North Carolina Stormwater Fees Report

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Environmental Finance Center

About This Report

The Environmental Finance Center, with the support of the North Carolina Division of Water Infrastructure, conducted a survey of stormwater utilities in North Carolina for fiscal year 2023. Stormwater utilities(101) across the state are included in this survey, encompassing 104 fee structures (as three utilities charge different fees based on geographic area). Utility fees were confirmed via websites, local government budgets, local government fee schedules, or direct contact via phone or email. This survey includes 101 out of 104 known stormwater utilities in North Carolina. Ninety-six (95%) of the participating utilities are municipalities, while five (5 percent) are counties.

The following pages contain the 2023 North Carolina Stormwater Fees Survey results and analyses. More information on Stormwater Utility Management in North Carolina can be found here. In addition to this report is an accompanying set of tables and an online, interactive Fee Dashboard where users can compare utilities against various attributes such as geographic location, system characteristics, and NPDES permit status.

The Environmental Finance Center would like to thank the Division of Water Infrastructure, the North Carolina League of Municipalities, the Stormwater Association of North Carolina, and the stormwater utilities participating in this year's survey.

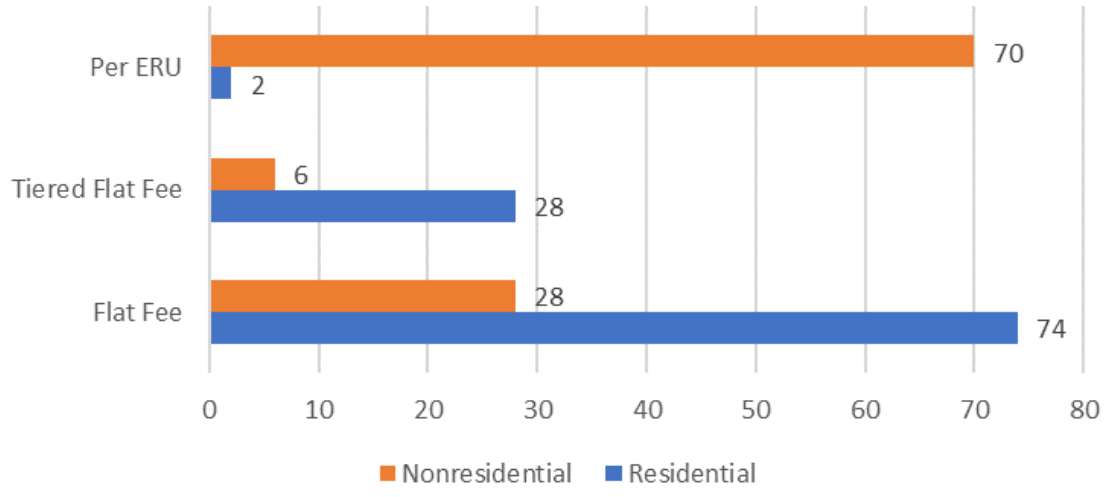
Contents

Stormwater Fee Structures

How are Stormwater Fees Structured in North Carolina?

Figure 1 displays the single-family residential and nonresidential customers by structure type for participating stormwater utilities in North Carolina. Flat fee structures are more commonly used to assess fees for single-family residential. Seventy-four of the 104 single-family residential fee structures (71 percent) are flat fee structures. Fees charged per Equivalent Residential Unit (ERU), described below, are more commonly used to assess fees for nonresidential properties. Seventy of the 104 nonresidential fee structures (67 percent) charge customers a fee per ERU, while just two single-family residential fee structures charge per ERU. This difference may exist because residential parcel sizes tend to have a similar amount of impervious surface compared to nonresidential parcels. Since nonresidential parcels may be as large as a shopping mall or as small as a restaurant, charging per ERU ensures that each establishment pays a fee proportional to the amount of impervious surface within its parcel. Additionally, tiered flat fees are more common for single-family residential properties than nonresidential properties. Twenty-eight of the 104 fee structures (27 percent) charge single-family residential customers using a tiered flat fee. In comparison, just six of the 104 fee structures (6 percent) charge nonresidential customers using a tiered flat fee.

Figure 1: Stormwater fee structures by structure type (n = 104)



Flat Fees

Utilities that use flat fees charge all properties the same fee regardless of the estimated amount of impervious surface on the property. Communities might implement a flat fee for residential customers because residential parcels within the city's jurisdiction do not vary significantly in size. This eliminates the city or county's need to estimate the size of each parcel individually, cutting down on data collection and administration costs. Before establishing a stormwater utility, many communities conduct studies to determine the average size of a residential parcel. Many communities implementing a residential flat fee structure charge nonresidential customers using a different structure, such as tiered flat fees or per Equivalent Residential Units(ERU). In the example provided below in Table 1 and Equation 1, all residential customers are charged $4.00 per month.

Table 1: Residential flat fee example

Residential Flat Fee Per Month
$4.00

Equation 1: Example calculation for 3,000 ft² of impervious surface

$$All\ Properties\ Pay\ the\ Same\ Fee$$

$$Monthly\ Fee = \$4.00$$

Tiered Flat Fees

Properties that are charged based on tiered flat fees are assessed a fee based on the estimated amount of impervious surface on the parcel. However, unlike per ERU fee structures, the amount of impervious surface on a parcel is not multiplied by the size of an ERU. Instead, each property is categorized into a single tier based on the amount of impervious surface estimated to be within that parcel. Thus, within the fee structure illustrated in Table 2, a property with 1,900 square feet of impervious surface will pay the same fee as a property with 4,999 or below square feet of impervious surface. Typically, tiered flat fee structures will create small, medium, and large property categories, but some utilities may have more than three tiers. In the example provided in Table 2 and Equation 2, a property with 3,000 square feet of impervious surface will fall in the "medium" category and pay a fee of $2.50 per month. This is an example of a tiered flat fee structure with three tiers.

Table 2: Tiered Flat Fees Example Fee Structure

Single Family	Monthly Fee
Less than 1,500 ft^2	$1.50
1,500 ft^2 – 4,999 ft^2	$3.00
5,000 ft^2 or more	$4.50

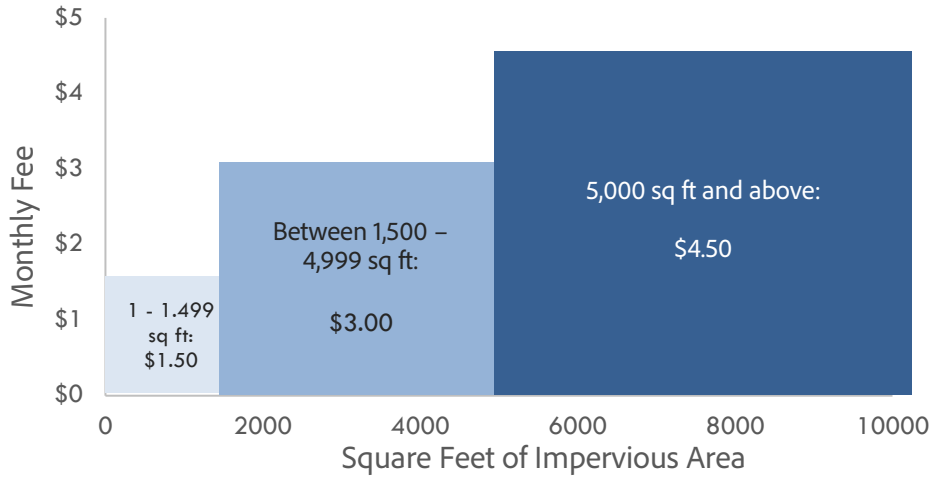
Equation 2: Example Calculation at 3,000 ft^2 of Impervious Surface

$$1{,}500 ft^! < 3{,}000\ ft^! < 4{,}999 ft^!$$

$$Monthly\ Fee = \$3.00$$

Figure 2 provides a visual representation of how tiered flat fees are charged. The horizontal axis displays the impervious service on a fee payer's property, while the vertical axis displays the monthly fee owed. As the impervious surface increases along the horizontal axis, the fee only changes when passing 1,500 ft^2 and 5,000 ft^2.

Figure 1: Tiered Flat Fees Example Fee Structure Visualized



Per Equivalent Residential Unit

Properties charged per Equivalent Residential Unit (ERU) are assessed a fee based on the estimated amount of impervious surface on the property. A "per ERU" stormwater fee structure may include a base charge, which may or may not include a certain number of square feet of impervious surface included in this charge. Additionally, a utility may have a "per ERU" with a cap fee structure. This stipulates that any parcel with more impervious surface than the cap will pay the fee at which the structure is capped. A cap of 4,000 square feet means any residential property with more than 4,000 square feet of impervious surface will be charged for 4,000 square feet. Stormwater utilities with "per ERU" fee structures estimate the amount of impervious surface on individual properties using GIS or other methods. The impervious surface area on a property is divided by the size of the ERU to get the

number of ERUs on that property. A utility may also round up or down to the nearest ERU. The number of ERUs, rounded or not, is then multiplied by the price per ERU to get the stormwater fee owed for the individual property. In the example calculation provided above in Table 3 and Equation 3, a property with 3,000 square feet of impervious surface will pay a fee of $4.44 per month because it is 1.11 ERUs.

Table 3: Example fee per ERU

ERU Size	Monthly Fee Per ERU
2,700 square ft.	$4.00

Equation 3: Example calculation at 3,000 ft² of impervious surface

$$\frac{3{,}000\ ft^2}{2{,}700\ ft^2\ per\ ERU} = 1.11\ ERU$$

$$1.11\ ERU * \$4.00\ per\ ERU = \$4.44\ fee\ per\ month$$

Stormwater Monthly Billing

Residential Monthly Bills

Table 4 shows that at 3,000 square feet of impervious surface, the median monthly residential stormwater bill is $5.00, while the largest is $29.40 and the smallest is $0.50. The median bill at 6,000 square feet of impervious surface is also $5.00. The minimum and maximum bills at 6,000 square feet are the same as at 3,000 square feet. These statistics being the same at each impervious surface area is due to the fact that residential stormwater fees are overwhelmingly flat fees.

Table 4: Residential minimum, median, and maximum Bills at 3,000 and 6,000 ft² of impervious surface

	3,000 ft²	6,000 ft²
Minimum	**$0.50**	**$0.50**
Median	**$5.00**	**$5.00**
Maximum	**$29.40**	**$29.40**

Figure 3: Monthly residential stormwater fees at 3,000 square feet of impervious surface (n = 104)

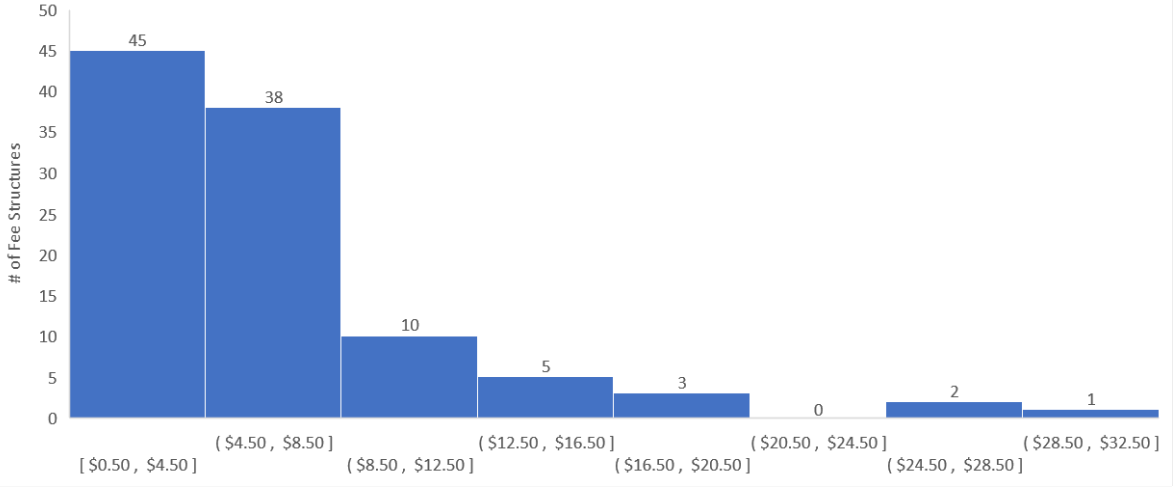


Figure 3 displays the variation in single-family residential stormwater billing at 3,000 square feet of impervious surface. Note that these comparisons do not include the level of service provided, which can vary widely based on the stormwater utility's goals, regulatory mandates, service area, and population. For example, the level of service provided by a utility may be high in municipalities and counties where stakeholders demand greater infrastructure investment, usually to address issues such as flooding. In areas where the water quality is impaired, the federal government's requirements may involve higher levels of stormwater management at the local level.

Multi-family Monthly Bills

Table 5 (right) captures the minimum, median and maximum bills at 4 and 10 Equivalent Residential Units. The table displays that 61 of the 104 fee structures charge multi-family properties unique fees from single-family residential. For four living units, or 6,000 square feet for utilities, the minimum monthly stormwater bill is $0.67, while the maximum is $51.00, and the median bill is $13.23. The median bill at 10 units or 15,000 square feet of impervious surface is $30.00, the minimum is $1.00, and the maximum is $136.00.

Table 5: Multi-family minimum, median, and maximum bills at 4 and 10 Units

	4 Units (6,000 ft^2)	10 Units (15,000 ft^2)
Minimum	$0.67	$1.00
Median	$13.23	$30.00
Maximum	$51.00	$136.00

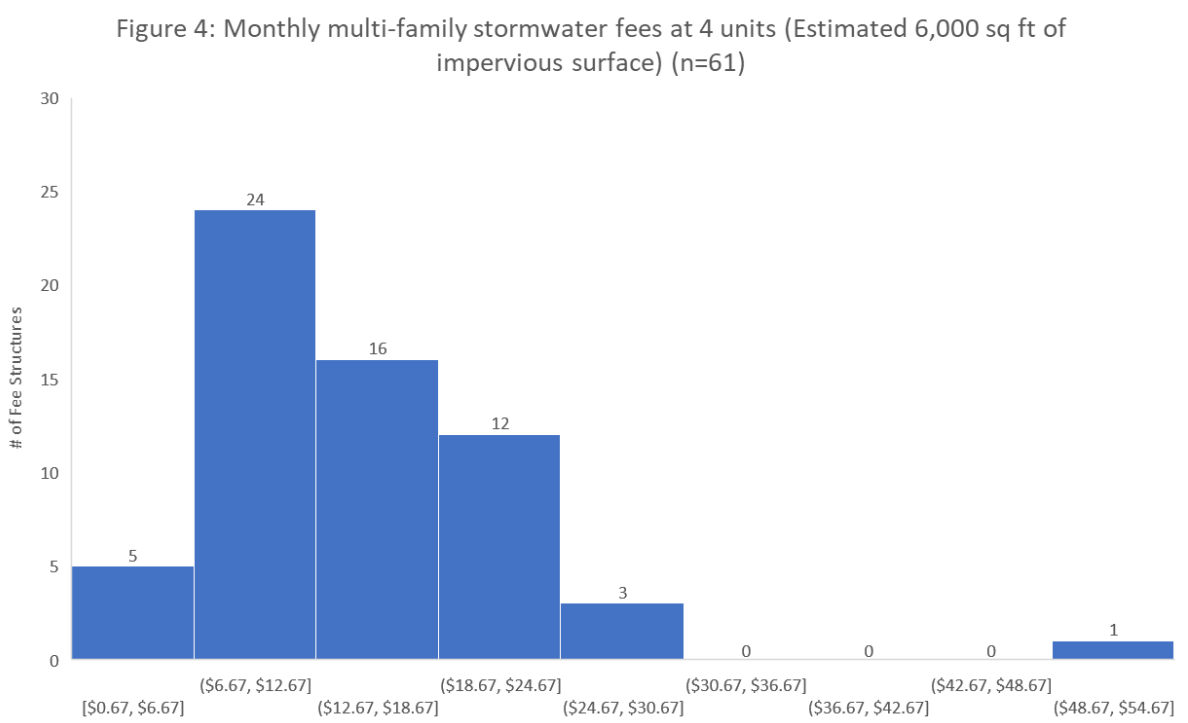


Figure 4 above displays the variation in multi-family residential stormwater billing at four living units or 6,000 square feet of impervious surface. Note that these comparisons do not include the level of service provided, which can vary widely based on the stormwater utility's goals, regulatory mandates, service area, and population.

Nonresidential Monthly Bills

Table 6 breaks down nonresidential fees by showing minimum, median, and maximum bills at 10,000 and 50,000 square feet of impervious surface. The table encapsulates 101 of the 104 fee structures that charge stormwater fees to nonresidential customers. At 10,000 square feet of impervious surface for nonresidential properties, the largest monthly bill is $85.00, and the smallest is $0.83. The median bill is $15.61 per month. At 50,000 square feet of impervious surface, the median bill is $76.07, the minimum is $1.00, and the maximum is $425.00.

Table 6: Nonresidential minimum, median, and maximum bills at 10,000 and 50,000 ft² of impervious surface

	10,000 ft²	50,000 ft²
Minimum	**$0.83**	**$1.00**
Median	**$15.61**	**$76.07**
Maximum	**$85.00**	**$425.00**

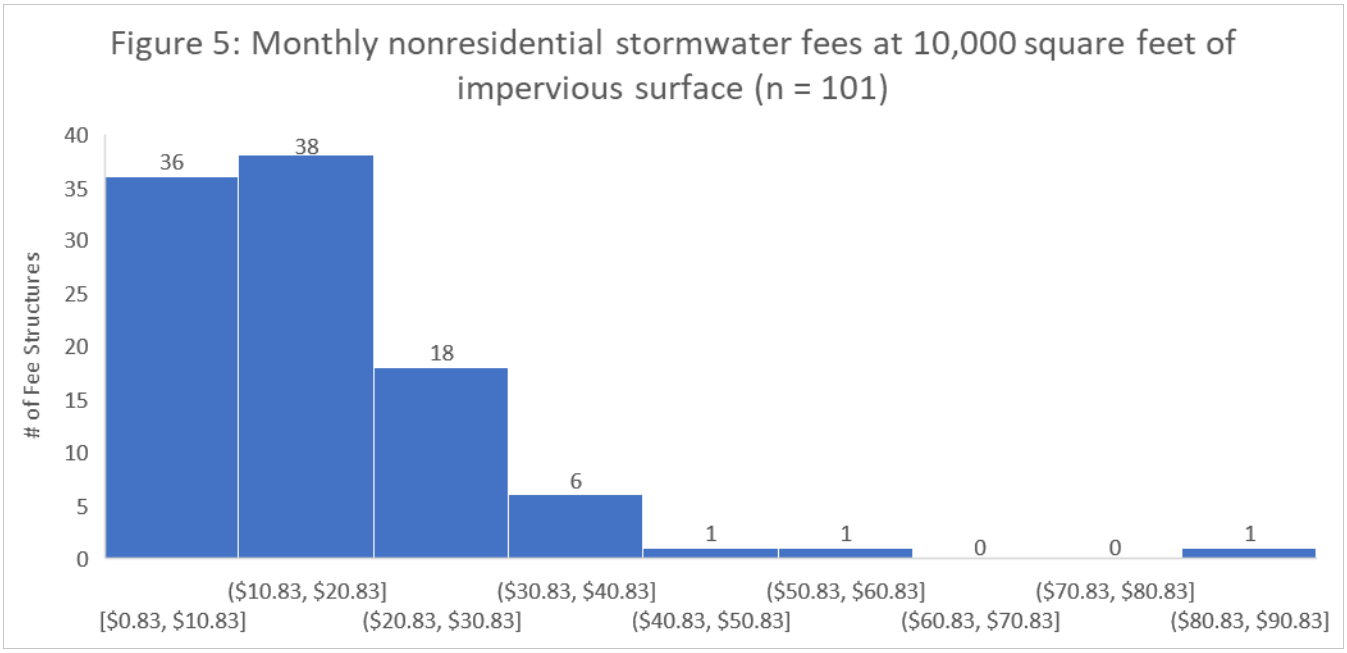


Figure 5 displays the variation in nonresidential stormwater billing at 10,000 square feet of impervious surface. Again, note that these comparisons do not include the level of service provided, which can vary widely based on the stormwater utility's goals, regulatory mandates, service area, and population.

Trends in Stormwater Fee Changes

Between fiscal year 2022 and fiscal year 2023, thirty utilities raised residential and non-residential stormwater fees, representing 30 percent of the utilities in the survey. This indicates that stormwater utilities have been actively evaluating their stormwater funding needs. Twenty-five utility providers raised their residential charges, resulting in an average monthly bill increase of $5.88 for households with 3,000 square feet of impervious surface area.

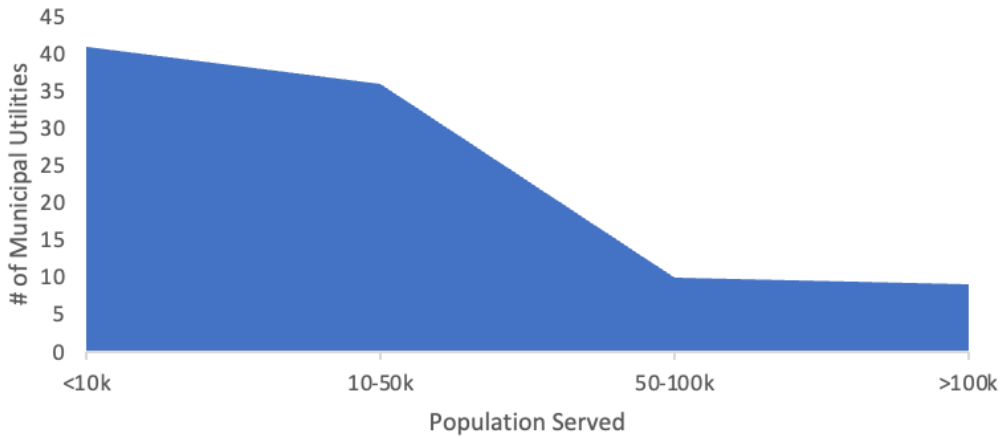
Residential fee increases ranged from $0.08 to $14.43. Twenty-seven utilities raised their fees for nonresidential customers, with an average increase at 10,000 square feet of impervious surface area of $3.46. For multifamily units, 22 utilities raised their fees, with an average increase at 15,000 square feet of impervious surface area of $3.87.

Supplementary Utility Information

Population Served

Most of the stormwater utilities in North Carolina have service populations under 50,000 people. As of the 2017-2021 five-year American Community Survey, the largest stormwater service population was 864,871, served by Charlotte. The smallest service population was 155 people on Bald Head Island. Overall, nine utilities service more than 100,000 people, ten between 50,000 and 100,000 people, 36 between 10,000 and 50,000, and 41 service fewer than 10,000 people. In total, the 96 municipal utilities that participated in the survey service approximately 4.4 million of the 10.4 million North Carolinians, representing 42 percent of the population of North Carolina. Including the county utilities serving unincorporated county areas, the percentage of North Carolinian households paying a stormwater fee is likely slightly higher than 42%.

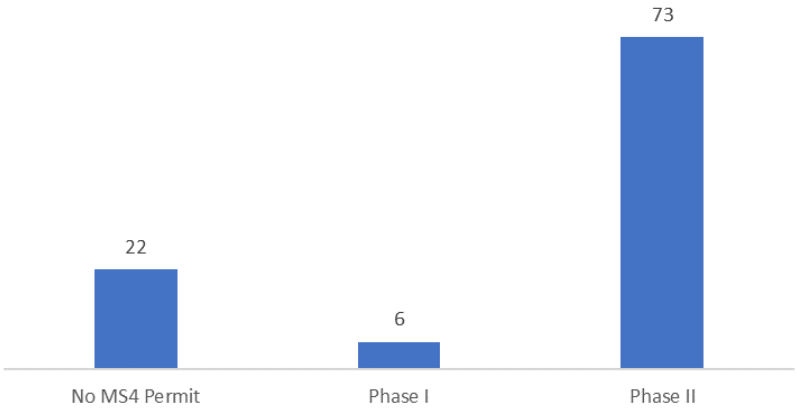
Figure 6: Service populations of municipal utilities (n=96)



NPDES Permitting

An MS4 permit (Municipal Separate Storm Sewer System) is issued to a municipality under the National Pollutant Discharge Elimination System (NPDES). Based on EPA policies, Phase I communities are larger municipal separate stormwater systems that generally serve populations over 100,000, have more acres disturbed by development, or have certain types of industrial activities. These entities have been required to have stormwater permits and maintain stormwater management programs (SWMPs) since 1990. Smaller municipalities may be issued Phase II MS4 permits and must maintain similar SWMPs. This survey shows six stormwater utilities (6 percent) have Phase I MS4 permits, while 73 (72 percent) have Phase II. Municipalities and counties with MS4 permits comprise 79 of the 101 (78 percent) stormwater utilities participating in this survey. The remaining 22 stormwater utilities exist in counties or municipalities that do not have MS4 permits. These communities have elected to create a stormwater utility to manage their stormwater challenges without the regulatory pressures associated with the NPDES program.

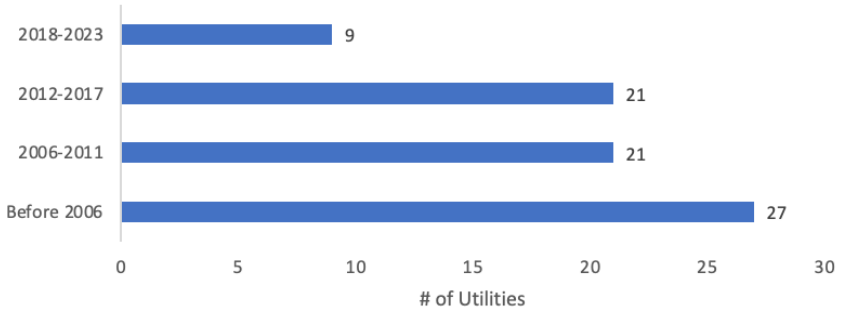
Figure 7: NPDES permit categories (n=101)



Year of Utility Creation

The first stormwater utility in North Carolina was created in 1992 in the city of Matthews. Figure 8 shows the years of utility creation for the 78 utilities in the survey for which a year is known. While most utilities were established in the 2000s and 2010s, many local governments would still benefit from a dedicated funding source for stormwater spending.

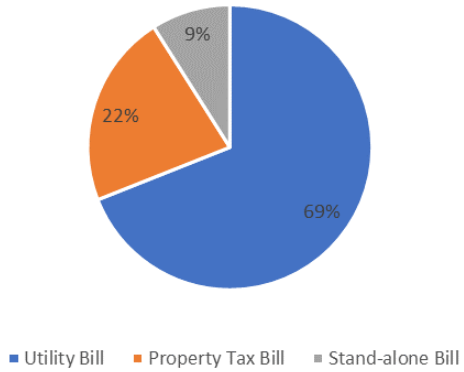
Figure 8: Year of stormwater utility creation (count) (n=78)



Billing Methods

Stormwater utilities can charge for their services through various methods, including stand-alone utility or property tax bills. Of the 93 utilities in North Carolina for which the billing method is known, 64 stormwater utilities charge their customers through a combined utility bill as their primary method of fee collection. However, not every stormwater utility operates in a county or municipality that offers water, sewer, or electric service. Therefore, some utilities rely on other methods of fee collection. Additionally, stormwater utilities that bill for their services on the county or municipality's utility bill may still have to send separate stand-alone bills to fee payers not connected to the other utility systems. Eight utilities charge their customers on a stand-alone bill. Stand-alone billing may increase administrative costs for a utility because of the need to send out separate bills to each customer. An additional 21 stormwater utilities charge for their services on the customer's property tax bill.

Figure 9: Stormwater billing methods (n=93)



Additional Resources for North Carolina Stormwater Utilities

This report is one of a series of stormwater fees and stormwater fee structure surveys in North Carolina, compiled by the North Carolina Division of Water Infrastructure and the Environmental Finance Center (EFC).

Visit https://efc.sog.unc.edu/resource/north-carolina-stormwater-fee-dashboard/, where, in addition to survey results, you will also be able to access the free, interactive fee dashboard, which facilitates fee comparisons among utilities and normalizes fee revenue by service population to compare utility fee revenue per capita.

For more information on making appropriate fee comparisons, please contact Melanie Sanchez at msanchez@sog.unc.edu.

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