fall within the legal requirements of a special assessment billing approach, the amount of the assessment must be commensurate with a special benefit or an increase in the value of the assessed property. Stormwater services billed through a monthly user fee are typically based only on the estimated run-off burden caused by the property.

Per the 2018 Florida Stormwater Association Survey: Based on the most recent survey of stormwater utilities, 66 percent of the stormwater utilities generate revenues from monthly user fees and 29 percent utilize non-ad valorem special assessments.

Per the 2018 Florida Stormwater Association Survey: Under the monthly user fee approach, the "run-off burden" caused by the property is typically based on methods that estimate the amount of stormwater run-off generated by a property. Approximately 69 percent of stormwater utilities who charge a user fee use impervious area as the basis for estimating a specific property's stormwater "run-off burden", while 14 percent use both gross area and impervious area to establish the basis for charging stormwater fees.

With this background, it can be concluded that the use of special assessments is more restrictive as to how stormwater costs can be levied to individual properties, since a special benefit related to stormwater facilities must be demonstrated while monthly user rates typically reflect system-wide rates based only on the estimated stormwater runoff generated by the property. These concepts are particularly germane to the recovery of costs associated with new capital facilities that can vary significantly for different watersheds or basins within a given jurisdiction and for which it may be difficult to demonstrate a County-wide benefit.

For stormwater utilities in Florida that rely on the user fee or "run-off burden" approach, only 3 percent of the systems surveyed recently by the Florida Stormwater Association report that they charge fees for capital costs based on a "zone-of-benefit" approach. Accordingly, 97 percent recover stormwater costs, including the cost of capital projects on a system-wide basis. However, there is nothing to preclude adopting a capital-related portion of a stormwater fee by specific basin. The County should establish a rate methodology that best suits the stormwater expenditure needs, cost recovery and the philosophy and goals of the community, recognizing that the non-ad valorem special assessment billing method may require basin-specific assessments related to certain major capital improvements that may be implemented in the future.





## 7.2 Comparison of Utility Bill and Assessment (Non-Ad Valorem)

Prior to finalizing and implementing the stormwater utility rates, the rate structure database must be tied to a billing method. The County must choose a billing method for distribution and collection of the stormwater utility fees before this can be done. The alternative billing methods include either monthly utility billing or non-ad valorem assessment. Some of the major considerations for the billing method decision include:

- **Utility bill:** For parcels with a utility account, the entity responsible for paying the utility bill will be charged a per-ERU fee on a monthly basis if the utility billing system is selected. Alternate accommodations may need to be established for parcels not served by County utilities or with inactive utility meters if the utility billing system is selected.
- **Non-ad valorem assessment:** If the County chooses the non-ad valorem assessment, stormwater utility rates will be assessed through the non-ad valorem assessment to be paid by the property owner on an annual basis. It may not be possible to levy the fee on government-owned parcels if the non-ad valorem assessment method is selected, and instead those parcels would receive a separate annual assessment based on the number of ERUs contained on that property.

The following table provides a comparison of the advantages and disadvantages of the tax bill collection method versus the utility bill collection method.

**Table 7.1 Billing methodology pros and cons**

	Non-ad valorem assessment (annual)	Utility bill (monthly)
Pros	<ul style="list-style-type: none"> <li>• Highest collection rate (95-98%)</li> <li>• One bill with all charges</li> <li>• Use tax roll data from PA</li> <li>• Revenue received within 6 months of start of fiscal year</li> <li>• Rate/fee annual assessment</li> </ul>	<ul style="list-style-type: none"> <li>• Deadlines set by local government</li> <li>• Timeframe set by local government</li> <li>• Easier to charge exempt property</li> <li>• Can be used to bill government properties</li> <li>• Can use bill to communicate with customers</li> <li>• May be able to piggyback on other government bills</li> <li>• Easier to amend rate/fee</li> </ul>
Cons	<ul style="list-style-type: none"> <li>• Strict statutory requirements regarding public notice</li> <li>• Strict statutory timeframes</li> <li>• Supplemental billing required for tax-exempt properties</li> <li>• May not allow for County-wide rates related to specific capital projects (special benefit rule)</li> <li>• Increased assessment &amp; tax collection costs</li> </ul>	<ul style="list-style-type: none"> <li>• Difficult to correlate utility accounts to property uses (methodology issues)</li> <li>• Collection issues regarding non-payment</li> <li>• Utility bill numerous lines</li> <li>• May miss property without utility account</li> <li>• Revenue received on monthly basis</li> <li>• Billing and administrative expenses</li> </ul>

Table 7.2 summarizes a sample of city and county stormwater utilities in Florida.

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**Table 7.2 Examples of Florida stormwater utilities**

Description	Approx. age of utility (yrs) <sup>[1]</sup>	Rate structure	Monthly stormwater rate per one ERU	Impervious surface per one ERU	Fee per sq. ft.	Fee type
<b>Florida utilities - Cities</b>						
City of Miami Beach	23	Flat rate for residential customers, ERU derived from average impervious area used to determine rate for commercial customers	23.3	791	0.02946	Utility bill
City of Palm Coast	5	Flat rate for residential customers, ERU derived from average impervious area used to determine rate for commercial customers	15.55	3,682	0.00422	Utility bill
City of Tampa – O&M and capital costs [5]	30	Tiered rate for residential customers, mid-tier average of 3,310 sq. ft. designated as ERU definition for commercial billing purposes	11.92	3,310	0.0036	Assessment
City of Winter Park	25	Residential customers are charged based on 15 tiers of impervious surface area with 2,324 being defined as 1 ERU for commercial billing purposes	11.56	2,324	0.00497	Utility bill
City of Maitland	22	Tiered rate for residential customers, mid-tier average of 2,532 sq. ft. designated as ERU definition for commercial billing purposes	10.39	2,532	0.0041	Utility bill
City of St. Petersburg [4]	30	Tiered rate for residential customers, mid-tier average of 2,406 sq. ft. designated as ERU definition for commercial billing purposes	9.93	2,400	0.00414	Utility bill
City of Fort Myers	20	Based on impervious area of property, charged in 500 sq. ft. increments	7.6	2,500	0.00304	Utility bill
City of Tampa – O&M only	-	-	6.83	3,310	0.00206	Assessment
City of Venice	22	ERU definition of impervious area applied to all customers	5	9,489	0.00053	Utility bill
City of Bradenton	23	Flat rate for residential customers, ERU derived from average impervious area used to determine rate for commercial customers	4.87	1,700	0.00286	Utility bill
City of Palm Bay	9	Flat rate for residential customers unless their property is more than 5 acres, ERU derived from impervious area used to determine rate for commercial customers	4.47	4,602	0.00097	Assessment
City of Bradenton Beach [2]	4	Fee based on 100 sq. ft. of impervious for all customers	4.4	N/A		Assessment
City of St. Pete Beach	9	ERU definition of impervious area applied to all customers	3.92	3,813	0.00103	Assessment
City of Miami	28	Flat rate for residential customers, ERU derived from average impervious area used to determine rate for commercial customers	3.5	1,191	0.00294	Utility bill
<b>Other utilities' average - Cities</b>			<b>\$8.80</b>	<b>3,203</b>		



Description	Approx. age of utility (yrs) <sup>[1]</sup>	Rate structure	Monthly stormwater rate per one ERU	Impervious surface per one ERU	Fee per sq. ft.	Fee type
<b>Florida utilities</b>	<b>Counties</b>					
Pinellas County	26	Tiered rate for residential customers, mid-tier average of 2,339 sq. ft. designated as ERU definition for commercial billing purposes	\$9.81	2,339	0.00419	Assessment
Pasco County	12	Flat rate for residential customers, ERU derived from impervious area used to determine rate for commercial customers	7.92	2,890	0.00274	Assessment
Sarasota County	25	Tiered rate for residential customers, mid-tier average of 3,153 sq. ft. designated as ERU definition for commercial billing purposes	7.55	3,153	0.00239	Assessment
Leon County	6	Flat rate for residential customers, ERU derived from average impervious area used to determine rate for commercial customers	7.08	3,272	0.00216	Assessment
Volusia County	27	Flat rate for residential customers, ERU derived from average impervious area used to determine rate for commercial customers	6	2,775	0.00216	Assessment
Brevard County	24	Flat rate for residential customers, ERU derived from average impervious area used to determine rate for commercial customers	5.33	2,500	0.00213	Assessment
Miami-Dade County	28	Flat rate for residential customers, ERU derived from average impervious area used to determine rate for commercial customers	5	1,548	0.00323	Utility bill
Hillsborough County	30	Tiered rate for residential customers, mid-tier average of 4,274 sq. ft. designated as ERU definition for commercial billing purposes		4,274	0	Assessment
Alachua County	13	Tiered rate for residential customers, mid-tier average of 2,250 sq. ft. designated as ERU definition for commercial billing purposes	2.5	2,250	0.00111	Assessment
Polk County	25	ERU definition of impervious area applied to all customers	1.5	1,000	0.0015	Assessment
Marion County	12	ERU definition of impervious area applied to all customers	1.25	2,275	0.00055	Assessment
<b>Other utilities' average - Counties</b>			<b>\$5.39</b>	<b>2,571</b>		

[1] Unless otherwise noted, amounts shown reflect rates in effect October 2019 and are exclusive of taxes or franchise fees, if any. All rates are as reported by the respective local government.

[2] Bradenton Beach has a rate set on 100 square feet of property

[3] Hillsborough County has an annual assessment instead of monthly user rates based on impervious area.

[4] City of St. Petersburg has a tiered rate system as follows: Tier 1: 1 sq. ft. - 1,600 sq. ft. (\$4.99) Tier 2: 1,601 sq. ft. - 3,200 sq. ft. (\$9.93)  
Tier 3: 3,201 sq. ft. - 4,800 sq. ft. (\$15.59) Tier 4: Above 4,801 sq. ft. (\$23.27)

[5] City of Tampa includes a city-wide service component of \$82.00 per year and a capital component of \$61.02 per year that is applied to the central and lower basin within the city.

## 8 Conclusion

Manatee County currently funds the operation of its stormwater management system primarily through revenue generated by solid waste tipping fees, the County's gas tax fund, and other minor funding sources including phosphate mining severance fees and general fund revenues.

The primary objectives of this stormwater utility study are to document the methodology by which stormwater rate structures are established, and to present alternatives for proposed stormwater fees and billing and collection options.

In order to implement a stormwater fee, the County must evaluate the options and alternatives presented within this study and make policy decisions based on the County's best interests. Once those policy decisions have been confirmed, the County can proceed.

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