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# Stormwater

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# Stormwater Utility User Fee Credits

Everything should be made as simple as possible; but not simpler. —Albert Einstein

By Andrew J. Reese

The establishment of stormwater utilities is fast becoming a “commodity” consulting service as smaller and smaller local entities decide to make the leap to user fee-based funding.

While the complexity of the stormwater program and the number of zeros at the end of the budget may be reduced, the need for well-thought-through, equitable, and legal policies has not diminished. In fact, in smaller towns, the need, for example, for perceived equity is often *greater* because people tend to know when questionable deals or bone-headed decisions have been made. There are fewer places to hide.

One area of interesting abuse, amazing ingenuity, and sometimes Rube Goldberg–esque complexity is in the area of stormwater credits. (For those of you less than 50 years old, Rube Goldberg was a cartoonist who developed marvelously complex contraptions to simple everyday things. Find out more at [http://en.wikipedia.org/wiki/Rube\\_Goldberg](http://en.wikipedia.org/wiki/Rube_Goldberg).) This article is about how not to do it that way.

### Background and Theory

The use of stormwater utility methods for financing urban stormwater programs is growing rapidly in popularity in the United States. Utilities have a proven track record of revenue stability, equitability of charges, and revenue sufficiency to support growing stormwater management programs. There are well over 600 such utilities presently in existence and many more in the planning stages. The rate structures of such utilities are becoming more complex as more and more cities turn to this method for stormwater financing in support of water-quality programs and green, low-impact development (LID), and sustainable design approaches.

Stormwater utilities typically generate most of their revenue through user fees. “Use” of the stormwater system is defined as the demand a property places on that system and the fact that it makes use of the stormwater services and facilities provided that protect their property, downstream properties, streets, aesthetics, and receiving-water quality (note that “benefit” is not part of the consideration under a user fee approach, as opposed to a special assessment or benefit assessment approach). The demand a property places on a system has traditionally been measured in terms of the peak flow of stormwater runoff generated by the property. The greater the flow, the greater the use and thus the greater the user fee. More recently two other major components of comprehensive urban stormwater program costs have been more commonly recognized within rate structures: volume of runoff and pollution. Volume correlates better to overall maintenance demands while pollution correlates well with the water-quality and compliance costs.

The two major parameters that most significantly influence the demand that a property places on the stormwater system and, less directly, the costs attributable to that property are total property area and some measurement of development, normally an estimate that reflects impervious area. Many stormwater utilities do not consider total area since undeveloped property may have little or no greater impact than it had before the existence of the city itself. Others actually reduce the fee a property pays if it preserves green areas (i.e. is larger). Imperviousness is handled either as a measured or estimated area, through an intensity of development method, by calculating a runoff coefficient, or by using directly connected impervious area only—all to say, “There are no cookie cutters.” Those who use a one-size-fits-all approach (or do a global name change on a neighbor’s rate ordinance) normally are sorry in the end.

In a typical stormwater rate structure both secondary funding methods and rate modifiers are often used to simplify program development and administration, improve equity, provide incentives for private actions that benefit the city’s stormwater management programs, and provide ratepayers a way to reduce their service charge if they meet appropriate

conditions. Secondary funding methods include plans review and inspection fees, fees in lieu of, latecomer fees, and many more. Rate modifiers often include one or more tiers of flat rates for single-family residences, fixed cost per account, and various other rate or billing adjustments.

Another rate modifier that fits within the overall rate structure is the use of a crediting mechanism to reduce the fee a property owner would pay. They are important in several ways:

Credits typically do not have significant total utility revenue reduction potential (often less than 2% to 5% if a “pull” versus a “push” marketing approach is used to advertise them) but may have large potential in reducing the resistance to the utility concept from large fee payers or others who would qualify for a credit.

One way a fee differs from a tax is that the customer is able to refuse service and that the provision of service is largely voluntary in nature. Credits may also satisfy the legal “requirement” that a customer is able to refuse service and that use of it is voluntary. (This idea is perhaps not as viable as it appeared when it first was used in several court cases. Most customers have little ability to refuse water or sewer service, and many pay some sewer or water fee due to the “availability” of the service. Thus, a stormwater utility mimics these other utilities not because a customer can totally refuse service and payment of the fee but because the customer can do certain things to reduce his demand or use of the public system and thus reduce his fee as well.)

Credits are also one of only a few ways stormwater utilities have to encourage sound development using a “carrot” rather than a “stick.” As such, they carry an importance far beyond their actual revenue significance.

There is a difference between a one-time credit (often termed an *offset*) and an ongoing credit. For the purposes of this article only ongoing credits will be discussed. So for our purposes a stormwater utility credit is an ongoing reduction in a property’s stormwater user fee given for certain qualifying activities.

There is a downside to credits too. They can be (1) complex and costly to initially determine, (2) hard to administer and police, (3) not large enough to actually encourage good stormwater behavior, and (4) often mismatched in the development process in that it is the developer who most often must make the decision to build something credit-worthy into the site, but it is not the developer who profits from the ongoing credit—it is the owner.

There is a cost to a local community having a credits program that must be factored into the stormwater cost of service. This cost can be minimized when the credits granted are calculated as part and parcel with the design-plans review-inspection process and realized in the course of meeting design standards.

### **Bases for Stormwater Credits**

What are those “ongoing” activities? Why should someone receive a credit?

Prior to discussing these various bases for applying credits, let’s remind ourselves, as was pointed out earlier, that any user fee itself must have some basis for calculation and application. That basis is some measurement of “use” of the public stormwater system or “use” of the results of the public system being applied upstream of me, around me, or within my city or county.

Also, based on a growing body of case law, for stormwater fees to be strictly legal in most states they should, among other things, be legal by charter and enforceable by law, be fair and reasonable, be equitable and non-arbitrary or capricious, have a sound monotonically increasing rational nexus, not be illegally discriminatory, and bear a substantial relationship to the costs of providing the services and facilities for which the fee is paid rather than to defray general expenses of the city. Additionally the process for arriving at a rate level and carrying out the rate must have followed stipulated procedures for public hearings and rate analysis.

In a perfect world credits should be derived and applied on the same basis as rates. Like my old professor used to say, “I don’t give grades; you earn them.” In the same way credits are not given—they are earned.

In that utopian world there are really only two main bases for a stormwater credit that pass this rate-paralleling muster. Those two are:

I obtain a stormwater credit because I take some ongoing action on my property that reduces its actual use of, or impact on, the downstream stormwater system to a level below that which would be reflected in the physical parcel measurement that determines my user fee.

I do some activity, operate some program, or perform some function that, in an ongoing way, reduces the overall cost of the stormwater program for the local government and thus obtain some, or all, of my cost of such performance back in the form of a credit.

Having said that, there are stormwater credits that are offered on a large number of bases and reflecting a large number of reasons (some of them strictly political) as well. Some of the most common are:

A class of ratepayers

The class of property

Location within the watershed or service area

“Other” (you would be better off not knowing!)

#### **Credits Based on Classes of Payers**

Credits granted on the basis of a classification of ratepayers may or may not be appropriate, depending on what criteria are used in the classification. Most legitimate reductions in user fees based on classes of users are not handled through

credits but through the rate methodology itself. Less imperviousness is its own reward.

Other classification criteria may reflect the economic situation or status of the ratepayers. For example, lower-income or elderly fixed-income individuals may pay a lesser amount. Although this credit basis may involve widely held and morally defensible social purposes or values, it has a technical shortcoming in that economic status criteria are not related to the reason the fee is imposed in the first place. Despite this significant shortcoming, economic-status-based reductions in service charges have been offered in some communities for water, sewer, and electric charges for lower-income individuals.

Common to water and sewer rate making is considering the affordability of its combined bills on several bases, one of which is the household affordability ratio (HAR). The HAR analysis compares total annual water-related utility charges (i.e., water, sewer, stormwater) to median annual household income. EPA guidelines suggest that for combined water and sewer a HAR value that is greater than or equal to 4% would impose a significant economic hardship and a HAR between 2.0 and 3.9 would cause a moderate hardship for some households. In such cases there are a variety of ways to provide the credit or to simply reduce the fee in the first place through the rate structure. It is often difficult to make such a determination, and utilities are often reluctant to delve into the personal income, etc., of its customers. Some simply either rely on other social agencies to provide a list or use the lists of other utilities such as electric or solid waste.

One way out of this catch 22 is to grant such rebates of fees apart from the utility rate process, such as general fund allocations to pay utility charges of economically disadvantaged persons. This then becomes a policy decision based on non-technical merit and not a part of the rate structure itself, but through an ancillary program.

### ***Credits Based on Classes of Property***

Credits based on classes of property can be divided into three groups: private property classes, state and federal government property classes, and local government property classes.

Private, *tax-exempt properties* impose demands on stormwater systems, but tax-based funding does not generate revenue to cover the cost of service to these properties. Recovering this revenue is often cited as a key justification for the utility rather than the tax-based approach. As in the previous case, exemptions that exclude tax-exempt properties from a stormwater service charge violate the technical basis for a user fee. Court challenges by tax-exempt properties have failed on the basis that the charge is a fee and not a tax. Drawing from these cases, it might be surmised that exempting a class of properties based on tax status may jeopardize the basis of the utility itself. It seems "the rain falls on the just and the unjust."

*Agricultural and "undeveloped" properties* offer another type of private property class. It can be argued (and has been in the courts) that this type of property does not affect the stormwater system adversely because the infiltration capabilities of the property are not diminished when compared to "natural" conditions. This may be true in the case of natural forested areas. For open grassy areas the runoff may be greater due to the loss of the rainfall retention properties of forest leaf and litter and the work of the trees taking up water. For agricultural and intensively maintained recreational areas (such as golf courses) it can be argued that stormwater quantity and the pollution and sediment loading is far greater than in the natural state. In this case partial or total payment of the fee could be warranted. A credit may then be granted for onsite practices that reduce stormwater quantity or pollutant loading, provided maintenance is provided to ensure proper operation of best management practices and provided the program and rate structure in some way reflect these costs. If undeveloped property is not charged a fee, then a credit should not be granted where no fee is charged. In these cases cities rely on federal and state mechanisms to encourage sound agricultural or land-use practices apart from the stormwater utility user fee and credits.

Often, for the sake of convenience, *individual residential properties* are not afforded the credit opportunities of larger non-residential properties. Activities an individual homeowner could take to reduce stormwater pollution are minor (though can be major in aggregate) and impossible to monitor. This presents a conceptual problem in that other water-related utility fees are entered into on a more or less voluntary basis (though there are often few other options) and charged on the basis level of consumption or use of a service, while a stormwater fee is compulsory (Lindsey 1990). All property owners are users of, or benefit from, a properly functioning stormwater system. To partially address this problem, some cities allow residential developments with homeowner associations to be treated like other non-residential properties for credits or, in the case of a whole subdivision that is designed with low-impact development (LID) or other green design features, a reduced fee is applied across the board to every property within that subdivision without regard to actual lot-by-lot inspection or analysis.

*State and federal facilities* do not pay local property taxes. Charging them a stormwater user fee (or service charge) becomes a new source of revenue for the city and broadens the rate base. Most cities charge these classes of properties. This charge has been challenged in the courts with mixed results, though recently the famous Cincinnati case has taken a first step toward probable reversal, allowing for charges to be levied on federal property.

This type of charge becomes quite complex in the case of charging states and the federal government for *runoff from roadways*. In some states, counties do not own or operate roads. If such a county should institute a stormwater fee, the charge to the state could be unreasonably large. In that case efforts can be made to seek credits based on extraordinary circumstances rather than a class exemption. For example:

The charge could be waived or reduced if the entity maintains its own stormwater system and handles the flow of city or county water adequately through its system.

In other cases the charge is reduced, reasoning that part of the street is actually stormwater conveyance and not imperviousness per se.

In still other cases the charge has been upheld in the courts if the city or county charges itself for its own roads, which amounts to a municipal paper transaction from the general fund to the utility enterprise fund.

*Local government properties* are not subject to property taxes. The case can be made to exempt all local government properties from the stormwater fee since the source of the funds, the local community, is the same in any case. All local private property owners and other taxpayers participate in the ownership and management costs of these public properties through their private property taxes. Therefore, the exemption of local government properties from stormwater charges normally is relatively revenue neutral.

However, *taxpayer* and *ratepayer* are not equivalent terms. The owner of an individual parcel of property, based on land value, will pay one amount in support of stormwater while that same property owner, treated as a ratepayer, would pay a different amount. For example, a skyscraper would pay a much higher amount under a tax-based system than a user fee-based system. A shift from tax-based funding to user fee-based funding will normally slightly shift the cost burden toward the aggregate of non-residential properties. However, in any individual parcel's case the cost may be more than its share under tax-based funding. If a policy decision is made to charge all state and federal government or public facilities for stormwater runoff, then local publicly owned property should also be charged.

### **Credits Based on Location of Property**

It can be argued that properties located adjacent to major streams do not make use of the urban stormwater system in the same way properties do that are located elsewhere in the system. Some cities have granted some measure of credit for those properties that are located adjacent to and discharge directly into major streams or creeks. Such an argument taken to its logical conclusion would result in differing charges based on differing locations throughout the watershed. This is clearly unworkable. It is not done in the case of water or wastewater rates.

While properties adjacent to major streams and rivers do not make direct use of as much of the local urban stormwater system as properties located at the top of the watershed, there are also strong justifications for not granting them credits. Because of their riparian rights as owners of lands through which, or adjacent to which, streams flow, these properties are the primary, and often exclusive, beneficiaries of all systems and activities designed to reduce flooding, reduce flood insurance rates, regulate floodplains, stabilize rivers and streams, develop greenways, and clean up surface water. In fact, in some cities, a surcharge is imposed on floodplain-located properties to pay for the city's floodplain administration costs. On balance, it might be stated that the farther from the watershed outfall, the more use is made of the system, while the closer to the watershed outfall, the more benefit is enjoyed from proper working of the system.

Also, all properties, regardless of location, benefit from installation of an adequate stormwater management system, and the proof of special benefit assigned to each property is not necessary (Hartigan 1989, *Teter v. Clark County* 1985). All property owners share in the general benefits of cleaner water, safe streets during storms, and sounder development practices.

### **Adequate Basis for Credits**

The two "airtight" bases for granting credits are discussed here. Just because they are legally defensible does not make them simple to apply, though. So, keeping Einstein's quote in mind, let's discuss these two bases in real-world applications.

The typical basic guiding principle in developing and granting stormwater credits based on impact and cost reduction can be stated as follows: Credit should be given for approved private investments or actions commensurate with reduced public cost or that produce a stormwater-related public good that is ongoing. Under this guiding principle, there are a number of ways to look at how credits could theoretically be justified and applied. Table 1 gives some examples, some of which are discussed below. As you think about these credits keep in mind that some of them could equally be applied as part of the rate structure and not as a rate modifier. For example, disconnected imperviousness or green roof areas could simply be billed at a lower level.

### **Credit Based on Reduction of Individual Use or Impact**

The basis for an individual parcel's stormwater utility fee is twofold: the total cost of the stormwater program and the impact or use of each property on the stormwater and stream systems. This impact is typically approximated by measuring impervious area. However, there are many other impacts of urban development, including higher peaks, more "flashy" peaks, higher velocities, more total flow volume, higher levels of pollution, more erosion and/or sediment, less

long-term base flow, and higher temperatures.

Most cities that have used an impact-based crediting mechanism have concentrated on providing credit for the reduction of peak flows. This credit is granted for the provision of detention or retention ponds. Many equations or rules have been employed using both fixed credit proportions or a sliding scale based on the amount of the peak flow reduction. One city, for example, uses a sliding scale that moves from a minimum of 20% credit for a basic detention pond and a simplified application procedure to a maximum potential of an 80% credit for over-design to correct downstream problems. Another sliding scale method is to use the concept of “effective impervious area.” To the extent owners make their property respond, in terms of hydrologic or other impact, as if it is less impervious it is appropriate to allow a credit. For example, if a property owner makes the hydrologic response from 4 acres of impervious area respond like it is 2 acres of impervious area, the owner might get a 50% reduction of the fee. This fits well into the basic guiding premise of LID designs—mimic pre-development hydrology: volume, timing, pollution.

The difficulties in applying impact-based credits more broadly follow:

- How to define a standard against which the system is judged
- How to define the impacts a property has on stormwater systems
- How to measure reduction in these impacts and associated reductions in the cost of service
- How to assign costs of service to the impact
- How to accommodate historical shifts in design standards
- How much of the fee to make subject to crediting

It must be realized at the outset that a credit is not a strict engineering calculation. It does not have to be exactly predictive of, but only bear a relationship to, reductions in impact. Therefore, great simplifications not acceptable for engineering applications are quite adequate for crediting mechanisms. Courts have upheld rate structures, presumably including crediting mechanisms, based on what some have considered crude approximations. Much depends on the legal authority granted to cities, counties, or utilities by a particular state and charter. Also, credits for individual sites are no substitute for overall basin-wide multiobjective master planning resulting in a combination of both onsite and regional structural and non-structural practices. Every credited stormwater management facility should be planned and engineered to be both necessary and effective.

As a result of federal (e.g., NPDES, Section 319) or state program requirements, most local governments are looking at ways to apply stormwater utility credits for pollution avoidance or reduction activities. The “polluters must pay” theory of financing pollution-related impacts can be used in reverse as a basis for credits. Some cities approach this problem in a way to provide a financial incentive for many categories of pollution reduction mechanisms, both structural and non-structural. They propose using an inspector checklist and point rating system for the development of credits. Others have approached this problem by dividing the total fee among urban development impacts—for example, peak, volume, and pollution reduction.

Some give credit for industries that maintain current National Pollutant Discharge Elimination System (NPDES) permits for stormwater discharge. Credit should not be given to reward someone for reduction or elimination of illegal activities. Therefore, credit for disconnecting floor drain connections to storm systems would not be granted in locations where such practices are illegal anyway.

Newer LID-type designs fit into this category. And they currently have the same difficulty. In BMP design, because of lack of comprehensive data and information, “presumptive” benefits are normally calculated based on sound design standards. It is then reasoned that if the design criteria are followed, then certain benefits accrue to the property—and are recognized with credits. Because of the microscale and dispersed nature of LID designs, giving individual credits for individual practices becomes an accounting and logistical nightmare. In such cases the best approach is to aggregate the LID practices into one “bucket” and to presume that, if they are all in place, a certain benefit accrues to the property as a whole, which is credited. This means that there will need to be minimal LID design standards or, better, a performance criterion to be met.

#### ***Credit Based on Reduced Cost of Service***

The provision of onsite detention or retention systems theoretically reduces the cost of service for a given city by reducing, at a minimum, flooding-related costs and maintenance efforts. Multiobjective systems may also reduce other stormwater management program costs. It is somewhat comparable to reduced electric or water utility charges for use of systems in off-peak periods. Capital costs are lower because smaller conveyance system sizes can be used downstream from the property and, perhaps, older systems need not be replaced. Maintenance costs are lower because, presumably, the peak or volume of flow is reduced and thus the velocity-volume impacts on structural members and natural beds and banks are also reduced. The actual determination of cost reductions for this type of structure is very difficult, and therefore rules of thumb are used.

A modification on this approach is to offer a specific credit for the provision of needed additional capacity with onsite systems. In effect a property owner obtains the credit due his neighbors by handling their runoff for them. This type of

credit works well in redevelopment situations where excess capacity exists on one site but not on others upstream.

Another cost reduction credit approach involves a recognition of the reduction of municipal responsibility by using private resources. For example, cities spend a certain number of dollars per acre on major and minor system maintenance. Larger properties that maintain their own systems or public systems to a certain acceptable standard reduce the city's cost by removing their large area from public responsibility. This can be recognized through a credit equal to the area they remove from the city's responsibility or the actual cost of service reduced.

To implement a mechanism like this it is necessary to (1) determine the city's projected cost per acre for the maintenance operations program, (2) determine a minimum area and type of area for which a property can apply for this credit based on the minimum size the city typically maintains, (3) determine acceptable maintenance standards, (4) determine a means of verifying that the property owner or manager has an internal grounds crew or a contract grounds crew and a specific maintenance plan that will result in a suitable service level, and (5) develop an inspection or other reporting method to ensure compliance.

In other cases the public education capability of local schools (and even churches in one case) is recognized and credited if the local entity meets basic standards in terms of student contact hours and curriculum content. In one situation the development of this kind of credit led to larger regional public education and outreach programs involving many schools and joint development of curriculum.

Another example is a provision of credit for those industries, schools, and other facilities that have and fulfill the conditions of an industrial NPDES permit for stormwater management. It is argued that they must perform extraordinary activities beyond those of other properties and should thus be credited. What is ignored in these cases is the basis for such industrial permits—these types of properties have higher rates of or more toxic pollutants than average properties and thus require an individual industrial permit.

#### **How Generous Should the Credit Be?**

Based on the foregoing discussion it is apparent that the impact or cost reduction types of credit have the most legitimate basis. This is because the basis for granting credits is related to the purpose the fee is levied in the first place. All other types of credit must rely on either unrelated bases or more tenuous logic to establish a credit. Once a cost reduction or impact reduction crediting mechanism is decided upon, its actual implementation then determines the types and amounts of credit offered. By choosing among different basic approaches, a local government can either limit or expand the portion of the fee available for crediting.

The generosity of the credit varies along a continuum from "Scrooge" to "Santa." Along that continuum there are mileposts. Let's discuss three of them.

#### ***Approach One—Development Bears Its Own Burden (Scrooge)***

This approach recognizes the fact that large concentrated impervious areas (such as shopping malls or industrial sites) place a tremendous strain on the stormwater system at the point of release and downstream. It is further assumed in this approach that the stormwater utility fee is set to provide an average level of maintenance, capital improvements, and emergency response but is not designed to be able to mitigate impacts of the type experienced by the more intense developments. Such concentrated impervious areas would be considered well over this level. Detention or other controls are then required by the city to bring the impacts of a site to within some "norm" for development intensity, which can then be handled by the utility. It is considered a cost of doing business and should not be credited. For example, for peak flow control one city requires all developments to reduce peak flows to a level reflected by single-family half-acre lot development. Any detention structure that accomplishes only this minimum amount of peak flow reduction is not eligible for credit. Approved reductions beyond this level would be eligible.

#### ***Approach Two—Only Actual Cost Savings Belong to the Property Owner***

In this approach actual cost savings (or an approximation of them) are credited to the property owner. Here it is recognized that much of the program cost is relatively fixed and only remotely related to actual impervious area. Any credit given should be applied only for those elements of the program where an actual public cost savings could be shown or implied. The link between the total fee paid and the total program cost is broken, and only part of the fee is eligible for consideration for credit. Typically this includes portions of maintenance operations, capital improvements, water-quality field operations, engineering, and regulatory services. One city made up to 65% of its program available for crediting using this philosophy, reserving the other 35% as "fixed" or "non-parcel specific" costs that all properties must bear. Such things as administration, general planning, finance and accounting, and general regulation might fit in this category.

The partial program option suffers somewhat from a break in logic in that, for most stormwater utilities, the *total* individual user fee is based on impervious area while only a *part* of the fee is available for crediting. It might be argued that if the fee goes up and down based solely on impervious area, so should the credit. One way to partially offset this from the rate

structure side of the equation is to charge a fixed cost per account for those costs that have nothing to do with property size or impervious area demands on the system or program. For example, the cost to send out a bill is the same for a large shopping mall and a single-family residence. Each would then pay the same for this portion of the total program cost. This has the effect, though, of shifting costs toward the smaller ratepayers. Another way is to base the charge on both total area and impervious area allowing a fee reduction on only the impervious area-based portion.

***Approach Three—Credits Are Provided on the Same Basis as Fees (Santa)***

This approach fully matches the premise used for justification of the user fee: impervious area as a surrogate for demand placed on the system. The fee charged goes to pay for all parts of the stormwater program, not just directly applicable capital or maintenance operations. A direct relationship exists between impervious area, total program costs, and the total fee. This approach both is consistent with the basis of most user fees and has an easily established physical connection. It also provides the largest of the credits under the impact-cost crediting basis (in one case up to 100% of the total fee). This approach recognizes that much of the program cost is not tied to impervious area (administrative, NPDES costs, planning, etc.) but chooses to apply the credit solely on the basis of the fee. The total fee is based on impervious area, so the credit is too. In this situation, limits are placed on the amount of credit granted through more stringent technical criteria. For example, in one city part of the credit (25%) was applicable to volume of flow increases but would only be available for true volume reductions through infiltration, evaporation, stormwater reuse or diversion, or stormwater collected in detention ponds and then pumped to the wastewater system for treatment and discharge to receiving waters.

**Snappy Close**

It is rare that a local government entity can offer flexible programs that recognize and reward good or extra-special behavior. Stormwater credits are such a capability. As such their value goes well beyond a simple cash-for-action transaction and gets at the heart of the growing new paradigm of sustainable or green development and the older paradigms of a well-designed and maintained stormwater system.

A local community can gain significant mileage through using a stormwater credit in conjunction with an education and recognition program, through cost share and demonstration projects, and through neighborhood group efforts. If done correctly these credits become one tool in the tool belt of the stormwater manager to promote sound development, aesthetically pleasing, environmentally friendly, functional, and well maintained.

**Note**

The section "Background and Theory" is based in part on Reese 1996.

Topics: [BMP Post Construction](#), [Program management](#)

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