STORMWATER UTILITY FEES

CONSIDERATIONS & OPTIONS FOR INTERLOCAL STORMWATER WORKING GROUP (ISWG)

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New England Environmental Finance Center

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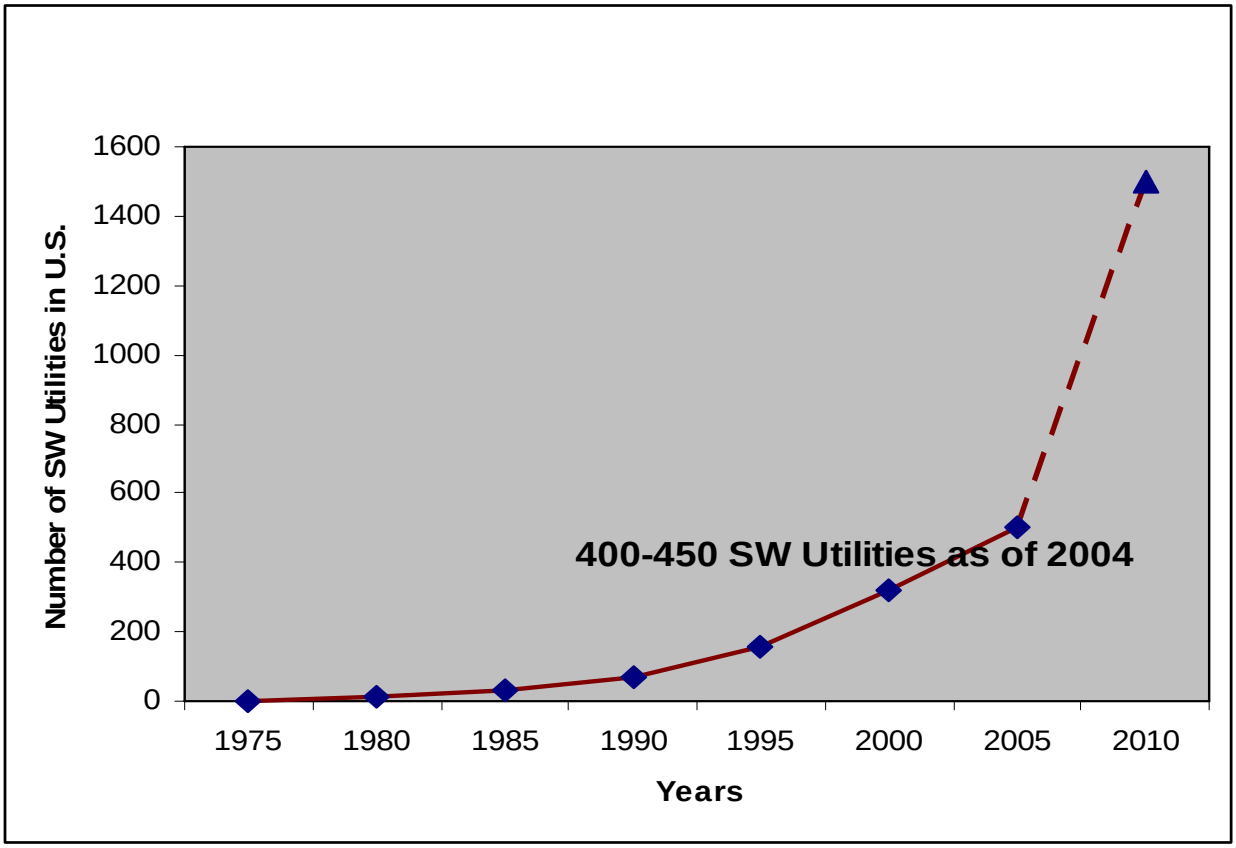
1. INTRODUCTION

Stormwater utilities are a concept whose time seems to have arrived. Established by relatively few communities in the 1970s as a method of funding flood control measures, stormwater utilities now exist in over 400 municipalities and counties throughout the United States. During the next 10 years, their numbers are expected to swell dramatically – by one estimate to over 2,000 by the year 2014.

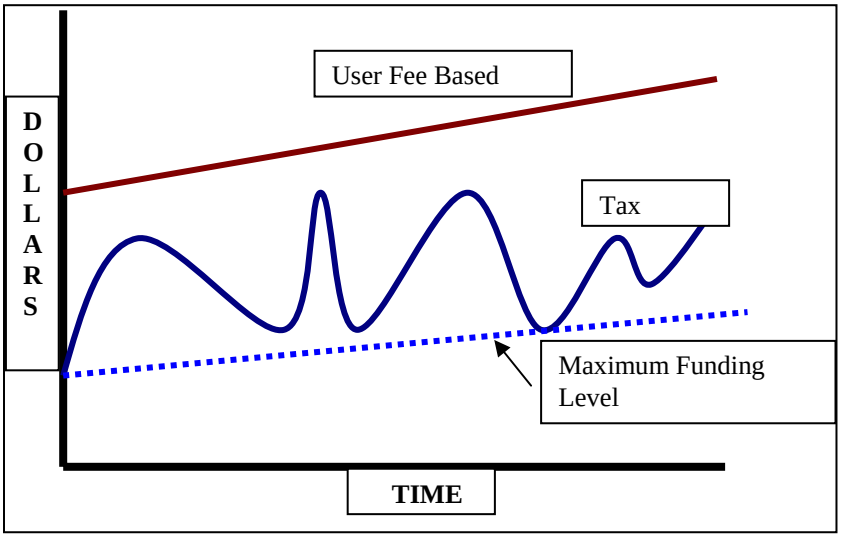


The reasons for this growth are multifold. Federal stormwater regulations passed in the 1980s (Phase I of the National Pollutant Discharge Elimination System Program, or NPDES), motivated many larger communities to seek alternative funding sources and organizational structures. And the Phase II NPDES requirements that now apply to smaller communities (21 in Maine) will be a driving force in the rapid growth of stormwater utilities during the next 10 years.

Federal requirements have provided the impetus for communities to reexamine funding alternatives, but the stormwater utility concept seems to be catching on quickly because it is a good one. While other options exist to General Fund support of stormwater programs, the utility approach has been identified in a number of analyses as the most equitable and effective approach to stormwater financing. As more and more communities establish stormwater utilities and sing their praises, this conclusion is being verified on the ground.

Stormwater utilities have the following benefits:

- They provide a stable, dedicated and adequate funding source for stormwater programs, which tend to get short shrift under the General Fund allocation process. With a reliable and sufficient funding source in place, stormwater managers can systematically address needs, instead of deferring them;
- They offer a more equitable system for raising revenues for stormwater management – basing fees on actual runoff impact, rather than property value. Under a stormwater fee system, non-profits and other tax-exempt entities that contribute stormwater are generally charged just like other properties. In general, user fees have the affect of shifting some of the burden of managing stormwater from residential to other properties; and



- They have potential to positively effect behaviors, especially when fees are based on impervious surfaces, or a system of credits are put into the system. At the very least, they raise awareness about the connection between human development activities and polluted runoff.

A primary challenge with implementing stormwater fees is gaining public acceptance and approval. In a political climate where anything that looks, sounds or smells like a new tax is viewed with suspicion, creating new public funding sources is no mean feat. Communities that have been successful have put considerable resources into educating both the public at large and decision-makers about the merits of user fees and stormwater management in general.

A second challenge is to fashion an approach to stormwater fees that works well for Maine communities. Difficult decisions must be made regarding a number considerations such as how the fee is to be structured, to whom and where it will apply and what expenses it will cover. For each of these considerations, a range of options exist. In some cases, the lessons learned from other communities provide guidance on the merits of particular options. But there is no "best" model that works well in all type of regions and communities. To quote a recent article on stormwater utilities: "…there is no cookbook solutions when designing a stormwater utility. Each community must make its own recipe from a list of possible ingredients…"

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The focus of this report is providing guidance to decision-makers on the development and implementation of a stormwater utility. The heart of report is Section 3, which evaluates the pros and cons of different stormwater utility considerations. The report also includes selected research findings and case studies. Finally, the report includes a series of observations from the author, based both on the selected research that has been conducted and the author's own experiences with Maine local government.

2. SELECTED RESEARCH FINDINGS

Following are selected research findings on stormwater utilities, collected mostly in the review of information available on-line. An impressive amount of materials already exists on this approach, and it is likely to grow as more communities develop and adopt stormwater utilities and user fees.

General

- Stormwater utilities have been in existence since 1970s, but recently there has been a dramatic increase in their number.
- As of 2004, over 400 stormwater utilities exist nationwide.
- The initial impetus for enacting stormwater fees was flood control. Now NPDES requirements are an important driving factor.
- By one estimate, there will be over 2,000 stormwater utilities by 2014.
- Florida has the most stormwater utilities (over 100). High concentrations also exist in Washington, Oregon and California.
- Florida conducts a survey of its utilities every two years – perhaps the best source for trends and issues facing utilities.

Utility Organization and Administration

- Nationally, 54% of stormwater utilities are established as an independent organization and 33% are established within Departments of Public Works. In Florida, 66% are established within Departments of Public Works.
- Over 70% of stormwater utilities are funded by stormwater fees only.
- About 70% of utilities combine stormwater bills with some other bill. About 20% send out with tax bill, and less than 10% send out separate bill.
- In addressing non-payment of fees, most utilities nationwide use lien on property; most utilities in Florida shut-off other utilities.

Stormwater Rates/Funding

- Average monthly charge for residential properties is in $3-$4 range per month for existing utilities ($36-$48 per year).
- A number of experts concur that $3 per household per month ($36 annually) represents a "psychological" threshold over which residents are less likely to support a fee when it is first introduced.
- Most utilities use impervious surface as the basis for determining fees (80% in Florida; 60% nationwide).
- Nationwide, over 80% of utilities claim fees cover either "most urgent" needs (30%) or "most" needs (55% -- lower percentages in Florida). Less than 20% say that fees meet "all" needs.
- Most stormwater fee structures exempt public roads (70% nationally, 60% Florida). Just over 50% of all utilities exempt undeveloped lands, including agricultural lands.

Legal Defensibility

- In Florida, about 12% of stormwater utilities have faced legal court challenges.
- Of those challenged:
  - Fee sustained or settlement reached: 46%
  - Case pending: 23%
  - Fee not sustained: 8%
- National survey in 1996 indicated 16% of utilities had faced legal challenges.

Identified Key Factors in Success

- Careful upfront planning as to goals of the utility and the steps needed.
- A well conceived and implemented public outreach campaign that involves both education and participation.
- Education of and involvement by key public officials.
- Presence of a staff "champion" – a person involved in all aspects of work and became focal point and major cheerleader for utility.
- Use of knowledgeable consultants is key in some cases.

Sources

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"Comparison of Florida and National Stormwater Utility Surveys," Presentation by Stephen Lienhart at 2002 Southeastern Conference on Stormwater Management.
"2001 Stormwater Utilities Survey," Florida Association of Stormwater Utilities.

An Internet Guide to Stormwater Financing. (Website produced by Center for Urban Policy and the Environment http://stormwaterfinance.urbancenter.iupui.edu/

3. STORMWATER UTILITY CONSIDERATIONS AND OPTIONS

There are multiple considerations involved in the establishment of a stormwater utility and user fees. This document focuses on 11 that are viewed as particularly important. They are:

1. **Start-up Strategy**: how the fee system is phased in – whether as a simplified interim system or as a more refined, comprehensive approach.

2. **User Fee Structure**: how fees are to be applied to the customer base, particularly the approach for residential versus non-residential properties.

3. **Approach to Multi-Family Units**: how multi-family residential housing units are treated under the fee system.

4. **Fee Basis and Data Collection:** what the fee is based on, i.e. actual versus estimated impervious area, and what information needs to be collected.

5. **Organizational Structure:** how the utility is organized within the municipal government.

6. **Fee Collection**: how customers are billed.

7. **Implementation**: the extent to which stormwater programs are implemented on the regional or local levels.

8. **Expenses covered:** what stormwater related expenses are funded by the fee.

9. **Geographic coverage:** whether the fees will apply to just the "NPDES regulated area" within the communities or town-wide.

10. **Exemptions:** which, if any, types of properties will be exempt from the fees.

11. **Credits:** whether reductions in fees will be offered landowners who take specific steps to manage stormwater or provide other benefits.

The table on the next page lists each of these considerations, with a series of possible options posed for each. **The different lettered options are intended to be reviewed separately for each consideration (reading from right to left), not as a preferred package of options (reading from top to bottom).** Using the analogy of a restaurant menu, the ISWG should consider all the listed "dish" options listed for each "course" consideration, ultimately aiming to reach agreement on what to order – based both on which dishes are most appetizing and how they complement the overall meal.

For your convenience, the table includes selected links (identified by underlines) that allow the reader to move quickly from the listed consideration to the evaluation of the options. As **fee structure** may be the focus of much of ISWG's discussion, links also are provided from the options listed in the table for this consideration and the detailed evaluation of each option. You may also find it helpful to use the *Document Map* feature (found under the *View* Menu in Microsoft Word) to move around the report.

Table #1: Stormwater Utility Considerations

#	Consideration	Option A	Option B	Option C	Option D	Option E	Option F
1	**Start-up strategy**	Starting with simplified fee structure and refining later	Starting with more refined fee structure				
2	**Fee structure**	Flat rate for residential; flat/tiered rate for non-residential	Flat rate for residential; variable rate for non-residential	Tiered rate for residential and non-residential	Tiered rate for Residential; variable rate for non-residential	Variable rate for all use classes (simple)	Variable rate for all use classes (complex)
3	**Multi-family approach**	Treat entire complex like a non-residential property	Represent as a percentage of 1 ERU, e.g. .6	If a tiered residential structure is used, put m.f. in "small" class	Treat every unit as one single-family property.	Some other option	
4	**Fee basis and data collection**	Lot Area	Lot Area in conjunction with generalized factor to estimate impervious surface or runoff impact	Lot-by-lot measurement of impervious surface (usually by use of aerial photos)	Use of other data to estimate impervious surfaces	Some other option	
5	**Organizational structure**	Separate utility	Within existing utility or municipal department	Organized mainly as an enterprise fund for financing purposes that relies on existing entities and resources			
6	**Fee collection**	"Regional" collection by Portland Water District or other established entity	Local collection: use of existing billing system: e.g. tax or sewer bills	Local collection: use of new billing system	Some other option or combination		
7	**Implementation: regional versus local**	Formal regional structure	"Adhoc" regional structure	Mostly local implementation (with some joint use of educational materials)	Some other option or combination		
8	**Expenses covered**	All components of stormwater system, including capital projects and CSOs	Everything except CSOs and major capital improvements	Just NPDES II requirements	Some other option or combination		
9	**Geographic coverage**	Individual boundaries of SM4 towns	Urbanized portions of SM4 towns covered by NPDES II requirements	Some other option or combination			
10	**Exemptions**	No exemptions	Roads and selected other public uses	Undeveloped land	Agricultural lands	Other exemptions	
11	**Credits**	No credits	Credits for reducing stormwater flow off-site	Credits for improving stormwater quality	Educational credits	Other credits	

CONSIDERATION #1: START UP STRATEGY

OPTION A: STARTING WITH SIMPLIFIED FEE PROR TO ADOPTING A MORE REFINED FEE STRUCTURE
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OPTION B: STARTING WITH MORE REFINED FEE STRUCTURE

BACKGROUND

A number of communities with stormwater fees started off with simplified rate structures – usually a flat rate approach – and then refine them later on. Examples include Eugene, Oregon and Fort Wayne, Indiana. The thinking behind this strategy is to gain acceptance of the concept of a stormwater utility and user fees by starting with a very simple fee structure, which can be refined later. Other communities choose to spend the upfront time and effort creating a refined system that they can sell to the public as a final product.

OPTION A: STARTING WITH SIMPLIFIED FEE STRUCTURE

PROS	CONS
• Allows public an opportunity to get use to the concept of a stormwater user fee prior to building in refinements. • Avoids the need of collecting extensive data on impervious surfaces or other factors prior to adopting approach. • May allow educational focus to be on why a stormwater fee is needed and how we all contribute to the problem (instead of focus on intricacies of fee structure).	• If there is the perception the fees are rushed through without due consideration, there may be a backlash. • While the simplified structure is in place, it may be more likely to be legally and politically. • Once the provisional system is adopted, it may difficult to change to a more refined system. • Even a simplified approach (such as tiered system for nonresidential) will still require considerable data gathering to establish thresholds.

OPTION B: STARTING WITH A REFINED FEE STRUCTURE

PROS	CONS
• Can be presented as a thoroughly-considered and well-conceived approach, rather than an interim measure. • Avoids some of the "cons" of Option A involving legal and political defensibility, and difficulty of changing the system once something is in place.	• Typically requires 18-24 months to develop and pass a refined system – a lot of time and money for a fee structure that still may not gain approval. • Would not have some the "pros" of Option A: particularly in avoiding need for extensive data gathering and being able to initially sell and administer a relatively simple system.

CONSIDERATION #2 FEE STRUCTURE

OVERALL BACKGROUND

Deciding how user fees are to be structured is perhaps the most critical and difficult decision involved with establishing a stormwater utility. This consideration has implications for a number of issues including cost, ease of administration and understanding, equity and legal defensibility. Because of its importance, fee structure is given particular emphasis in this report.

A review of some of the 400 communities with stormwater utilities reveals many themes and variations in how user fees are structured. To keep the evaluation simple, the focus of Consideration #2 is on how fees are charged for the two main use classes distinguished in most stormwater fee systems: residential and non-residential. Six different rate structure options are identified under this consideration, based on whether a *flat, tiered* or *variable* rate scheme is used for the two main use classes.

Flat fees: A uniform fee is charged for all the properties in a use category. Many communities, for instance, employ a flat rate for residential properties in which all homeowners are charged the same amount.

Tiered fees: Fees increase in steps, depending on whether the property falls within a particular size range, based on the amount of impervious surface or some other factor. A typical tiered approach creates *small, medium* and *large* categories for residential properties, charging a different fee for each class.

Variable fees: Fees increase incrementally based on the amount of impervious surface or some other factor. An example of such fee structure would be one in which a property is charged $3 per month for every 2,000 square feet of impervious area.

For residential properties, the most common type of fee structures are flat, tiered and variable. For non-residential properties, the most common type of fee structures are tiered and variable. As far as overall composition of fee structures, residential flat fees and non-residential variable fees are common combinations. In general, fee structures for non-residential properties are either the same type or more refined than residential properties. For instance, research did not uncover any communities that couple tiered residential fees with flat non-residential fees – or variable non-residential fees with tiered non-residential fees.

The table below summarizes the main fee structure combinations, identifying the 6 general options.

OPTION	RESIDENTIAL (Single-Family)	NON-RESIDENTIAL	COMMENT
A	FLAT	FLAT	Combined into one option, since pure "flat" approaches are rare.
A	FLAT	TIERED	
B	FLAT	VARIABLE	
C	TIERED	TIERED	
D	TIERED	VARIABLE	
E	VARIABLE (Simple)	VARIABLE	
F	VARIABLE (Complex)	VARIABLE	

While the treatment of residential and non-residential properties is a pivotal issue regarding fee structure, it is not the only one. The structure of fees can also vary according to how they treat multi-family units (often considered differently than single-family properties), what factors are used as the basis for the fee (e.g. impervious surface versus lot area), what types of uses, if any, are exempt from the fees, and whether credits are offered in certain circumstances. To avoid putting too many options on the table at once, however, these considerations have been "decoupled" from Consideration #1 and are treated separately and later on in the report.

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CONSIDERATION #2: FEE STRUCTURE

OPTION A: FLAT RATE RESIDENTIAL FLAT OR TIERED RATE NON-RESIDENTIAL

BACKGROUND

Under a flat rate system, all property owners within a particular use category pay the same amount in fees. Union, Ohio, for instances, has a fee structure with annual charges of $36 for residences, $72 for commercial properties and $118 for industrial properties. Preliminary research indicates, however, that relatively few utilities use a flat rate for non-residential properties, except as an interim measure while developing a more refined system. More common is a *tiered* approach in which non-residential properties are classified, usually by use and size of impervious area or some other factor, with all properties within a specified range charged the same fee. Valparaiso, Indiana is a good example of this approach.

VALPARAISO, INDIANA (50 miles east of Chicago)

Population: 25,500 Land Area: 10 square miles
Fee Established: 1998 Amount collected annually: $520,000

Classification/Tier	Fee Amount
Single Family	$3/month, or 36/year
Non-residential < 10,000 sf impervious	$3/month, or 36/year
Non-residential 10,000-40,0000 sf impervious	$12/month, or $144/year
Non-residential 40,000-160,000 sf impervious	$48/month, or $576/year
Non-residential >160,000 feet impervious	$96/month, or $1,152/year

PROS

- Reduces data collection needs – requires only rough impervious surface calculations to set non-residential classes.
- Easy to explain and for public to understand.
- Easy to administer.
- Might be adopted as an interim system, while more refined approach is developed.

CONS

- May be vulnerable to legal challenges as nexus between fee and volume of stormwater generated is weak, particularly for non-residential users.
- May be challenged politically by residential users who feel they are subsidizing large commercial uses.
- Essential "ceiling" for non-residential parcels may keep revenue stream relatively low.

FINAL NOTES

- Union, Ohio first considered a system based on impervious surface, but judged it to be too labor intensive for a small community. Also more than 95% of city was residential and impervious surfaces on most parcels were fairly uniform.
- Valparaiso system uses uniform rates for different classes, but classes justified as multiples of typical single family parcel – modified ERU approach.
- Both Union and Valparaiso are NPDES II communities.

OPTION B: FLAT RATE FOR RESIENTIAL; VARIABLE RATE FOR NON-RESIDENTIAL

BACKGROUND

Under this approach, residential properties are charged a flat rate, while non-residential properties are charged a variable rate that increases according to the amount of impervious surface or some other site factor.

The majority of communities that have adopted stormwater fees use this general approach, with many variations regarding how fees as calculated and structured. One approach is to charge non-residential uses a set amount per square foot of impervious surface (e.g.. $10 per 1,000 sq. feet per year). More commonly, utilities establish a basic unit of measurement, based on the typical amount of impervious surface of a residential parcel – which often ranges from 1,500 to 3,500 square foot. This unit is often referred to as the *Equivalent Residential Unit* (ERU). Non-residential properties are then charged according to how many ERU they contain (dividing their impervious surface by the area of 1 ERU). The fee structure used by Sanford, Florida is a good example of this approach

Sanford, Florida (near Orlando)

Population: 38,291 Land Area: 19.1 square miles
Fees established: 1991 Amount collected annually:$1.5 million

Type of property	Fee
Residential	$48/year
Non-Residential	$48/year/per ERU 1 ERU currently equals 2,126 square feet of impervious surface

PROS

- Offers more equity that flat or tier fee system for non-residential properties.
- Less vulnerable to legal challenge – approach has been upheld in court cases.
- Avoids having to collect comprehensive info on residential properties, which typically comprised more than 80% of land uses.

CONS

- Initial information gathering needs still substantial.
- Having one class of residential uses may lead to challenges, i.e. owner of very small lot unhappy to be paying the same as the owner of a "trophy" home."
- ERU concept initially difficult for some ratepayers to understand.

FINAL NOTES

- The amount of impervious surface in an ERU varies from community to community. Most are in 1,500 to 3,500 square foot range.
- In Sanford, Florida, fee applies to government-owned properties, including those owned by city.

OPTION C: TIERED RATE FOR RESIENTIAL AND NON-RESIDENTIAL

BACKGROUND

The approach of having a tiered structure for both residential and non-residential properties is not widely used by stormwater utilities. Many communities avoid creating residential tiers because of the considerable data gathering involved; ones that do in the interest of equity or political expediency often couple it with a more refined variable approach for non-residential uses (See Option D). Nevertheless, the approach does offer some distinct advantages, not the least of which is a system that is quite understandable and straightforward. Washington, North Carolina has such as system.

Washington, North Carolina

Population: 9,583 Land Area: 6.5 square miles

Fees established: 2002 Amount collected annually: $360,000

Residential		Non-Residential	
Impervious Surface Area	**Monthly Charge**	**Impervious Surface Area**	**Monthly Charge**
Up to 1,517 s.f.	$2.00	201 to 600 sq. ft.	$10.00
1,518-2322 s.f.	$3.00	601 to 20,000 sq. ft.	$20.00
Greater than 2,322 s.f.	$4.00	20,001 to 40,000 sq. ft.	$40.00
		40,001 to 100,000 sq. ft.	$50.00
		Greater than 100,000 sq. ft.	$100.00

PROS

- Tiered residential structure provides more equity than flat rate.
- Tired residential approach may buy more political support for approach.
- Tiered non-residential easy to understand and administer
- Use of ranges requires less precise impervious surface mapping – some time and cost savings.

CONS

- Establishing tiered residential rate more time intensive and expensive than flat rate – may not be worth it in light of relatively small differences in runoff impact for residential properties.
- Since collecting specific data on non-residential properties is necessary to classify into tiers, it may be just as easy to use a variable approach – which provides more equity.
- Essential "ceiling" for non-residential parcels may reduce revenue stream, and create legal/political vulnerability.

FINAL NOTES

- Fee in Washington, South Carolina initially established to pay for new capital improvements to system, with thinking that it will eventually pay for maintenance to existing system as well.

(*CONSIDERATION #2: FEE STRUCTURE)*

OPTION D: TIERED RATE FOR RESIENTIAL; VARIABLE RATE FOR NON-RESIDENTIAL

BACKGROUND

This approach is similar to Option C, except that residential properties are classified into different tiers, based on amount of impervious surface or some other factor. A good example of this approach in Griffin, Georgia, which has two tiers for residential uses. Other communities use three tiers (small, medium or large), and/or have a separate rate for multi-family units.

GRIFFIN, GEORGIA (40 miles south of Atlanta)

Population: 25,000 Land Area: 15.5 square miles
Fees established: 1997 Amount collected annually: $1.2 million

Category	Fee
Small Single-Family Residential (Parcels < 1,600 square feet)	$1.77 per month, or $21.24 per year (60% of the rate for one ERU)
Large Single-Family Residential (Parcels > 1,600 square feet)	$2.95 per month, or $35.40 per year (100% of the rate for one ERU)
Non-residential parcels	$2.95 per ERU per month, or $35.40 per ERU per year (ERU value set at 2,200 square feet of impervious surface)

PROS

- Provides residential owners more equity than options A or B.
- Less vulnerable to legal challenge.
- Threshold between different classes of residential uses might be established without having to do comprehensive calculations for every residential parcel.

CONS

- Information gathering needs substantial.
- The added time, expense and administrative complexity involved in adding tiers for residential uses may not be worth it (in light of the relatively small difference in impervious surfaces between different residential properties as compared to non-residential properties).

FINAL NOTES

- Griffin spent $180,000 in planning and creation of its stormwater utility.
- Griffin is NPDES II community
- Griffin's Public Works Director, Brant Keller, has been a prominent champion of the stormwater utility movement, and may be a good resource person/speaker if Maine decides to move ahead with the approach.

OPTION E: VARIABLE RATE FOR ALL (OR MOST USES): SIMPLIFIED APPROACH

BACKGROUND

Under this approach, all or most classes of uses are charged a rate that varies according to the amount of impervious surface or some other factor. There are no flat rates or tiers. A goal of such type of rates structures is to be as equitable as possible, with an effort to accurately assess properties according to their actual stormwater impact. Toward this end, some of these approaches can become quite complex, factoring in such considerations as pervious surfaces, location within a watershed or drainage area, or water quality. However, a considerable range of alternatives exists in terms of complexity and comprehensiveness, and some approaches, while requiring extensive data gathering, are quite simple in their application. The option considered here is one such simplified approach; option F explores more complex variable rate approaches.

As many experts believe that the extent of impervious surface is the best indicator of a site's overall stormwater impact, some communities base their stormwater fees – both residential and non-residential – on the actual impervious area of each property. Arvada, Colorado is one of these.

Arvada, Colorado (suburb of Denver)

Population: 102,153 Land Area: 57 square miles
Fee Established: 2001 Amount collected annually: $2.1 million

The current monthly stormwater fee is **$1.12 per 1,000 square feet** of impervious surface ($13.44 per 1,000 sq. ft. per year)

Examples of how this fee would be applied:

- Single-family residence with 2,800 s.f. of impervious surface: $3.14/month, or 37.68 annually
- Commercial use with 20,000 s.f. of impervious surface: $22.40/month, or $268.80 annually.

PROS	CONS
• Easy to explain and to determine (if accurate impervious surface info available). • Closest to "you pave, you pay" approach, and may ultimately be deemed as most fair, once rate payers are educated about the impact of impervious surfaces. • Creates a direct incentive for all users to reduce impervious areas.	• Of approaches already considered (Options A-C), requires most in the way of data collection and ongoing updating of information. • May incur a significant amount of administrative expense as rate payers (esp. home owners) reduce or increase impervious surfaces by relatively small amounts.

FINAL NOTES

- Residential users in Arvada pay an average of $3.51 per month.
- Community conducted strong educational campaign prior to adoption, and significant outreach continues.

OPTION F: VARIABLE RATE FOR ALL (OR MOST USES) MORE COMPLEX APPROACHES

BACKGROUND

The amount of impervious surface on a property, while a good overall indicator, is not the only factor involved in how much a particular parcel contributes to the overall stormwater problem. Some communities have tried to develop fee structures that consider some of these other factors. Ann Arbor, Michigan, for example, looks at both impervious and pervious areas, multiplying each established hydraulic response factors to determine how many "hydraulic acres" are on a site. Some utilities provide different rate structures according to where the structure is in the watershed. Others add a water quality component in which the rate is multiplied by factor, based on typical pollutant loading for the particular land use.

Ann Arbor Hydraulic Acre Approach
(Example of its application to hypothetical one acre of land)

Area in Acres	Hydraulic Response Rate Factor	Hydraulic Acreage
.6 impervious	.95	.57 impervious
.4 pervious	.2	.08 pervious
		.65 total
0.65 Total Hydraulic Acres x $38.88 (service charge rate) = $25.27 per quarter		

As an example of how refined (and complex) a communities fee structure can be, Boulder, Colorado calculates the amount of pervious, semi and pervious surface on each parcel, categorizes parcels into 5 classes based on the resultant runoff coefficient, has separate charges to account for capital projects versus O & M expenses, and has an additional charge according to which drainage basin the parcel is located in.

PROS

- Such systems are probably the most equitable since they aim to accurately determine the amount of stormwater running off each site.
- Such systems are probably the most legally defensible because of the tight nexus between the fee and runoff impact.

CONS

- Generally require extensive information gathering.
- Precise measurement of residential properties may not be worth the effort.
- May be too complex for citizens to understand.

FINAL NOTES

- Communities with more complex rate structures are generally larger communities (NPDES I) with large staffs and hefty stormwater budgets.
- Some of the complexities within rate structures are driven more by data collection issues – see Consideration #3.

TABLE B: FEE STRUCTURE BENEFIT ANALSYIS

RATE STRUCTURE OPTION	EQUITY	SIMPLICITY (For public and decision-makers to understand)	DATA COLLECTION NEEDS*	COST/EASE OF ADMIN.	LEGAL DEFENSIBILITY
A: Flat Res. Flat/Tiered Non-res.	Poor/Poor+	Excellent	Excellent	Excellent	Poor
B: Flat Residential Variable Non-Res.	Fair	Good	Good-	Good	Fair+
C. Tiered Residential Tiered Non-Res	Fair-	Good	Fair	Good	Fair
C. Tiered Residential Variable Non-Res.	Good	Fair+	Fair	Fair	Good
D. Variable all classes: Simplified	Excellent	Fair+	Poor	Poor	Excellent
E. Variable: all classes: Complex	Excellent+	Poor	Poor	Poor-	Excellent

* Assuming options use parcel-by-parcel measurement of impervious surface and/or other factors as opposed to using generalized calculations (see Consideration #3).

CONSIDERATION #3: APPROACH TO MULTI-FAMILY UNITS

BACKGROUND

Multi-family units are treated in a variety of ways in stormwater fee structures. In general, they do not fit neatly within the flat, tiered and variable approaches that are discussed in Consideration #2, and are thus easier to evaluate as a separate consideration.

There are several unique characteristics of multi-family units that make developing a viable fee structure challenging. One is the considerable range of building and project types that are encompassed by this term: high-rise apartments, townhouses, triple-deckers, duplexes, condominium units and others. At one end of the spectrum, a large apartment complex with a common parking area has very similar site characteristics to a commercial office or retail establishment. At the other end, many residential communities with condominium ownership are much more similar to single-family dwellings.

Another characteristic is that, for many types of multi-family facilities, residents do not own their units – bringing up the question of whether fees are charged to the property owner or to individual tenants. In condominium-type arrangements, residents typically own their dwelling, but parking facilities and other areas are owned in common. In this case should the individual owners be charged or should the homeowners association receive a lump bill?

OPTION 1: TREAT WHOLE COMPLEX LIKE NON-RESIDENTIAL PROPERTY

Under this option, the buildings and grounds of an apartment complex or other multi-family development are treated like a non-residential property, with the fee based on how many ERUs or square feet of impervious surface are present on the entire property. For rental units, the bill typically goes to the landlord; for condominium units, the bill might go to the homeowners association.

PROS

- Simplifies billing, and avoids needing to apportion fees among individual multi-family units.
- Fee based on impervious surface or some other site factor, not as a derivation of single-family rate – probably the most equitable.

CONS

- In some residential communities with condominium ownership, individual units much more similar to single-family residences – may be easier to charge each individually.
- Bills going to landlords or property owners tends to insult multi-family residents from stormwater management education and awareness efforts.

OPTION 2: TREAT AS FRACTION OF SINGLE-FAMILY RATE

Recognizing that a typical multi-family unit has less stormwater impact than a typical single-family unit, some communities set fees for multi-family units as a fraction of single-family fees. Iowa City, Iowa, for example, treats all single-family units as 1 ERU, charging these properties $2 per month, and all multi-family units as .5 ERU, charging each $1per month.

PROS

- Easy to administer – all units pay same fee.
- Avoids having to collect data on each multi-family property.

CONS

- Doesn't account for significant differences in different types of multi-family units, e.g. apartment buildings with multiple floors and relative to more spread out developments.
- In general, may overestimate impact, except for spread-out multi-family complexes.

OPTION 3: IF A TIERED RESIDENTIAL APPROACH IS USED, TREAT AS "SMALL" RESIDENTIAL PROPERTY

For communities that have a tiered residential fee structure that establishes "smaller" and "larger" categories or "small," "medium" and "large," one option is to treat all multifamily units as "small" residential uses.

PROS/CONS

- Similar to pros and cons of Option 2. Actual degree of how equitable this approach is dependent on how what actual fees are set for small residential class.

OPTION 4: CHARGE THE FLAT SINGLE FAMILY FEE PER UNIT

To keep things simple, some communities charged all residences the same fee per unit – whether they are single or multi-family. The rationale is similar to charging a flat fee for all single-family properties: that the difference in impervious surfaces (and overall stormwater impact) is relatively small (800 - 2,000 sf), especially compared to non-residential uses, and that creating variable fees may not be worth the trouble. Even for relatively small apartment units (i.e. 500 sf), one could argue that area taken up by parking, building areas used by all tenants and other common areas increases each units share of overall impervious surface – and stormwater impact.

PROS/CONS

- Similar to those for Options 2 and 3 except in degree. Probably the most simple to administer, but may be the least equitable.

CONSIDERATION #4: FEE BASIS AND DATA COLLECTION

BACKGROUND

Closely linked to the structure of fees is the consideration of what information is to be used as the basis for that fee structures. The majority of stormwater utilities use impervious surface as the basis for their fees. But others use lot area, lot area in conjunction adjusted by generalized factors based on land use type, or some other approach.

In general, these different approaches to information can be used to create any one of the fee structures discussed in Consideration 2. One can, for instance, use lot sizes to create either tiered or variable approach for some or all use classes. Communities that use lot sizes in conjunction with generalized factors often maintain a flat rate for residential properties, and apply formulas to nonresidential properties resulting in a variable rate.

The decision on what information to use as a fee basis has significant implications regarding the cost of data collection, ease of administration, legal and political defensibility and other factors.

OPTION A: PARCEL SIZE

Under this approach, fees are apportioned according to the size of the parcel, with larger parcels paying a higher fee. Rock Island, Illinois for example, uses the following tiered approach:

Gross Parcel Size	Fee
0-6,000 sf:	$2.82 month
6,000-18,000 sf.:	$4.39 month
18,000-87,000 sf,	$5.49/month
Larger than 87,000 sf	$4.39 per 28,000 sf/month

Sioux City, Iowa uses a straight variable rate of $2.50 per 10,000 square feet of lot area per quarter.

PROS

- Simple to collect/maintain information.
- Simple to administer.
- Only requires updating as new parcels are created or parcel sizes change.

CONS

- Poor nexus with actual stormwater impact – treats 1-acre paved lot the same as 1-acre undeveloped lot.
- May be vulnerable to challenges, both legally and politically.
- Creates no disincentive to pave.
- Seems to “punish” large landowners who keep land undeveloped.

OPTION B: PARCEL SIZE IN CONJUCTTION WITH GENEARLIZED FACTOR(S)

This approach has many variations. A common approach is to use lot size in conjunction with a pre-determined a runoff coefficient aimed at estimating runoff impact for different land use types. North Augusta, South Carolina, for example, establishes a base residential unit (in their case a 1/3 of acre lot with a runoff coefficient, termed the C-Factor, of .35), and this base is used to compute the number of ERUs per gross land area for different non-residential classes of land.

Property	C-Factor	ERUs per gross acreage (derived from base res. unit)	Gross Acreage of Sample Parcel	Total ERUs in parcel	Annual Fee (at $48/per ERU per year)
School	.52	5.28	2	10.56	$ 506
Shopping Center	.76	6.58	5	32.9	$1,579
Gas station and convenience store	.83	7.17	1	7.17	$ 344

In the above example, residential properties are charged a flat fee of $48 per year regardless of whether they are larger than 1/3 acre. Some communities apply the approach to residential properties, which are typically given factors in the .25-.35 range. This factor is then applied to lot size to determine the actual fee.

PROS

- Allows creation of fee structure without needing to collect parcel-specific information other than gross size and land use.
- Less labor intensive and expensive than a parcel-by-parcel analysis of impervious surface.

CONS

- This approach can be quite inaccurate in estimating actual site conditions – and ultimately runoff impact – especially for non-residential lots.
- If applied uniformly to residential properties, C-factors may accurately reflect runoff impact on small lots, but not for larger mostly undeveloped lots.
- May be vulnerable to political and legal challenges.
- Can be complicated to explain to public and to express in stormwater utility ordinance.

OPTION C: ACTUAL MEASUREMENT OF IMPERVIOUS SURFACES

Although the actual measurement of impervious surfaces is labor intensive, the majority of newer stormwater utilities use this approach – at least for non-residential properties. Most use GIS and aerial photography, with some ground verification. Costs for doing this can vary tremendously, depending on what resources and capabilities the community already had.

PROS

- According to many experts, imperviousness is the best overall indicator of stormwater impacts.
- Actual measurement of impervious surfaces (as opposed to estimating) provides an accurate and defensible basis for fees – less likely to be challenged, legally or politically.
- Technological improvements with GIS and remote sensing have made actual measurement of impervious surfaces on a parcel basis less daunting.
- Having accurate impervious surface data helpful for other planning/engineering purposes.

CONS

- Initially, much more labor intensive and expensive than option A: requires collection of site-specific data.
- More technically involved than other options
- Data needs constant updating as impervious surfaces added.
- Unpaved, but otherwise impervious or semi-impervious surfaces are more difficult to identify from aerials.

OPTIONS D: ESTIMATION OF IMPERVIOUS SURFACES

Actual measurement of impervious surfaces using aerial photos and GIS can be a time-consuming and relatively expensive process – at least if the chosen fee structure involves a tiered or variable rate for residential properties. An alternative is to try to estimate impervious surface based on other existing or easily obtainable parcel-specific information. Using assessment records that indicate the size of building footprints and other data may be the most promising option. These estimates of impervious surface may be accurate enough if the community opts for a tiered approach in which all properties within a range of surface area pay the same fee.

PROS

- Offers a cost-effective alternative to digitizing maps.
- For residential properties, building footprints typically comprise >than 80% of impervious surfaces.

CONS

- Assessing info generally doesn't include info on amount of impervious surface in parking areas, drive etc – less effectively as a tool for non-residential structures.
- Some assessment information on building footprints out of date.
- Info needs to be updated.

CONSIDERATION #5: ORGANIZATIONAL STRUCTURE

BACKGROUND

Stormwater utilities can be organized in a variety of ways. Most are established either as stand-alone entities or incorporated into an existing municipal department such as public works. For communities that wish to create the utility solely as a legal and financial mechanism, there are other organizational options as well.

OPTION A: INDEPENDENT "STAND ALONE" ORGANIZATION

Under this option, an entirely new entity is created. This approach is often used by communities that intend to have an extensive stormwater management program that requires more resources than existing departments can provide. Nationally, about 54% of stormwater utilities are formed this way . While it is difficult envision individual MS4 communities in Maine each establishing independent stormwater utilities with new administrative capabilities, a regional organization might be created through interlocal agreements that formalize coordination on all or some of the functions of a typical stormwater utility.

PROS	CONS
• Unifying stormwater management under one entity may allow effort to be focused and avoid duplication. • A regional entity might allow more of a watershed focus.	• Forming a new entity may be unnecessary in light of availability existing resources at the regional and local levels. • Forming a new entity may be politically unpalatable

OPTION B: ORGANIZED WITHIN EXISTING UTILITY OR MUNICIPAL DEPARTMENT

Under this arrangement the utility become part of another department or utility, most commonly the municipality's Public Works Department. This arrangement occurs about 40% nationally (76% in Florida). This type of stormwater utility often shares some of its staff with other programs but maintains its own primary staff and budget.

PROS	CONS
• Takes advantage of existing administrative capacity and resources. • Avoids political problem of creating a new entity. • Public works or engineering department already responsible for many stormwater-related duties.	• Formal creation of a new subdepartment may be unnecessary if functions already taken care of under existing structure.

OPTION C: ORGANIZED PRIMARILY AS A LEGAL AND FINANCIAL ENTITY

Under this arrangement, the primary purpose of the utility is to provide a legal and financial structure for creating a dedicated fund – rather than creating an administrative unit. User fees are put into an enterprise fund or restricted bank account, and are used to fund existing and new programs related to stormwater management. This approach is most often used by smaller communities, which are mainly interested in the financial benefits of a stormwater utility.

PROS

- Provide a dedicated funding source without the need for creating a new administrative unit or function.
- May be the most politically acceptable option if concerns exist about creating new "bureaucracy."
- Collected revenues can be dispensed to various departments/or contractors to implement stormwater related tasks.

CONS

- Unless a particular department or person is given responsibility for the utility, there may be lack of follow-through and coordination.
- Potential for lack of accountability regarding how money is dispersed.
- A lost opportunity, perhaps, to give the new utility organizational identity to better draw attention to stormwater management.

CONSIDERATION #6: FEE COLLECTION

BACKGROUND

Research indicates that fee collection is a significant issue for communities considering the establishment of a stormwater utility. Since stormwater fees tend to be in the $3-$4 per month range for residential properties, billing costs have potential to significantly chew into this revenue. The consensus among those with experience is that it is best to piggy-back on an existing structure rather than trying to establish a new billing system.

Many communities use the billing systems of existing utilities (water and wastewater). This approach, however, can have a strong bearing on Consideration 6: Geographic Area, because rural areas are less likely to be served by public sewer and water. Faced with the prospect of having to develop a separate billing system for rural residents (or billing them on their tax bill), some utilities decide to just apply their stormwater fees to the more urbanized area served by public sewer and/or water.

OPTION A: USE OF NEW OR EXISTING REGIONAL BILLING SYSTEM

PROS	CONS
• If there is an existing regional structure, avoids the costs and administrative burdens of creating a new system. • A regional billing system offers significant economies of scale. • A private billing company could be hired by competitive bid to serve multiple towns.	• No existing regional entity may exist, particularly for residents who aren't on public sewer and/or water. • Some customers may prefer to get bill from the municipality rather than regional entity or private billing company.

OPTION B: USE OF EXISTING LOCAL BILLING SYSTEM

PROS	CONS
• Using existing billing system much less expensive than creating separate billing. • Customers may be more accepting of a new charge on an existing bill than receiving a new bill and also prefer to get local bill.	• For some communities, the tax bill is the only existing mechanism for billing all of its citizens. If tax bill is used, more difficult to argue that stormwater fee is not a tax.

OPTION C: USE OF NEW EXISTING LOCAL STRUCTURE

PROS

- Fee can be properly explained as a separate charge, and not confused with tax bill.
- Opportunity for targeted educational materials on stormwater and the need for the fee.
- To reduce costs, billing could take place on a quarterly or annual basis.

CONS

- The most expensive alternative. The billing cost per customer may represent a significant portion of the fee, particularly if billed on a monthly basis.

CONSIDERATION #7: IMPLEMENTATION: REGIONAL VERSUS LOCAL

BACKGROUND

Stormwater runoff does not follow municipal boundaries. Most experts agree that regional stormwater planning that focuses on watersheds and drainage basins is the wave of the future. For the present, however, we must contend with the realities of our existing political structure, with its focus on home rule and lack of strong regional structures.

As the work of the Interlocal Stormwater Group (ISWG) has demonstrated, many aspects of stormwater management are well suited for an interlocal approach. The group has developed a joint approach in creating a 5-year Stormwater Management plan in accordance with the federal NPDES II requirements, and as that plan is implemented, significant opportunities exist for additional coordination. Implementation of other stormwater management measures may best handled on a town-by-town approach, although sharing of resources and expertise seems possible in most instances.

OPTION A: FORMAL REGIONAL

Parts of the country with strong county government have been able to fold stormwater management into their regional approach of planning and providing for services and facilities. Areas with multi-town sewer or water districts have also successfully added stormwater to the mix. In Maine, it is possible that larger utilities such as Portland Water District could assume some implementation responsibilities, as could the Soil and Water Conservation Districts, Regional Councils or non-profits such as the Casco Bay Estuary Project. The Interlocal Stormwater Working Group itself may eventually need to transform itself into more of a formal structure with increased staff resources and administrative responsibilities.

PROS	CONS
• In the long term, there may be a need to develop a formal regional arrangement to sustain stormwater management efforts in a systematic way.	• At the current time, the ad-hoc approach being used by the ISWG is working well – why change it? • Effective stormwater management still requires community-specific engagement – turning it over to a third party may not serve this purpose well.

OPTION B: AD-HOC REGIONAL

This is the approach currently being used by the Interlocal Stormwater Group. There is no formal organizational structure. The group is problem/task focused, and works on issues of mutual self-interest. Meetings are generally held once a month. Several subcommittees are charged with following through on specific projects/tasks.

PROS	CONS
• The approach has been very successful to date – if it ain't broke…. • The approach is flexible – allows communities to address issues of mutual concern. • Allows a regional focus without the political baggage of creating "another layer of government."	• Issue of whether existing level of interest and productivity are sustainable in the long-term. The group itself seems to recognize this issue in its efforts to hire a coordinator.

OPTION C: LOCAL

To date, implementation of stormwater management plans has largely been a local function in many communities throughout the country. The larger NPDES I communities, often isolated from one another geographically, have forged ahead independently in upgrading their stormwater management measures. While NPDES II is more likely to affect multiple communities in a region – creating more opportunities for coordinated action – some stormwater measures may remain best implemented on the local level.

PROS	CON
• Some stormwater management measures may be best managed at the local level, e.g. street cleaning and catch basin maintenance. • In some instances, it may be easier for a community to proceed with an implementation measure rather than to try to coordinate with others.	• In general, a go-it-alone approach is more labor intensive, duplicative and expensive than a coordinated, interlocal approach. • Even for implementation aspects such as system maintenance and inspection, there may be opportunities for joint purchasing of services and equipment sharing.

CONSIDERATION #8: EXPENSES COVERED

BACKGROUND

For many communities, the original impetus for adopting stormwater fees was/is impending NPDES requirements. Most communities, however, use the revenues generated from these fees to fund a wide variety of stormwater-related expenses – many which were formerly funded by General Fund revenues.

The stormwater fees collected by communities nationwide are generally sufficient to cover most O&M costs associated with stormwater and meeting the Five Minimum Measures of the NPDES II program. Fewer communities have been successful at covering the costs of all stormwater-related costs – including large-scale capital projects.

OPTION A: ALL COMPONENTS OF STORMWATER-RELATED SYSTEM INCLUDING CAPITAL PROJECTS AND CSOs.

PROS

- Provides stable, dedicated funding source to address existing and future needs in a systematic way (avoids fickleness of annual budget prioritization).
- Because of substantial shifting of financial burden off of general fund, the utility fees can be "sold" primarily as a *transfer* of charges rather than an additional charge.
- If fees inadequate to meet large capital needs in short-term, utility can use existing resources to bond.

CONS

- Without charging high fees or doing substantial bonding, may be difficult to raise adequate fees to cover all stormwater related expenses.
- If creation of stormwater utility and adoption of fees is coupled with large capital improvement "wish list," may scare people off.
- There may be some merit in starting off with a stormwater program in which most expenses are covered, and then adding more once public acceptance is better gauged.

OPTION B: ALL COMPONENTS OF STORMWATER SYSTEM EXCEPT MAJOR CAPITAL IMPROVEMENTS AND CSOs.

PROS

- Covering these type expenses is usually possible if modest fees are charged.
- Still has potential to cover items now covered with general funds, e.g. street cleaning and other maintenance, and to be touted as reducing reliance on general fund.

CONS

- If capital projects aren't given dedicated source, may be less likely to be protected during tight budgetary times.
- Public tends to be most supportive of fees when they see tangible improvements – such as capital projects.

OPTION C: JUST NPDES II REQUIREMENTS

PROS	CONS
• May be much easier to "sell" the concept as a response to an unfunded government mandate. • Would allow fees to be minimal. • Program could be broadened and fees increased as public acceptance grows.	• Creates an *artificial* separation between NPDES required programs and things communities are doing and will be doing anyway to better address stormwater problems. • Unless fees set very low, usually revenues exceeds expense for meeting minimum NPDES requirements – allowing for broader program to be funded.

CONSIDERATION #9: GEOGRAPHIC COVERAGE

BACKGROUND

The NPDES II regulations apply only to urbanized areas of the MS4s towns with bonafide stormwater systems. All properties in a community, however, contribute to stormwater runoff, including those in rural areas. Some communities with stormwater utilities apply their fees only areas served by utilities (public water, sewer and/or stormwater). Others apply fees community-wide.

OPTION A: INDIVIDUAL BOUNDARIES OF MS4 TOWNS

PROS

- From a scientific/technical basis, makes sense, as all properties contribute to stormwater runoff.
- Approach may also be perceived as more fair, as all residents share the burden.
- Besides the stormwater runoff of property, all residents also used road system and engage in behaviors that impact stormwater quantity and quality.
- Avoids "punishing" people who choose to live in compacts areas and "rewarding" those who choose to live on the large lot in the country.

CONS

- Rural landowners may have particular difficult seeing how the fee has any relationship to them, as no stormdrain system exists in their neighborhood.
- The natural features of many rural lands provide stormwater detention and filtering – charging these landowners a fee may be deemed unfair.
- Charging rural landowners may require new billing system, unless put on tax bill (See Consideration #5).

OPTION B: URBANIZED PORTIONS OF MS4 TOWNS COVERED BY NPDES II REGS.

PROS

- May be easier to build public support for fee when property owners can actually see a system that needs obvious maintenance and upgrading.
- Billing may be vastly simplified if it can be added to existing water or sewer bill.

CONS

- May be perceived as punitive toward those who choose to live in compact areas.
- Creates the impression that only those living in built-up areas contribute to stormwater problems.
- Limits amount of revenue that fees can generate.

CONSIDERATION #10: EXEMPTIONS

BACKGROUND

As all properties (with perhaps a few exceptions) contribute to stormwater runoff, it can be argued that all properties should be charged under a fee system. It is difficult to argue that a parking lot that serves a church or school should be treated differently than an identical lot that serves a commercial property. On the other hand, certain improvements such as roads constitute essential infrastructure that benefits the public. It also may make little sense to charge public entities that will in turn pay their fees with general fund revenues. Finally, it can be argued that undeveloped lands have a far less significant stormwater impact than developed ones, and should be exempt from fees.

OPTION A: NO EXEMPTIONS

PROS

- At least from an ideal standpoint, it is consistent to charge all property owners – as we all contribute to stormwater problems.
- Under this approach, there are no exemptions that reduce the amount of revenue collected or that make the system complicated.
- Residential and commercial users are often more supportive of stormwater fees when they feel that public and non-profit owners are being charged as well.
- Even undeveloped lands generally contributes some stormwater to the overall system.

CONS

- Roads and other essential public infrastructure provide benefits that counteract their stormwater impact.
- If publicly owned facilities and lands pay are required to pay fees, the money will likely just reallocated from General Fund revenues or some other source.
- There may be a number of uses/types of lands that either (1) do not create much if any stormwater runoff, or (2) it is politically expedient to exempt them.

OPTION B: EXEMPT ROADS AND SELECTED OTHER PUBLIC USES

PROS

- Roads are essential infrastructure; their benefits more than outweigh their stormwater impacts.
- For a municipality, paying fees on roads and other town-owned properties is tantamount to paying itself. For any public entity, the funds to cover the fees would likely come from the General Fund.
- Exempting private roads may avoid administrative and political headaches.

CONS

- Roads do contribute significantly to stormwater runoff.
- Fees on at least private roads could generate substantial revenues, and be a disincentive for excessive road building in new subdivisions.

OPTION C: EXEMPT UNDEVELOPED LANDS

PROS

- Undeveloped lands, particular large blocks of them, can help to mitigate stormwater impacts, particularly as they function to divert, store and filter stormwater.
- If the focus of the fee is on impervious surface, it is difficult to then charge owners of land with no impervious surfaces (or an extremely low ratio)
- It may be politically expedient to exempt these users as well.

CONS

- Undeveloped properties are the source of significant stormwater runoff in some cases.
- As users of the community's road system and other services, even owners of parcels with no or little stormwater impact, still contribute to the overall problem.

OPTION D: EXEMPT AGRICULTURAL LANDS

PROS

- One could argue that those engaged in agricultural are dealing with enough challenges and uncertainties without hitting them with a new fee.
- One could argue that those engaged in agriculture should be rewarded, not punished, for keeping land open. Conversion of farmlands to subdivisions creates significant impervious surfaces and alters natural drainage patterns.
- Agricultural lands managed according to BMPs have far fewer negative stormwater impacts, and can even function as retention areas within the neighborhood.

CONS

- In some cases, agricultural operations can create significant negative stormwater impacts, particularly regarding water quality.
- It may be more difficult to convince other property owners that they should pay their far share when they see a class of potential high-impact users exempted.

CONSIDERATION #11: CREDITS

BACKGROUND

Consistent with the thinking that stormwater fees can not only create a dedicated revenue source, but also provide an incentive to change behaviors, some communities have incorporated credits into their fee structures. Probably the most common credits are for the installation of on-site measures that detain or filter stormwater.

OPTION A: NO CREDITS

PROS

- Keeps fee structure simple to understand and to administer.
- Doesn't reduce revenue stream.
- Communities have had very mixed results with credits – it is often less expensive for owner to pay fee than to undertake actions to be eligible for the credit.
- If impervious surface used as basis for fee structure, it provides a built-in incentive to pave less.

CONS

- If a goal of stormwater fees is to change behaviors, credits provide an incentive.
- Credits often help to "sell" a stormwater program to the public and engage them in the stormwater management process.

OPTION B: CREDITS FOR STORMWATER ATTENUATION

A typical credit system provides fee reductions for measures that attenuate stormwater as measured relative to pre-development conditions. For example, maintaining volumes at predevelopment levels might warrant a 40% reduction, and maintaining them 10% below predevelopment levels might warrant a 60% reduction. A few credit systems focus more on the maintenance of systems – providing a credit for system that are annually certified by a professional engineer to be functioning correctly

PROS

- Can be an incentive for property owners to seriously address stormwater management on their property.
- Allows users to actively participate in the goals of better managing stormwater.
- Could be used as an incentive for better maintenance of on-site detention and other systems.

CONS

- Most state and local requirements already require stormwater detention – credit would be rewarding them for something they are already required to do in many cases.
- It may be cheaper for owner to pay stormwater fee than install measures or pay for regular inspections.
- Credits have potential to significantly reduce revenue stream, particularly if large non-residential users take advantage of them.

OPTION C: CREDITS FOR STORMWATER QUALITY

The focus of most stormwater fees is stormwater quantity, not quality. Although a few examples exist of stormwater fee structures that factor in quality concerns, this can make the system quite complex. More utilities try to address quality by providing a credit. High Point, North Carolina, for example, provides a 20% fee reduction for properties that direct stormwater into BMPs focused on improving water quality. The BMP must be referenced in the city's ordinance and designed to reduce suspended solids by 80%.

PROS	CONS
• Provides a way for stormwater quality to be addressed without making overall fee system too complex • A credit for stormwater quality may help in NPDES permitting.	• Measures to improve the quality of stormwater running off a site may be expensive – making it cheaper for owner to pay the full fee. • Could cut into revenue stream if many users take advantage of it.

OPTION D: EDUCATIONAL CREDITS

Some utilities provide credits to education institutions that agree incorporate stormwater-related topics into their curricula. Lake County, Ohio, for instance, provides up to a 15% credit to schools that agree to devote at least a minimum specified amount of time teaching students and employees about stormwater issues, and posting/distributing pertinent information and materials.

PROS	CONS
• Provides a novel way to broaden education and outreach effort. • Provides a way of enlisting the help of educational institutions in raising awareness. • Educational institutions may be more likely to work cooperatively, even if the credit doesn't pay for the added program.	• Unless effort is coordinated, efforts by individual schools may be redundant or haphazard. • The credit may not provide enough of an incentive for the school to meaningfully participate.

4. ANALYSIS OF COSTS AND REVENUES

The process of developing and implementing stormwater utility fees can be a daunting one, particularly in convincing the public that a new fee system is warranted and political leaders that the proposal is worthy of their initial and continuing support. As preliminary discussions unfold with elected officials and others, the following three questions may be particularly important to answer. First, is the amount of revenue this new system likely to be raise worth the energy and "political capital" involved in getting a system through the process? Second, will the amount of fees raised be adequate to cover the stormwater improvements needed, either by the community or by the ISWG collectively?" And third, to what extent do stormwater fees reallocate the funding of stormwater-related costs, particularly by bringing in the tax-exempt sector? The analysis presented below is aimed at providing information that will help to answer these questions.

Revenue from Residential Properties

Most communities that adopt stormwater fees, at least initially, charge residential properties owners in the range of $3-$4 a month, which amounts to $36-$48 per year. A few communities charge less; a considerable number charge more. For the sake of simplicity, the analysis below assumes a fee structure in which all residential property owners are charged a flat fee. This approach may somewhat overstate revenues in communities that have a significant number of apartment and multi-family units, and which employ a fee structure in which individual units are charged less than single-family residences. On the other hand, a fee structure that uses different residential tiers might generate somewhat higher revenues, as the system would capture higher fees from some of the larger residential properties.

Table 1: Potential Revenue From Residential Properties

		Annual Revenues Generated Under Different Residential Flat Fees Scenarios		
	No. of Households (2000)	**$3 month**	**$3.50 month**	**$4/month**
Portland	29,722	$1,069,992	$1,248,324	$1,426,656
South Portland	10,042	$361,512	$421,764	$482,016
Westbrook	6,855	$246,780	$287,910	$329,040
Freeport	3082	$110,952	$129,444	$147,936
Gorham	4,868	$175,248	$204,456	$233,664
Windham	5,543	$199,548	$232,806	$266,064
Scarborough	6,471	$232,956	$271,782	$310,608
Cape Elizabeth	3,501	$126,036	$147,042	$168,048
Yarmouth	3,438	$123,768	$144,396	$165,024
Falmouth	3,956	$142,416	$166,152	$189,888
Cumberland	2,560	$92,160	$107,520	$122,880
Saco	6,773	$243,828	$284,466	$325,104
Biddeford	8,616	$310,176	$361,872	$413,568
Auburn	9,794	$352,584	$411,348	$470,112
Total	$105,221	$3,787,956	$4,419,282	$5,050,608

Revenue from Non-Residential Revenues

For fee structures that will use a tiered or variable fee structure for non-residential properties, estimating potential revenues from such properties is less easily accomplished. To do this with a high degree of accuracy, one would need to measure the amount of impervious surfaces for all non-residential properties in each community. Assessing information may allow rough estimates to be made, but it seldom includes information on the amount of parking, driveways and other hardscape on the site. Communities with GIS capabilities may be in a better position to make such estimates, although it may require digitizing impervious surfaces on each tax lot, which can be time consuming.

The analysis below is intended to provide a very rough estimate of what sort of revenues might be expected from the non-residential sector. The estimates of non-commercial acreage for each community are "soft" numbers, based on review of valuation information and comprehensive plan inventories, as well as the researcher's own knowledge of these communities.

Table 2: Potential Revenue From Non-Residential Properties

				Annual Revenues Generated Under Different Non-Residential Rates		
	Rough estimate of developed non-residential acreage	**Rough estimate of impervious area (50% of total acreage)**	**Estimated # of ERUs (at 1 ERU = 2,500 square feet)**	**$3 per month per ERU**	**$3.50 per month per ERU**	**$4 per month per ERU**
Portland	2,800	1,400	24,394	$878,170	$1,024,531	$1,170,893
South Portland	2,400	1,200	20,909	$752,717	$878,170	$1,003,622
Westbrook	1,400	700	12,197	$439,085	$512,266	$585,446
Freeport	800	400	6,970	$250,906	$292,723	$334,541
Gorham	400	200	3,485	$125,453	$146,362	$167,270
Windham	1,200	600	10,454	$376,358	$439,085	$501,811
Scarborough	1,000	500	8,712	$313,632	$365,904	$418,176
Cape Elizabeth	80	40	697	$25,091	$29,272	$33,454
Yarmouth	200	100	1,742	$62,726	$73,181	$83,635
Falmouth	350	175	3,049	$109,771	$128,066	$146,362
Cumberland	80	40	697	$25,091	$29,272	$33,454
Saco	800	400	6,970	$250,906	$292,723	$334,541
Biddeford	800	400	6,970	$250,906	$292,723	$334,541
Auburn	1,400	700	12,197	$439,085	$512,266	$585,446
Total	13,710	6,855	119,442	$4,299,895	$5,016,544	$5,733,193

Because the acreage numbers are probably conservative and the assumption of 50% impervious surfaces may underestimate the amount of imperviousness on many sites, these estimates are likely to be on the low side of the spectrum. For a number of communities, the estimated revenues amounts are about the same as the estimates for residential properties. In reality, most communities nationally that have adopted stormwater fees find that the non-residential sector contributes 60-70% of total revenues, at least when they have a significant amount of non-residential property.

Total Revenue Estimates

Table 3 below provides total revenue estimates both all sectors. Again, because of the "softness" of the non-residential revenue estimates the information should be used with caution, but it provide an idea of the type of revenue potential for these fees.

Table 3: Potential Revenue From All Properties

	Annual Revenues Generated Under Different Rates			
	$3 per month per ERU	**$3.50 per month per ERU**	**$4 per month per ERU**	**Average Percentage Share of Non-Res. Property**
Portland	$1,948,162	$2,272,855	$2,597,549	45%
South Portland	$1,114,229	$1,299,934	$1,485,638	68%
Westbrook	$685,865	$800,176	$914,486	64%
Freeport	$361,858	$422,167	$482,477	69%
Gorham	$300,701	$350,818	$400,934	42%
Windham	$575,906	$671,891	$767,875	65%
Scarborough	$546,588	$637,686	$728,784	57%
Cape Elizabeth	$151,127	$176,314	$201,502	17%
Yarmouth	$186,494	$217,577	$248,659	34%
Falmouth	$252,187	$294,218	$336,250	44%
Cumberland	$117,251	$136,792	$156,334	21%
Saco	$494,734	$577,189	$659,645	51%
Biddeford	$561,082	$654,595	$748,109	45%
Auburn	$791,669	$923,614	$1,055,558	55%
Total	$8,087,851	$9,435,826	$10,783,801	53%

Even at fairly low rates, the revenue potential for stormwater fees is considerable. Revenue potential is greatest for more urbanized communities with a considerable amount non-residential development. For some of the smaller bedroom communities, potential revenues are more modest, at least at low monthly rates. Whether these amounts justify the process of implementing a fee system is a decision to be made by policy makers. But the fees have potential to both raise significant amounts and to broaden the base from which these revenues are drawn (see analysis of cost reallocation below).

In order to determine the adequacy of these fees to cover stormwater-related costs, analysis of expenses is needed, which is done below.

Expenses

Phase II Cost Considerations

A driving force behind the adoption of stormwater user fees nationally has been the National Pollutant Discharge Elimination System Program (NPDES), authorized by the Clean Water Act, which regulates point source discharges. In response to the Phase I portion of this program, many larger U.S. cities have already implemented enhanced stormwater programs and have adopted stormwater fees to help them do so. Smaller communities, including 28 in Maine (termed MS4 communities because they have Municipal Separate Storm Sewer Systems) must now comply with Phase 2 of this program, prompting consideration of possible funding sources, including stormwater fees.

Several different cost estimates exist for what it will cost communities to comply with NPDES Phase II requirements. When the program was adopted, EPA provided two different estimates, one a median value, both based on number of households in each community. The American Public Works Association (APWA) has provided two estimates as well, one for communities that plan to implement a "barebones" program; the other who wish to do a comprehensive program, both based on community population. The results of these estimates, summarized below in table, show a significant disparity in values when applied to the communities within the ISWG.

Table 3: Estimated Costs for Implementing NPDES Phase II Program

Community	Population (2000 Census)	Households (2000 Census)	EPA Estimate #1 Median Value ($4.19/household)	EPA Estimate #2 Mean Value ($9.16/household)	APWA Estimate for barebones program ($1.33/capita)	APWA Estimate for comprehensive program ($10.96 per capita)
Portland	64,249	29,722	$124,535	$272,254	**$85,451**	$704,169
South Portland	23,324	10,042	$42,076	$91,985	**$31,021**	$255,631
Westbrook	16,142	6,855	$28,722	$62,792	**$21,469**	$176,916
Freeport	7800	3082	$12,914	$28,231	**$10,374**	$85,488
Gorham	14,141	4,868	$20,397	$44,591	**$18,808**	$154,985
Windham	14,904	5,543	$23,225	$50,774	**$19,822**	$163,348
Scarborough	16,970	6,471	$27,113	$59,274	**$22,570**	$185,991
Cape Elizabeth	9,068	3,501	$14,669	$32,069	**$12,060**	$99,385
Yarmouth	8,360	3,438	$14,405	$31,492	**$11,119**	$91,626
Falmouth	10,310	3,956	$16,576	$36,237	**$13,712**	$112,998
Cumberland	7,159	2,560	$10,726	$23,450	**$9,521**	$78,463
Saco	16,822	6,773	$28,379	$62,041	**$22,373**	$184,369
Biddeford	20,942	8,616	$36,101	$78,923	**$27,853**	$229,524
Auburn	23,203	9,794	$41,037	$89,713	**$30,860**	$254,305
Totals	253,394	105,221	$440,876	$963,824	**$337,014**	$2,777,198

In general, these numbers seem more helpful in providing general context for what type of cost ranges are possible than realistic estimates for what ISWG communities might spend for individual implementation programs. If the ISWG communities proceed with collaborative implementation, there may tend to be a focus on no-frills components on which all towns agree are the highest priority, rather joint funding of more ambitious projects. Therefore, the APWA "barebones" estimate may provide a realistic ballpark figure, with successful collaborations on particular program components allowing additional cost savings. On the other hand, such estimates would not reflect costs that individual communities might incur who which to go beyond the no-frills approach.

Rather than relying upon generalized estimates, the ISWG may want to develop more precise estimates of what compliance with NPDES requirements will cost. The Casco Bay Watershed NPDES Phase II Workplan, a 5-year management plan developed to help ISWG communities comply with NPDES requirements, provides an excellent template for estimating implementation costs. Using that workplan, at least one local engineering provided the ISWG with an estimate of what implementing the plan might cost. The group could ask other consultant to make estimates as well. Or it could make its own estimates.

Other Expenses

Beyond covering costs associated with NPDES II requirements, communities with stormwater utilities fees typically use the revenues raised to fund other programs/projects as well. Some use the funds to cover operating and maintenance costs. Some use the funds to cover needed capital projects, both replacement of aging infrastructure and new facilities. Others use revenues to address combined sewer overflows (CSOs) and flooding problems.

A selling point of stormwater fees is that they allow financing of projects and programs that are now funded mostly by the property tax. It may be misleading, however, to claim that a landowner's property taxes will be reduced by the corresponding amount of what is charged annually for stormwater fees. Because stormwater systems often suffer from deferred maintenance (and an inability to compete with other perceived community needs in the budget setting process), spending on stormwater typically increases after the enactment of stormwater fees.

Analysis of Funding Adequacy for NPDES Communities

Even though some of the analysis above is based on rough estimates, it supports several preliminary conclusions:

1. For ISWG communities, the amount of revenue likely to be raised by enactment of stormwater utility fees appears more than adequate to cover minimum compliance with NPDES II requirements.
2. Even at fairly low rates, the amount of revenue raised would probably be adequate to cover a number of other stormwater-related expenses, including O&M costs and selected capital improvements.
3. At higher rates, revenues may be sufficient to fund most aspects of a community's stormwater program.

These findings are generally consistent with other communities across the country. While NPDES requirements are often the impetus for enacting stormwater fees, communities find that they are adequate to allow them to go beyond minimum compliance and help fund other needed projects.

Reallocation of Stormwater Costs

One of the more attractive aspects of stormwater utility fees, at least to municipal officials, is the prospect of creating a revenue source in which all property owners contribute relative to their impact on the stormwater system. Unlike property taxes, stormwater fees are typically levied on properties owned by non-organizations, public entities and other normally tax-exempt organizations – thus capturing additional revenue and potentially reducing the burden on other property owners. Depending on how fees are structured, they generally have the effect of reallocating the costs of financing stormwater management efforts from residential properties to other sectors.

Without collecting large amounts of local data, it is not possible to accurately predict the extent to which adoption of stormwater fees would serve to reallocate stormwater costs within ISWG communities. A study conducted as part of development of a stormwater field in Marshfield, Wisconsin (population 20,000) compared how much respective sectors pay for stormwater management under the current tax system and under a proposed stormwater fee system. These results are summarized in the following table.

Table 5: Projected Reallocation of Costs in Marshfield, Wisconsin

Sector	Under Current Tax System	Under Proposed Stormwater Fee System
Residential	61%	28%
Commercial	33%	39%
Industrial	6%	12%
Tax Exempt	0%	19%
Other lands	0%	2%

It is worth noting that these projections are based on a city with a considerable amount of non-residential property, including many tax-exempt organizations.

The extent to which stormwater fees have potential to reallocate costs is largely dependent on how the fee is structured and how much developed property is owned by different sectors. In the Greater Portland area, for instance, there is considerable variation in how much developed is owned by tax-exempt organizations. In most instances, larger communities such as Portland, South Portland and Westbrook have the greatest proportion of tax exempt property, as well as other non-residential development. In some instances, however, small communities are home to large tax-exempt institutions – such as the University of Southern Maine in Gorham – that would serve to considerably shift burdens under a stormwater fee system.

Table 6: Rough Estimate of Additional Revenue Raised for Different Amounts of Tax-Exempt Properties*

Acres of developed property	Est. of Impervious Acreage (50% coverage)	Est. Area Impervious Surface (in sf)	Number of ERUs@ 2,500 s.f. per ERU	Est. Amount of Revenue Raised Annually
1000	500	21,780,000	8,712	$313,632
500	250	10,890,000	4,356	$156,816
400	200	8,712,000	3,485	$125,453
300	150	6,534,000	2,614	$94,090
200	100	4,356,000	1,742	$62,726
100	50	2,178,000	871	$31,363
50	25	1,089,000	436	$15,682
25	12.5	544,500	218	$7,841

*Assumes at $3/monthor $36 per year per ERU.

5. NEEFC OBSERVATIONS

In evaluating stormwater fee options, the staff of the New England Environmental Finance Center (NEEFC) has focused on providing an objective analysis of pros and cons. In researching this topic, however, it is difficult not to form impressions and opinions regarding the merits of different options and how the approach might be best adapted in Maine. While NEEFC staff views its primary role as one of providing neutral analysis to the ISWG, it sees merit in offering the group some observations regarding the development of user fees, some which are value-laden. Below are eight such observations.

1. No public approval – no stormwater fee.

In trying to fashion the best stormwater fee approach, it is always helpful to keep political acceptability in mind. The idea of *any* new fee will be looked at suspiciously by a significant segment of Maine's citizenry, and new fees to deal with *stormwater*— an issue that is just emerging on the public's radar screen – will be a particularly hard sell. Even as different options are considered on their technical merits, discussion should be tempered by how the approach might "play in Peoria" – or in this case, in places such as West Freeport, North Gorham, Stoudwater or Pride's Corner.

2. A "transparent" process and product may be particularly important in Maine

Compared to some of the larger U.S. cities that have developed fairly sophisticated stormwater fee systems, local government in Maine – even in some of its more populated communities – has a folksy, small-town feel to it. What might pass muster in a city of 1 million may not get very far in Maine. Citizens generally know that, individually or in groups, they can wield a considerable amount of influence on town affairs, and they demand a high degree of transparency in their communities' decision-making processes and policies they can clearly understand. If a proposed fee structure contains a methodology for estimating impervious surface area, you can be assured that a certain percentage of citizens will go out on their lot with a tape measure to see if the estimate is accurate. Knowing this, many public officials – even those who generally support the concept of a stormwater fee – are likely to lead cautiously, trying to get sense of the public's sentiment. In this type of environment, a premium will be placed on a creating a clear, open process for deliberation of user fees, and the development of a proposal that is easy to explain and defend.

3. Identifying clear public benefits is helpful

Among the insights of those who have successfully implemented fees is the observation that citizens are much more willing to pay for something when they can see a tangible benefit. Stormwater management, unfortunately, can sometimes seem like an invisible service, especially to a public that has not been made better aware of its aspects. The "Think Blue" PR campaign is excellent because it begins to form in the public's mind the cause and effect relationship between human activities and polluted runoff. Interestingly, the ads all focus on flows into *stormdrains* – an infrastructure element that most people are aware of. The down side of this approach is that sends the message that stormwater management is not really an issue for the resident whose road is not served by the storm drain system. The challenge of showing rural residents (not regulated by NPDES) clear benefits is further discussed in Observation #5 below.

4. "Unfunded government mandate" sales pitch only goes so far

The federal NPDES program is a primary impetus behind our discussion of stormwater fees, and the temptation is strong to use the "unfunded mandate" argument in trying to gain public acceptance. A number of experienced stormwater utility advocates caution against this approach. For one thing, fees typically bring in revenues that exceed the funds needed to implement NPDES II (unless very minimal fees are adopted). These additional revenues can be used to shift stormwater- related expenses from the General Fund to the dedicated stormwater fund. Although the latter benefit can be used in building public support, it should be used with caution as well. General fund support of stormwater program has often resulted in the later being chronically unfunded with significant deferred capital and maintenance needs. Once a dedicated funded source is created with establishment of a stormwater utility, a tendency exists for stormwater-related expenditures to go up. Consistent with observation #3, most experts believe user fees should be should primarily sold on their benefits to the community.

5. The issue of geographic coverage is a challenging one

One can make a strong argument that if user fees are to be implemented, all properties owners in a community should pay into the system, since all lands (with a few exceptions) have stormwater impacts. But as far as actually getting a user fee system adopted, applying it to rural areas may be a tough sell.

- Whereas property owners in urbanized areas can actually see stormwater infrastructure and be informed about costs involved in maintaining and improving it, rural owners are less likely to understand how the fee benefits them.
- For areas already served by sewer and water, owners are generally in the habit of periodically paying water and sewer fees – and they may not strongly object to paying several additional dollars a month (if they are clearly informed of why it is needed). It is harder to picture rural residents readily accepting a new billing from the town for stormwater.

While the approach of, at least initially, getting a fee system in place for urbanized areas regulated under NPDES has tactical merit, it may be viewed as a penalty levied against people who choose to live in-town as opposed to the country – and therefore "anti-smart" growth. For these and other reasons, this consideration will be an especially challenging for ISWG to grapple with.

6. The flat fee approach for residential classes has some distinct advantage

Many communities with stormwater fees use a flat residential rate because:

- There is relatively small variation in impervious surfaces between residential properties, at least compared to non-residential properties;
- Since residential properties typically comprise more than 80% of total properties, treating this as a flat rate class greatly simplified data collection requirements and overall administration;
- The approach has been upheld in legal challenges – when the community uses accurate sampling to determine an average amount of impervious surface for a residential property (and establishing it as *the equivalent residential unit or ERU*) and uses this unit as the basis for assessing fees on non-residential properties.
- For communities that do have tiered residential rates (e.g. small, medium and large), the variation in monthly rates is relatively small – i.e $3 versus $4.50 versus $6 – which again begs the question of whether the additional revenue is worth the trouble of creating tiers.

Although the main argument for a tiered residential rate is that it is more equitable, the real question is whether this additional degree of equitability is necessary given the relatively small variations in likely fees for different classes, the relatively narrow range of impervious area typical for residential uses, and the resulting need to collect a substantial amount of new data and administer a more complex system. If equity were the only goal, there are plenty of additional refinements that one might consider regarding different non-residential uses or factoring in water quality issues – but the goal of simplicity and transparency are counterbalancing considerations.

Ultimately, consideration of a tired residential approach may be mostly a political one. In some communities, the few dollars difference in monthly fees between a "small" and "large" residential property may be needed to gain public support. If this is the reality (as opposed to the perception), the focus should be on keeping the tiered system as simple as possible, rather than creating lots of classifications that tend to split hairs.

7. Lot-size-based fees are alluring, but…

Some communities use lot sizes as the basis or in creating their fee structures. The primary benefit of using parcel size is that it is information that is often readily available to the community. The argument can also be made that, in general, the larger a parcel's land area, the more water runs off the property during storm events, increasing overall impacts. The weakness of this approach is that it gives no consideration to the whether the site is undeveloped, and to its ability to absorb or attenuate storm flows based on extent of imperviousness or other factors.

To partially address this weakness, some fee structures use lot area in conjunction with coefficients aimed at accounting for the typical amount of development for different land use classifications. This approach may provide good correlation with actual impervious surface for small parcels, but the use of a constant factor of all residential properties (typically .25), overestimates impervious surfaces for larger parcels. Actual studies show actual percentages of impervious areas drops at a fairly constant rate as lot area increase.[1] For these and other reasons, actual measurement of impervious surfaces is the method of choice by many "experts" in this field and by the majority stormwater utilities – despite the extra work involved in mapping impervious areas.

8. Trying to cover all stormwater-related may make fees too high

The textbook approach to setting user fee rates is to identify what stormwater-related expenses are to be covered, and then determine how much the customer base needs to be charged to meet this level. While this ultimately may be the "official" methodology in establishing fees, at the front end of the process there may be some benefits in doing this approach in reverse – figuring out how much revenue will be raised under several different fee scenarios. Otherwise, communities could find themselves backed into a corner of proposing fees that are much higher than the public is willing to pay – at least initially. For a community with 8,000 households and a typical amount of non-residential properties, a $3 per month fee may bring in between $450-550K annually. Knowing this, the community can make decisions about the extent to which existing and future stormwater expenses will be funded by the fees.

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[1] As an example, consider two residential properties: one a 10,000 square foot lot with 2000 feet of impervious surface and the other a 5-acre lot with 4,000 square feet of impervious surface. Applying a .25 "intensity of development" factor, the impervious surface estimate for the first lot would 2,000 square feet – right on the money; but for the second, the estimated impervious surface would be 1 acre – way off the mark. Even accounting for the longer driveways typical of rural residential lots, this approach can grossly overstate imperviousness.

6. CASE STUDIES

The table below provides some basic information on 10 (of the more than 400) communities in the country with stormwater utilities. Detailed case studies are provided for communities whose name is underlined and can be quickly accessed by clicking on the community name. These cases studies have been excerpted from *An Internet Guide to Stormwater Financing*, a website developed by the Center for Urban Policy and the Environment at Indiana University-Purdue University Indianapolis. Unabridged version and other case studies may be found at the website: http://stormwaterfinance.urbancenter.iupui.edu/.

A SAMPLE OF COMMUNITIES WITH STORMWATER FEES

Municipality	Pop.	Land Area (sq. miles)	Fee Enacted	Organization	Fee Structure Type	Avg. res. monthly charge	Annual revenues
Union, OH	6,400		1997	Part of Public Works Dept.	Flat residential and non-residential	$3.00	$72,000
Valparaiso, IN	25,000	10	1998	Dept. of Stormwater Management	Res: Flat Non-res: Tiered	$3.00	$520,000
Washington, NC	9,583	6.5	2002	Part of Public Works Dept.	Res: Tiered Non-res. Tiered	$3.00	$360,000
Takoma Park, MD	17,299	2.1	1996	Part of Public Works Dept.	Res: Flat Non-res: Variable	$2.00	$200,000
Marshfield, WI	18,800	12.7	Proposed	Part of Public Works Dept.	Res: Flat Non-res: Variable	$5.50 proposed	$1.4 million estimated
Griffin, GE	25,500	15.5	1999	Stormwater Dept.	Res: Tiered Non-res: Variable	$2..95	$1.2 million
Arvada, CO*	102,153	57	2001	Part of Public Works and Utilities Dept.	Variable – All classes	$4.00	$2.1 million
Greeley, CO	76,930	29.9	2002	Separate Stormwater Division	Res: Variable Non-res: Variable	$3.75	$2.4 million
Olympia, WA	42,514	16.7	1986	Part of Public Works Dept.	Res: Tiered Non-res: Variable	$6.00	$2.5 million
Fort Collins CO	118,652	46.5	1980	Within Utilities Dept.	Variable all (complex)	$7.44	$5.6 million

UNION, OHIO

Union is a small city in Southwest Ohio that is 15 miles north of Dayton. The city is a predominantly residential community with approximately 6,400 residents. The community's proximity to Dayton and its low cost of living have made it a fast-growing community where 40-60 new homes are being built each year. Union has no income taxes, lower than average property taxes, and low utility rates that are made possible by the city's small, efficient government system. Union has the smallest number of city employees of any city of its size in Ohio.

Stormwater Management History

In 1987, a storm washed out an important road in the community and the idea of starting a stormwater utility fee to fund the maintenance and repair of the storm drain system was presented to the City Council and to the public. No one objected to the new charge because everyone in the small community had suffered the effects of the failing stormwater system and seen the damage stormwater had done to their community. The City Council passed Ordinance 794 quickly and the City of Union became one of the only cities in Ohio with a stormwater utility fee.

Stormwater Program Organization and Responsibilities

The stormwater program is organized under the city Department of Public Works and the department's seven hourly employees perform most of the stormwater program's responsibilities. The public works employees are mainly responsible for the operation and maintenance of the city's storm drain system but they also work on capital improvement projects and new storm drain construction. The employees clean out the catch basins twice a year and have completed several large projects since 1987 to correct problems in the old storm drain system and increase its capacity to handle new development.

Rate Structure

Union considered two types of fee systems: a system based on the number of square feet of impervious area on each property and a three-tiered system of flat rates based on property type. The impervious area- based rate system was judged to be too labor intensive for the small city's staff to implement so the city chose to use flat rates for residential, commercial, and industrial properties. Union city officials observed that the city was 95 percent residential and most lots had similar amounts of impervious area so the flat fee system was determined to be the most appropriate rate structure for their situation. The three-tiered rate structure of Union's stormwater utility fee currently charges its residential customers $3 a month, its commercial customers $6 a month, and its industrial customers $9 a month. The bills are sent out with the city water and sewer bills monthly. The stormwater utility fee rate structure has no credits or exemptions.

Table 1: City of Union Stormwater Utility Rate Structure

Property Classification	Stormwater Charge
Residential	$3.00 per month
Commercial	$6.00 per month
Industrial	$9.00 per month

Basis for Charges

The stormwater charges are based on a cost assessment that was done during the research phase of the utility project that took into account current and future operation and maintenance costs, capital improvements, staffing, and other budget considerations. The cost assessment results indicated that the community would require $4 or $5 a month from its residential customers but the charge was reduced to $3 by the city council in order to make the charge more acceptable to the public. The council planned to leave the rate low until residents saw the benefits of the improved stormwater system and then raise the rates at a later date to fund additional improvements. The rate has not increased since the fee's inception in 1987, but the rates may increase soon in order to fund water quality programs required by Phase II of the EPA's NPDES permit requirements.

Utility Budget

Stormwater fees produce around $72,000 each year in revenue. The city's estimated budget for stormwater service for the year 2000 is $75,300 (See Table 2). The revenue generated by the stormwater utility fees does not cover the costs of large capital improvement projects but it is used to back bonds and supplement grant funding received from the state. The stormwater utility budget currently allocates approximately $12,600 from its budget to match grant funds and $10,600 as debt service. The City of Union's stormwater program is currently receiving assistance from two Ohio Issue II grants that total approximately $98,000 for major infrastructure construction projects. The grant money will fund the replacement of two culverts that frequently back up and cause street flooding. Union does not have any impact fees levied on new development but requires developers to make any necessary improvements to the storm drain systems that the development will use in order to receive approval for the plans.

Table 2: City of Union Stormwater Utility Budget

Expenses	**Amount Budgeted**
Personnel	$35,047
Maintenance and Materials	$8,950
Debt Service	$8,695
Rentals (Including a portion of the lease payments on drain cleaning, equipment used by water, sewer and stormwater	$8,048
Land and Improvements	$7,160
Professional and Contract Services	$5,000
Miscellaneous	$2,400
Total	**$75,300**

Public Education

The City of Union does not have an active public education program. The city's population is small and the city's boundaries only encompass an area of about four square miles so the improvements that the stormwater utility fee has made possible are readily apparent to the small community. The City of Union initially had a public education program to educate its residents and prepare them for the new charges that would appear on their water and sewer bills but the program ended shortly after the stormwater utility began charging residents for stormwater services.

VALPARAISO, INDIANA

Valparaiso is located approximately 50 miles east of Chicago and about 15 miles south of Lake Michigan. The city has about 25,500 residents. The city receives an average of 39 inches of precipitation and 47 inches of snow each year.

Stormwater Management History

Prior to the establishment of a stormwater utility, there were no funds available for drainage problems. When drainage problems arose, the funds to address them were borrowed from the street department or the sewage utility. New drainage projects were rare unless they were part of a street or highway project.

Utility Creation

The City Engineer received several drainage complaints in 1996 after mild rainstorms and he prompted the Mayor to investigate the possibility of a stormwater utility. The mayor presented the issue to the Common Council for discussion and the council passed an ordinance in October of 1996 that established a Department of Stormwater Management. The department was charged with the task of investigating the city's drainage problems and developing criteria to rank the proposed projects. The Board of Directors of the new department also researched the stormwater utilities of other communities in order to decide on what type of rate structure and billing system should be used. The Engineering Department prepared a list of drainage complaints and cost estimates for each proposed project and began using aerial photography to determine the average amount of impervious area contained on a single-family lot.

The Board of Directors of the Department of Stormwater Management recommended a user charge system with six classes, recommended appropriate fees for each class, and presented their recommendations to the public in hearings and other meetings within the community. There was little opposition from community members so the proposed user charge system was presented to the Common Council and passed in the spring of 1998.

Utility Responsibilities

The Department of Stormwater Management is responsible for the collection, disposal, and drainage of storm and surface water in Valparaiso. Those duties are prioritized by the Board of Directors and carried out primarily by staff in the City Engineer's office. As part of the Gary/Hammond metropolitan area, the City of Valparaiso is currently on a "maybe" list for the EPA's Phase II NPDES stormwater regulations and the stormwater department will perform duties related to Phase II if the city is informed that it has been included in those requirements.

Utility Organization

The Valparaiso Department of Stormwater Management consists of a Board of Directors appointed by the Mayor. The Board has three members, of whom only two can be members of the same political party. The Department of Stormwater Management has no paid positions. The Department of Stormwater Management funds two-thirds of an engineer's position within the

City Engineer's office and reimburses other city departments for labor on stormwater management projects. Stormwater utility bills are sent using the water department's billing service.

Rate Structure

The City of Valparaiso established a six-class rate structure. Single-family homes are Class 1 and apartment units and mobile homes are Class 2. Non-residential sites are classified into four categories based on the number of square feet of impervious area on the parcel. A flat rate of $3.00 per month was established for single-family homes. The other five classes are charged a multiple of the single-family home rate based on the number of square feet of impervious area on the property (See Table 1).

Class	Class Description	Multiplier	Rate Per Month
1	Single-Family $3.00	1	$3.00
2	Apartment Units and Mobile Homes	.75	$2.75
3	Non-Residential < 10,000 Square Feet Impervious Area	1	$3.00
4	Non-Residential 10,000 – 40,000 Square Feet Impervious Area	4	$12
5	Non-Residential 40,000 – 160,000 Square Feet Impervious Area	16	$48
6	Non-Residential > 160,000 Square Feet Impervious Area	32	$96

Credits and Exemptions

Credits can be requested by any stormwater utility customer by obtaining a credit application and submitting it to the Board of Directors with the appropriate application fee. Single-family, apartment, and mobile home customers must submit a $25.00 application fee and non-residential customers must submit a $100.00 application fee. Credit applications are reviewed by the Board within three months and customers receive a written response to each request.

Stormwater Utility Budget

Valparaiso received nearly $520,000 in user charge revenue in 2000. Almost 70% of that revenue came from the single-family, apartment unit, and mobile home customers who make up over 90% of the utility's customer base. The stormwater utility's revenue pays for a portion of an engineer's position in the City Engineer's office and the remaining funds are deposited into the utility's expense accounts to cover costs approved by the Stormwater Management Department's Board of Directors.

Public Information

Valparaiso does not have an ongoing public education program at this time. The Stormwater Management Department holds public meetings to discuss proposed projects and takes those opportunities to educate the public about the activities of the department and receive feedback from residents on the utility. The community is small and most stormwater management projects are readily apparent to the community so there is little need for an ongoing public education program to call attention to the stormwater utility's accomplishments.

GRIFFIN, GEORGIA

The City of Griffin is located in west-central Georgia about forty miles south of Atlanta. The city's population is approximately 25,000 people. The city encompasses a 15.5 square mile area and it is the county seat of Spalding County. The city is part of the Atlanta Metropolitan Statistical Area but its population has remained fairly stable over the past decade.

Stormwater Management History

Griffin began the process of establishing a stormwater utility in the mid-1990's. The city had several reasons for establishing a utility including a deteriorating stormwater system, flooding problems, a lack of drainage in some areas of the city, unplanned channels created by stormwater, and the onset of Phase II of the EPA's NPDES stormwater permit system. The city's administration, led by the mayor, the director of public works, and the city commissioners, decided to be proactive with regards to the NPDES Phase II permit requirements and began to investigate the idea of a stormwater utility. The City of Griffin hired two consulting firms with considerable experience in setting up stormwater utilities and obtained assistance from the members of the Florida Association of Stormwater Utilities.

The combined experiences of the consulting firms and the Florida stormwater professionals resulted in a well-designed program. The City of Griffin spent $180,000 on the planning of its stormwater utility and did background research for four years until they had designed a system that would withstand legal challenges and be acceptable to the public. During the research phase, the City of Griffin mounted a large-scale public education program to reduce opposition to the stormwater utility project and demonstrate the need for additional stormwater management funding. In 1997, Griffin's Board of Commissioners enacted the ordinances that established the stormwater utility and its rate structure and the City of Griffin became the first community in Georgia to have a stormwater utility.

Stormwater Program Organization

The City of Griffin's stormwater program, which is funded by the utility fee, is a separate department from the Department of Public Works but both share the same director. The program has a staff of around fifteen people with the majority of them working in the field full-time to correct stormwater problems and maintain the stormwater system. The department has two fulltime environmental technicians and a GIS technician to assist with the mapping and master planning efforts. The stormwater program also has its own administrative assistant.

Stormwater Program Responsibilities

The city's stormwater management program began with several environmental and organizational goals in mind. The city wanted to reduce flooding, improve water quality, decrease the pollutant loads entering the city's bodies of water, improve wildlife habitats, and reduce erosion and sedimentation problems. The city also wanted to be prepared for Phase II of the NPDES stormwater permit system and increasingly stringent state water quality standards. The program made significant progress toward its goals in its first several years of operation. Griffin implemented a GIS/GPS system and mapped out the city using aerial photography. The city's staff created a hydrologic modeling system, assessed the needs of each of the city's six

major drainage basins, wrote a master plan for capital improvements, and enacted a comprehensive land use plan.

Rate Structure

Griffin has two residential property classes and one non-residential property class in its rate structure. Single-family parcels are classified based on the number of square feet included on the parcel. Single-family residential properties that have a total area of more than 1600 square feet are classified as large and charged $2.95 per month for stormwater service. Single-family parcels with a total area of less than 1600 square feet are classified as small and charged 60% of the large residential parcel rate, or $1.77 per month. Non-residential properties are charged $2.95 per month for each equivalent residential unit (ERU) on their parcel (See Table 1). The ERU was calculated using aerial photographs and digital maps to determine the average amount of impervious area on a single-family residential parcel. One ERU is equal to 2200 square feet.

Table 1: Utility Rate Structure

Property Classification	Fee Methodology	Fee
Undeveloped property and railroad rights-of-way	Exempt	0
Small Single-Family Residential Parcels (<1600 square feet)	60% of rate for one ERU	$.1.77/month
Large Single-Family Residential Parcels (>1600 square feet)	100% of the rate for one ERU	$2.95/month
Non-residential parcels Area of parcel/one ERU x rate for one ERU	Impervious area of parcel/2,200 (size of one ERU) x rate	$2.95 per ERU/ month

Credits and Exemptions

The City of Griffin does not have any exemptions for developed parcels within the stormwater service area. Undeveloped land and railroad rights-of-way are the only properties that are not liable for stormwater service fees. The city even charges itself for city-owned developed property and city streets, making the city its own largest stormwater service customer.

Peak Flow Reduction Credits

The stormwater utility fee has two types of credits available. Non-residential customers and groups of homeowners such as neighborhood associations can apply for a peak flow reduction credit of up to 50% for onsite stormwater control facilities. All peak flow reduction credit applications must be completed by a certified public engineer that is registered to practice in the State of Georgia and inspected by the stormwater department before the credit is approved to ensure that all of the control equipment is installed properly and the system is being adequately maintained.

Education Credit

The Griffin stormwater utility fee also has an education credit that is available to public and private schools in the stormwater service area that have 1,000 or more students in their system. The credit offers up to a 50% reduction in the schools' stormwater charges for teaching the Water Wise program to students. The Water Wise program teaches children about the

importance of water resources and how they can help to improve water quality in their communities.

Stormwater Program/Utility Budget

Griffin's stormwater user fees amount to approximately $1.2 million dollars each year. Approximately 80% of the utility's user fee revenue is from non-residential customers. The remaining 20% comes largely from the large residential customers with small residential parcel revenue amounting for less than 1% of the utility's total revenue. The user fees are spent on mainly on stormwater administration and operations. The program's largest expenses are for capital outlays, personal services and benefits, and purchased and contract services.

Table 3: Griffin, Georgia Stormwater Utility Audited Expenses, Fiscal Year 1999 and Projected Expenses, Fiscal Year 2000

Expenditure	Audited Expenses, 1999	Project Expenses, 2000
Personal Services and Benefits	$265,184	$417,300
Purchased and Contracted Services	$236,901	$465,341
Supplies	$133,429	$139,010
Capital Outlays	$343,001	$2,393,330
Other Financing Uses	$80,400 -	$80,400
Debt Service	$18,659	$38,579
Other Costs	$944	$944
Total	**$1,077,574**	**$3,519,135**

Public Information

Initial Program

Griffin's stormwater management public information campaign has been very successful in educating the public about stormwater problems. Stormwater program officials spent a year and a half holding public hearings, doing presentations, sending out pamphlets, writing newspaper articles, and advertising throughout the city to educate the public and get support for the utility project before it became a reality. The public works director of Griffin involved the city's most prominent leaders and gained their valuable support early in the program's development to make sure that the city's leadership understood the scope of the problem and the reasons that a stormwater utility fee would be a valuable addition to the community. The city's leaders then used every form of media available to them and conducted meetings wherever they were accepted to speak. There was little vocal opposition to the stormwater utility fee and the City Commission passed the ordinances that established it in the summer of 1997.

Ongoing Program

The City of Griffin's stormwater program has kept its intensive public education program going strong since the establishment of the utility fee. Several newspaper and journal articles have been published about the utility fee, giving the small city national attention. The program has also kept the residents of Griffin involved by posting current construction projects and other information about the stormwater department on their website (http://www.griffinstorm.com), sending out brochures and newspaper inserts on the projects the utility fee has paid for.

FORT COLLINS, COLORADO

Fort Collins is located at the base of the Rocky Mountains between Denver, Colorado and Cheyenne, Wyoming. The city's population is currently approximately 109,000 residents and the area is one of the fastest-growing metropolitan areas in the country. Fort Collins is a historically flood-prone city that experiences intense storms during the summer months. The city averages about 14 inches of rain each year and 51 inches of snow.

Stormwater Management History

The Fort Collins stormwater utility fee was adopted by the Fort Collins City Council in 1980. The new utility fee allowed Fort Collins to consolidate its stormwater management efforts into one department. The department was charged with the operation and maintenance of the city's storm drain system and the development and implementation of a capital improvements program.

The stormwater utility fee was vigorously promoted by the Fort Collins City Council. Council members realized that the city's stormwater system was in critical condition. Before the establishment of the stormwater utility fee, there was no staff or funding available to respond to drainage system problems reported by residents and the city was undergoing rapid development without a capital improvements budget that was able to keep up with the city's stormwater management needs.

Stormwater Program Responsibilities

The City of Fort Collins Stormwater Department is responsible for the maintenance and repair of the city's storm drain system, improving water quality in the city's twelve basins, and reviewing development plans to ensure that all new construction within the city adheres to the design standards for stormwater and flood control. The department is also responsible for master planning for each of the city's basins, floodplain management, and the design and construction of stormwater capital improvement projects.

Stormwater Program/Utility Organization

The stormwater program is part of the Fort Collins Utilities department that is responsible for the city's light and power, water, wastewater, and stormwater utilities. The stormwater program shares some of its staff with the water and wastewater utilities but each program has its own primary staff and budget. The stormwater program employs approximately 25 full-time equivalent employees.

Rate Structure

The Fort Collins stormwater utility fees are based on the runoff coefficient of the property, the area of the parcel, the drainage basin the parcel is located in, and an onsite detention reduction factor (when applicable). The fee for each parcel is calculated by multiplying the runoff coefficient, the on-site detention reduction factor (when applicable), the basin fee base rate, and the gross area of the parcel.

Basin Fee = (runoff coefficient) **x** (on-site detention reduction factor) **x** (basin fee base rate) **x** (area)

Runoff Coefficients

The runoff coefficient of each parcel is calculated using the percentages of pervious, semipervious, and impervious areas of the parcel in the following formula, known as the rational method:

C = (% impervious area) **x** (0.95% pervious area **x** 0.20) + (% semi-pervious area **x** 0.50)

Impervious areas are those surfaces that do not absorb stormwater including paved surfaces and buildings. Semi-pervious areas are surfaces like gravel that can absorb some stormwater but absorb it slowly. Pervious surfaces are surfaces that absorb stormwater under normal conditions. Pervious surfaces include lawns and undeveloped properties. The runoff coefficients for each property are categorized by intensity of development into five categories. Each category is assigned a rate factor to use in the calculation of the stormwater utility fee (See Table 1).

Table 1: Fort Collins Development Categories and Rate Factors

Development Category	Runoff Coefficient	Range Rate Factor
Very light	0- 0.30	0.25
Light 0.40	0.31- 0.50	0.40
Moderate 0.60	0.51- 0.70	0.60
Heavy 0.80	0.71- 0.90	0.80
Very heavy 0.95	0.91- 1.00	0.95

On-Site Detention Reduction Factor

The on-site detention reduction factor allows stormwater utility customers to get a reduction in their monthly stormwater bills by installing on-site stormwater controls. The factor is calculated using a nomograph that uses the volume of stormwater detention provided by the on-site control system and the property's runoff coefficient (See Figure 1). The nomograph was developed using the unique characteristics of the Fort Collins area's drainage basins and the city's design standards for stormwater management. Nomographs for other cities would vary with different topography and design criteria.

Basin Fee Base Rates

Customers in each drainage basin are charged differently based on the needs of their basin as identified by the basin master plans. The basin fees range from a low of $2,175 per gross acre to $10,000 per gross acre (See Table 2). Two of the basins, Boxelder Creek and Cooper Slough, do not have base rates at this time.

Table 2: Fort Collins Drainage Basin Base Fees per Gross Acre

Drainage Basin	Fee per Gross Acres
Foothills	$6,525
Fox Meadows	$6,468
McClelland/Mail Creek	$3,717
Spring Creek	$2,175
Canal Importation	$6,181
Dry Creek	$5,000
West Vine	$7,004
Evergreen/Greenbriar	$10,000
Fossil Creek	$2,274
Old Town	$4,150
Average	**$5359.40**

Base Utility Rates

The stormwater utility fee base rates are currently $0.0006831 per square foot per month for operations and maintenance and $0.0012820 per square foot per month for capital improvements. The monthly operations and maintenance fee for each parcel is calculated by multiplying the parcel's area by the runoff coefficient rate factor and the operations and maintenance base rate.

The monthly capital improvement fee is calculated by multiplying the parcel's area by the runoff coefficient rate factor and the capital improvements base rate. Single-family parcels with an area of greater than 12,000 square feet have their base rates calculated differently than the other types of parcels. Single-family parcels larger than 12,000 square feet are charged using the above formulas for the first 12,000 square feet and then are charged one-fourth of the regular rate for all. Any parcel in the Fort Collins stormwater utility service area is sixty-two cents per month.

Example:
A single-family residential parcel with an area of 14,000 square feet and a runoff coefficient rate factor of 0.40 (light) would pay $3.42 as the monthly base rate for operations and maintenance and $6.41 as the monthly base rate for capital improvements.

1) Calculate the base rates for the first 12,000 square feet.
O&M base rate = 12,000 ft2 x 0.40 x $0.0006831 = $3.28
CIP base rate = 12,000 ft2 x 0.40 x $0.0012820 = $6.15
2) Calculate the base rates for the remaining 2,000 square feet.
O&M remaining base rate = 2,000 ft2 x 0.40 x $0.0006831 x 0.25 = $ 0.14
CIP base rate = 2,000 ft2 x 0.40 x $0.0012820 x 0.25 = $0.26
3) Add the base rate components together
O&M rate = $3.28 + $0.14 = $3.42
CIP rate = $6.15 + $0.26 = $6.41
Credits and Exemptions

Fort Collins stormwater utility customers are able to obtain on-site detention reduction credits as described above in the rate structure discussion. City streets and railroad rights-of-way are exempt from stormwater charges. Properties that have a total impervious area of less than 350 square feet of the total parcel's area are also exempt from stormwater charges.

Stormwater Program/Utility Budget

The Fort Collins stormwater management program budget for the year 2000 shows revenue of $5,625,140 from utility fees, $800,000 from development fees, $725,000 from earnings on investments, and $7,250 in miscellaneous revenue (See Table 4). The stormwater utility also issues revenue bonds to pay for larger projects. The utility issued $19.98 million in revenue bonds in 1999.

Table 4: Fort Collins Stormwater Utility Revenue, 2000 Budget

Revenue Source	Amount
Monthly User Fees $5,625,140	$5,625,140
Development Fees $800,000	$800,000
Earnings on Investments $725,000	$725,000
Miscellaneous Revenue $7,250	$7,250
Total $7,157,390	**$7,157,390**

Public Information

The City of Fort Collins stormwater management program maintains a website, sends information concerning the stormwater program to residents, offers presentations to the community, and funds a watershed education program in the area school systems to educate the public about the need for stormwater and flood management.

7. APPENDICES

APPENDIX A: ON-LINE RESOURCES

GENERAL

An Internet Guide to Stormwater Financing, Center for Urban Policy and the Environment at Indiana University-Purdue University Indianapolis. http://stormwaterfinance.urbancenter.iupui.edu/

Establishing A Stormwater Utility, Florida Stormwater Association. http://www.florida-stormwater.org/manual/sitemap.html

How to Create A Stormwater Utility, Pioneer Valley Planning Commission. http://www.pvpc.org/docs/landuse/storm_util.pdf

SELECTED READING

From Stormwater Magazine

Woolson, Eric. "Stormwater Utilities: Where Do They Stand Now?" http://www.stormh20.com/sw_0409_stormwater.html

Kasperson, Janice. "The Stormwater Utility: Will it Work in Your Community," http://www.forester.net/sw_0011_utility.html

Busco, Dan and Linsey, Greg. "Designing Stormwater User Fees: Issues and Options," http://www.forester.net/sw_0111_designing.html

Keller, Brant. "The Critical Elements to Success of Stormwater Utilities," http://www.forester.net/sw_0205_public.html

Shuuford, Elizabeth K., Whalen, Andrew J., and Cyre, Hector, J. **"**Stormwater Utility Passes Legal Test in Georgia." http://www.forester.net/sw_0405_stormwater.html

Reese, Andy. "Stormwater Paradigms," http://www.forester.net/sw_0107_stormwater.html

Other articles/reports

Cyre, Hector J. "The Stormwater Concept in the Next Decade." EPA National Conference on Tools for Urban Watershed Management and Protection, Conference Draft, 2000. http://www.epa.gov/ORD/WebPubs/nctuw/Cyre.pdf

Stormwater Rate Study, City of Marshfield (Wisc) March 2004. http://ci.marshfield.wi.us/pw/SW/Rate_Study.pdf

SELECTED MUNICIPAL WEBSITES

Griffin, Georgia	http://www.griffinstorm.com/
Arvada, Colorado	http://www.ci.arvada.co.us/2.cfm?div_ID=264
Sanford, Florida	http://www.ci.sanford.fl.us/storm.pdf
Rochester, Minnesota	http://www.ci.sanford.fl.us/storm.pdf
Washington, North Carolina	http://www.ci.washington.nc.us/stormwater_faq.aspx
Yakima,Washington	http://www.ci.yakima.wa.us/services/stormwtr/F4Fee_cities.pdf
Takoma Park, Maryland	http://207.176.67.2/finance/documents/swques.html
Bellingham, Washington	http://www.cob.org/cobweb/pw/drainage/

Wilson, North Carolina
http://www.wilsonnc.org/Departments/PublicServices/StormWater/fee.asp

Thurston County, Washington
http://www.co.thurston.wa.us/wwm/stormwater%20pages/stormwaterrates.htm

APPENDIX B: EXAMPLE OF POSSIBLE RECOMMENDATION FROM ISWG

Below is an example of how a recommendation from the Interlocal Stormwater Working Group might look. While it does reflect some of the discussion the group has had to date on several considerations, it is offered primarily as a framework for how ISWG's discussions and decision-making could be given shape prior to meeting with political leaders.

User Fee Structure/Start-up Approach

Option A: Enact a simplified fee structure, within the next 6 months after short outreach campaign. After successful adoption, begin to develop a strategy for implementing more refined comprehensive system in the future, coupled with a significant public education/participation campaign. The simplified fee approach would likely a fixed rate for all residential properties and tiered rate for 2 or 3 non-residential classes based on approximate size of impervious surfaces (i.e. Valparaiso, Indiana).

Option B: Take the time necessary to start with a more refined approach with a full-blown public outreach program on the front end. Aim for fee adoption sometime in 2006. Recommended fee structure would be either flat rate residential with variable rate for non-residential (establishing a base unit such as an ERU), or a similar approach that incorporates several residential "tiers."

Approach to Multi-family Units

Option A: Treat multi-family buildings similar to non-residential properties, in which the fee is based on total impervious area or the number of ERUs on the entire property. For rental units, the bill would be sent to the property owners; for condominium units the bill could either be sent to the homeowners association or to individual owners.

Option B: Charge multi-family units a fraction of the typical rate of the single-family rate, e.g. if a single-family property (considered 1 ERU) is charged $3 a month, charge each multi-family units, the equivalent of .6 ERUs, or $1.80 per month.

Data Collection/Methodology

If Start-up Approach Option A is chosen, initial data collection would involve rough classification of non-residential properties within two or three groupings based on amount of impervious surfaces on site (e.g. < 10,0000 sf; 10,000-40,0000 sf and >40,000sf). Properties could be classified by reviewing assessment records, building permits, aerial photos, etc.

If Start-up Approach Option B is chosen, more precise data collection would be needed, establishing impervious surfaces for all non-residential properties, and, if several residential tiers are used, for residential uses as well. Under this approach, a fairly standardized data collection approach using GIS in combination with recently shot aerial photos would be needed. Another option to look into use of remote sensing data, which some enhancements is now able to yield parcel level impervious surface data.

Fee Collection

Option A: Contract with Portland Water District to charge existing customers the stormwater fee, probably on a quarterly or yearly basis to reduce costs. The remaining customers (in communities or areas of communities not served by PWD) could be billed under contract with a private firm.

Option B: Each town collects fees on its own, either through local utility billings or adding charge on tax bill.

Utility Organization

Create the utility primarily as a financial and legal entity rather than as a separate entity that stands alone or is incorporated into a department. The municipalities would use the funds to stormwater-related expenses (as previously identified) and to support ISWG and others in regional/cooperative measures.

Implementation

Continue use of the Adhoc Regional model currently being employed by the Interlocal Stormwater Working Group (ISWG), with local implementation where appropriate.

Expenses Covered

In general, the fees would fund all stormwater-related expenses except CSOs and major capital improvements. Communities may wish to cover more on own discretion.

Geographic Coverage

Option A: Fees would apply to properties within the individual boundaries of MS4 towns.

Option B: At least to start, fees would apply just to NPDES-regulated areas within MS4 towns

Exemptions

Public roads, selected other public uses, undeveloped land and agricultural lands (without impervious areas) would be exempt from fees.

Credits

Initially no credits. Using actual impervious surface as basis for fees provides built in incentive to reduce paved area. If credits are to be considered, two most likely candidates are: (1) a credit for properties that demonstrate annual maintenance of stormwater system by a certified engineer (2) credits for improving quality of stormwater running off site through use of designated BMPs.