

Recommendations

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Rules and Standards

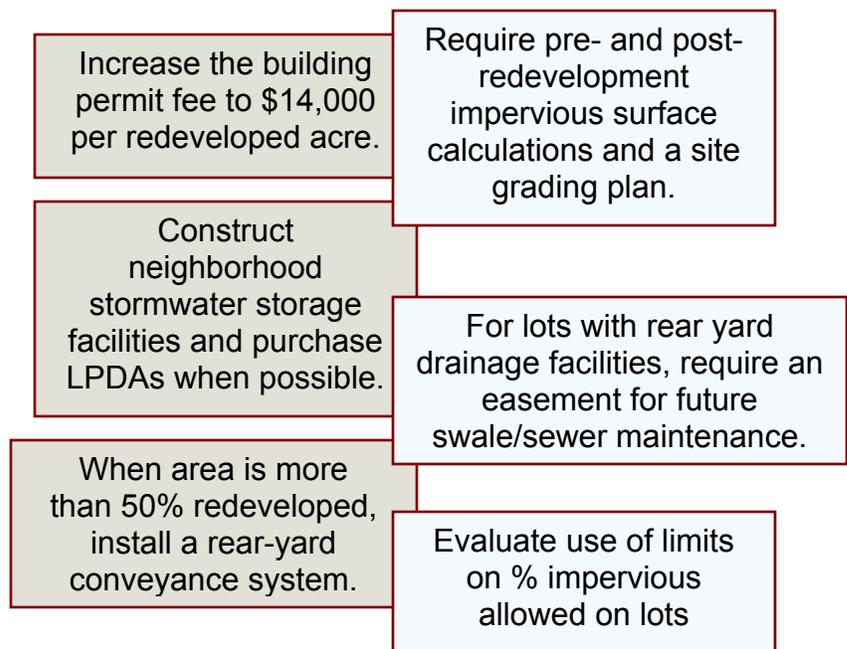
Recommendations on changes to existing rules and standards, permit fees, new rules and standards, and guidance on revised technical requirements have been developed to address the following:

- Need to enhance public safety
- Redevelopment pressures
- Chronic flooding areas
- New regulations focusing on water quality

The National Pollutant Discharge Elimination System (NPDES) program has required communities across the country to rethink stormwater rules. Many communities have responded by changing their technical standards to address not only stormwater *quantity*, but also *quality*.

Residential Redevelopment

New rules and technical guidance are necessary to ensure that the aggregate impacts of redevelopment will not have a negative impact on peak flows and/or water quality. The following are key recommendations to address residential redevelopment:



National Pollution Discharge Elimination System (NPDES)

The Village’s NPDES Stormwater Permit is largely based on the DuPage County permit language. The second permit cycle, which begins in 2008, should be written to take advantage of planned stormwater-related activities and projects, including:

Completion of GIS-based inventory and mapping is needed for NPDES permit.

- Updates to street sweeping frequency
- Stream restoration program
- Upgrades to the maintenance program
- Updates to the plan review and site inspection program
- Additional updates to local stormwater ordinances to further enhance stormwater quality

Early coordination with IEPA on NPDES changes is important.

The next Notice of Intent for the 2008-2013 permit cycle will likely be due to the IEPA in late 2007 or early 2008. Early coordination with the IEPA is recommended to determine what changes will be made to the Six Minimum Control Measures so the Village has adequate time to prepare their modified stormwater quality program.

Completion of GIS is a priority.

Critical to meeting the permit requirements is the completion of the GIS-based stormwater system inventory and mapping. This task should be a priority for completion.

Total Maximum Daily Loads (TMDL)

Although the majority of pollutants identified in the IEPA’s TMDL report (issued 2004) for the East Branch DuPage River result from point sources at area wastewater treatment plants, some are influenced by non-point sources, such as road salt application resulting in higher chlorine concentrations and high BOD resulting from urban stormwater runoff during small storms.

Future water quality monitoring may be required at the discharge of the Village’s streams. To anticipate meeting the TMDL requirement, the Village should require a water quality component for construction in commercial and industrial areas. At a minimum, Best Management Practices (BMPs) for the “first flush” storm should be constructed. These include sediment removal devices, permeable pavement, green roofs, filtration devices, wet detention basins, infiltration swales, and rain gardens (see following page for representative photos).

BMPs can improve water quality.



Rain gardens allow stormwater to pond and seep into the soil after a storm. Woody vegetation and mulch keeps underlying soils “loose” and promotes infiltration.



Infiltration swales behind curb & gutter allow first flush volumes to infiltrate instead of washing directly into storm sewers.

Photo source: US EPA

The Village should maintain proper municipal good housekeeping practices, such as controlling the application of road salts through salt regulators, proper salt storage, and exploring roadway de-icing alternatives. Detailed documentation of salt usage is important, as the Village may be measured against other communities in salt usage if chloride levels are not reduced in the East Branch DuPage River.

The impacts of the existing septic fields throughout the Village should be evaluated. Locations should be determined and mapped in GIS. Many fields are near roadway ditches, which may adversely affect impact water quality.

Localized Poor Drainage Areas (LPDAs)

The Village should evaluate LPDAs as potential sites for stormwater detention areas. Converting the flood-prone areas into “official” stormwater storage areas will have the following benefits:

- Removes private property from the Flood Hazard Area, reducing the threat of private property loss
- Provides stormwater detention storage for redeveloping areas

- Provides opportunities for parkland and creation of other open space areas
- Provides opportunities for stormwater quality BMPs
- May eliminate the need to increase downstream storm sewer sizes, as peak flows may be controlled through stormwater detention storage

It is recommended that the Village identify LPDAs in key economic development zones for potential elimination (through storm sewer size increases) and evaluate the potential for property acquisition in other LPDAs. Where property is acquired by the Village, existing structures should be demolished and the area excavated for stormwater detention storage (and complementary parkland, if space permits).

Acquisition of LPDAs and floodplain areas provides many benefits.

Floodplain Areas

The Village should evaluate flood-prone properties for potential purchase as part of a floodplain buyout program. This program involves purchase of flood-prone properties and conversion to multi-use open space. The sites can be enhanced to provide additional stormwater storage to mitigate flood damage, to preserve environmental resources, and to develop contiguous open space. It is recommended that the Village develop and implement a floodplain buyout program, working with partners such as park districts and other agencies for potential funding opportunities.

Public Education and Outreach Program

Based on the responses to the resident survey, it is apparent that there is a need for providing information about stormwater. In addition, keeping the public informed is a key component of a stormwater management program and is required in the NPDES permit. The Village should implement a public education program to provide educational materials to the community and conduct outreach activities about stormwater quality and quantity in the Village.

A key component of a stormwater program is public information.

Operation and Maintenance Program

Implementation of a comprehensive, proactive and cost-effective stormwater system maintenance program will maintain system capacity, reduce negative impacts to water quality, and meet regulatory requirements.

Develop, fund and implement a proactive, comprehensive, and cost-effective maintenance program.

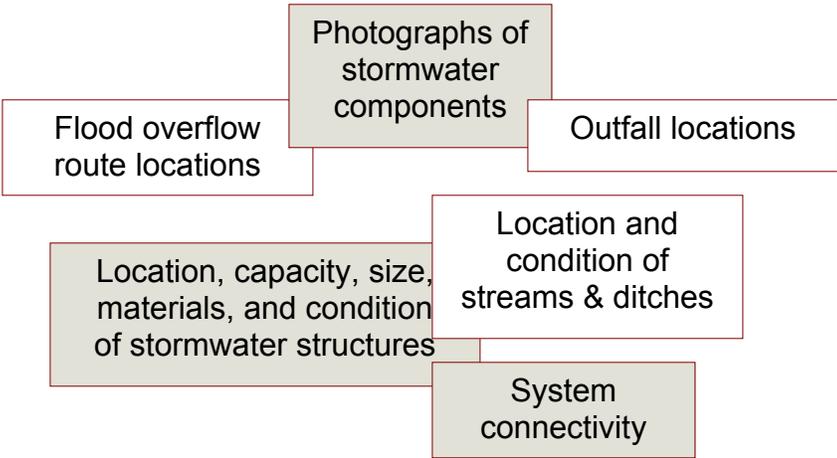
The recommended maintenance program components are grouped into four categories:

- Provide an inventory of all stormwater infrastructure components
- Use and enhance existing GIS for system mapping and maintenance records
- Outline procedures for maintaining stormwater facilities
- Provide guidance on efficiencies in performing maintenance activities

System Inventory and Mapping

To efficiently manage and maintain the stormwater system, a comprehensive inventory and accurate mapping of facilities are required. The Village’s GIS should be used for documenting the location, condition and maintenance history of stormwater system components. Resources should be dedicated to obtaining, inputting, maintaining and updating the following field information into the GIS.

Data collection and input into the GIS is a top priority.



Concurrently with the GIS update, some system-wide information should be developed with available data for immediate Village staff use:

System-wide maps are needed immediately.



Maintenance Records

Once the stormwater component of the GIS is up-to-date, Village staff should implement a GIS-based maintenance recordkeeping procedure to document existing maintenance and plan future maintenance activities. Field staff should utilize Mobile GIS technology, such as a hand-held PDA (personal data assistant), to record maintenance activities electronically. The procedure should address the following through the use of the GIS:

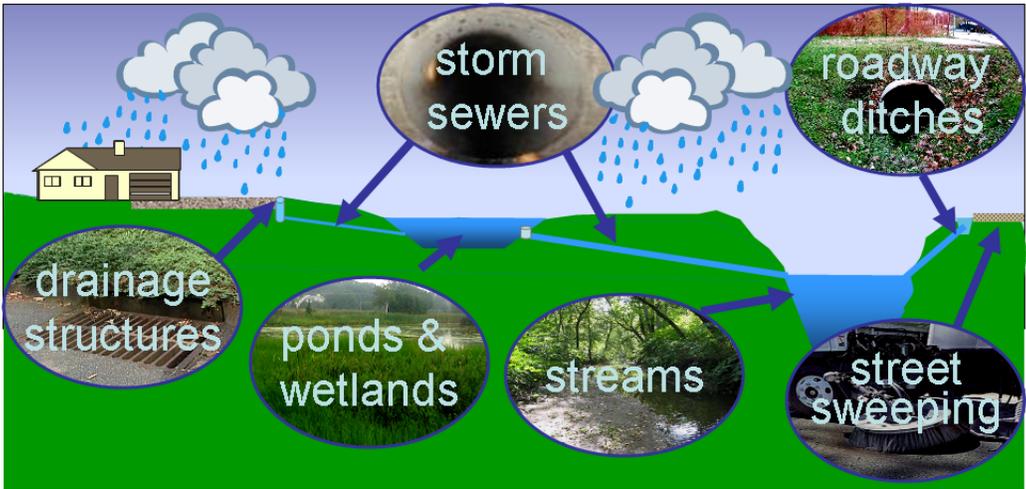
Use of mobile GIS equipment will streamline record-keeping.

- Locating work orders
- Selecting work orders
- Locating facilities
- Identifying facility characteristics
- Managing work crews
- Updating system mapping
- Documenting completed work

Procedures for Stormwater Facility Maintenance

Procedures for various maintenance activities for stormwater facilities (as shown on the following page) have been developed to provide guidance to Village staff performing the tasks.

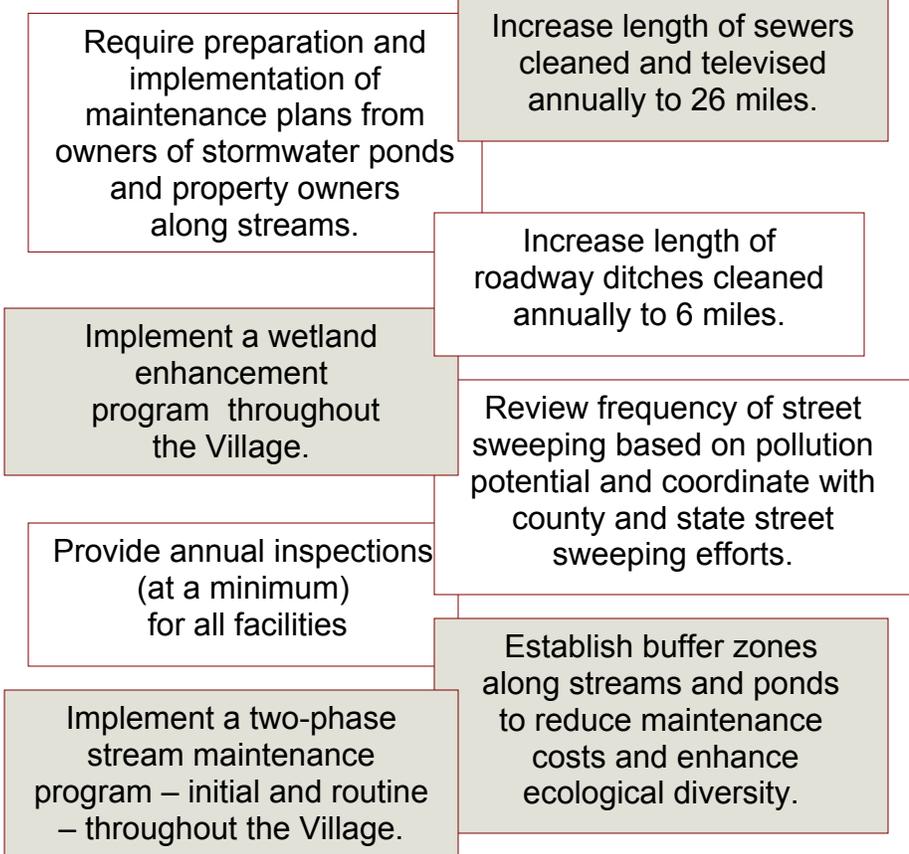
Implementation of maintenance procedures should begin with staff training.



These procedures include guidance on performing inspections, cleanings, vegetation management, and other required maintenance activities and should be implemented as soon as possible after training staff.

Key Maintenance Recommendations

Recommendations for maintenance activities include:



Maintenance Program Development

To determine the resources required to implement the maintenance program, an analysis was completed which detailed the various maintenance activities, the proposed frequency, and the annual staff labor hours required to accomplish the proposed level of scheduled maintenance. The following tables summarize the results.

Thirteen dedicated stormwater staff members are required for maintenance activities.

ACTIVITY	TOTAL AMOUNT	PROPOSED FREQUENCY	ANNUAL LABOR HOURS
Storm sewer maintenance	128 miles	Once every 5 years	6,480
Street sweeping	95 miles	3 to 40 times a year	3,280
Storage facility maintenance	4 each	Twice a year	1,360
Ditch cleaning	13 miles	Once every 10 years	6,000
Stream maintenance	11 miles	Once every 5 years	1,560
Structure maintenance	7000 each	Once every 4 -5 years	2,750
Drainage complaints	varies	As needed	1,000
		Total	22,430

The total annual labor hours required of 22,430 equates to thirteen (13) dedicated stormwater staff members to accomplish the identified maintenance activities. This would represent an increase of five (5) additional staff members with the assumption that all stormwater staff members are available to perform stormwater duties and not be assigned to other tasks.

A maintenance program should be developed which addresses the two categories of maintenance activities:

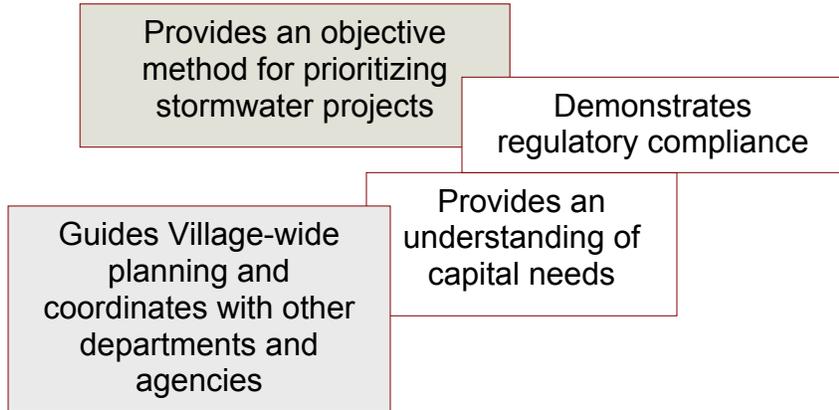
Scheduled Maintenance
 scheduled and completed on a regular basis according to a maintenance plan

Corrective Maintenance
 completed on an as needed basis after inspections, complaints, and emergencies

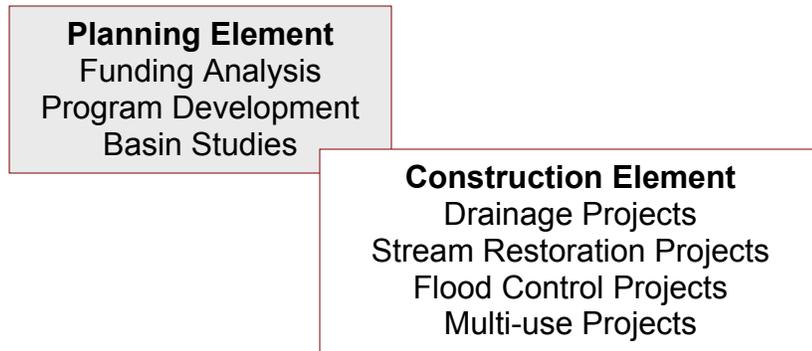
Capital Improvement Planning

An essential component of a stormwater management program is the development of a Stormwater Capital Improvement Program (SCIP). Benefits of SCIP planning are shown below.

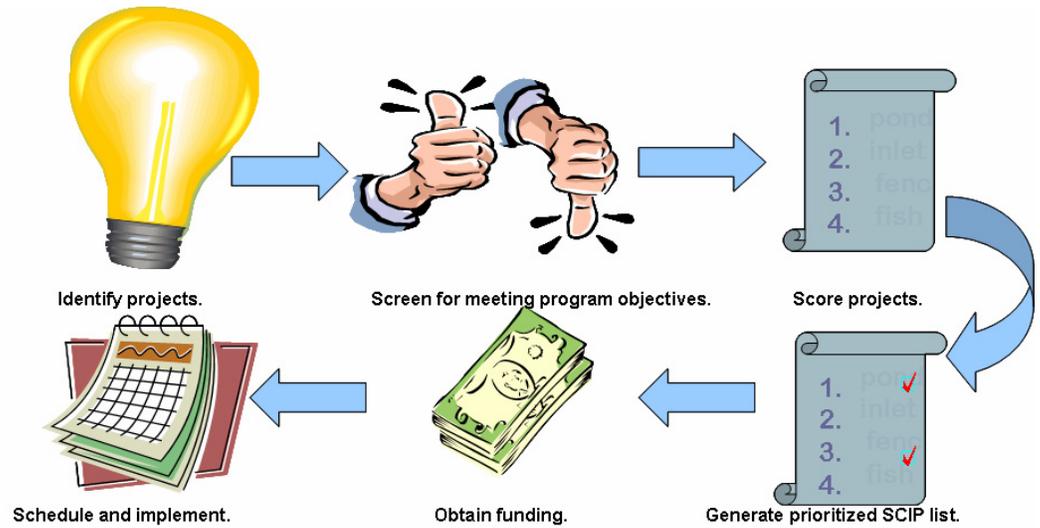
Planning capital projects is an essential part of the program.



The SCIP includes a planning element as well as a construction element. The planning element is designed to develop program improvements and to address regulatory activities. The construction element includes capital construction of projects.



The current planning process can be enhanced to address stormwater projects on a more objective and rigorous basis. Steps in the process include:



Project identification allows multiple stakeholders to present improvements for consideration. Potential projects can be identified through a variety of sources, including public requests, master planning results, inspections, redevelopment, and regulatory requirements.

Project Prioritization

Project ranking is an important component of the SCIP process. After information about identified projects is compiled by Village staff, each project should be reviewed utilizing a consistent set of criteria in relation to other projects to determine their relative importance. These criteria and assigned numerical ratings are summarized in the following table.

PROJECT VALUE	RATING		
FLOOD FREQUENCY	FREQUENT 6	OCASSIONAL 4	INFREQUENT 2
FLOODING IMPACT	MAJOR 6	MODERATE 4	MINOR 2
CONDITION	POOR 3	FAIR 2	GOOD 1
WATER QUALITY	SIGNIFICANT 4	MINIMAL 2	NONE 1
MULTI-USE BENEFITS	HIGH 3	MEDIUM 2	LOW 1
PARTNERING OPPORTUNITY	HIGH 3	MEDIUM 2	LOW 1
IMPACT ON MAINTENANCE	LOWER 4	SAME 2	HIGHER 1
SAFETY	HIGH 6	MEDIUM 3	LOW 1

For each eligible project, the appropriate ratings from the table are summed to obtain a total rating, with a maximum possible of 35 points. The projects with ratings that are in the top 10% of all project ratings will be recommended for implementation in the annual plan. For the projects included in the 2006-2010 Capital Improvement Plan, the following are the top 10%:

Top 10% Projects
Brooke/Centre Drainage Improvements
Seeley/Janet Storm Sewer Replacement
St. Joseph Creek Dredging (Mackie to Carpenter)

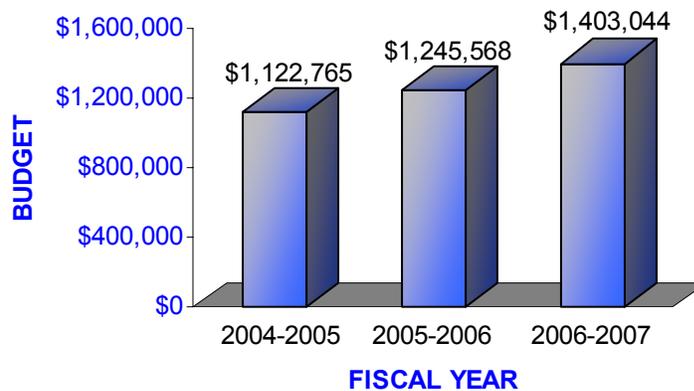
Funding

Financing a successful stormwater program requires a stable, reliable source of income. Implementation of the recommendations in this section will require additional staff, more capital improvement projects, and enhanced system maintenance. This will require a consistent and dedicated funding source.

Existing Funding

During the last several years, the Village of Downers Grove has experienced fluctuations in its stormwater budget for operation and maintenance. The increases generally have covered only personnel costs. The budgets do not allow for an increase in the level of service to address any additional stormwater responsibilities.

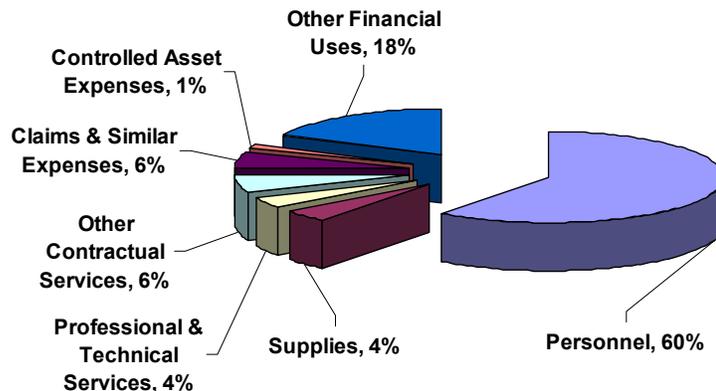
Stormwater Operating Budget



Existing funding does not provide for a consistent level of service.

Existing expenses that make up the Village’s stormwater operations are illustrated below. The personnel costs are associated with plan review, permit enforcement, inspection, and system maintenance activities.

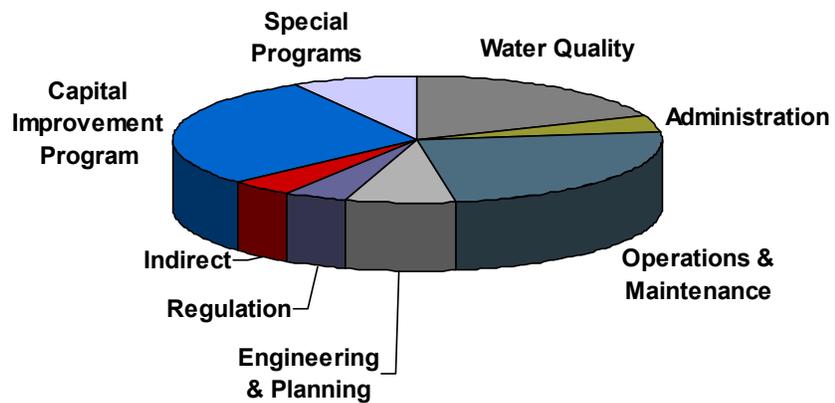
Stormwater Budget Distribution



Village staff has identified nearly \$8 million in needed stormwater capital projects. However, the budget for stormwater capital improvements has varied considerably over the past several years. This noticeably inconsistent funding results in a backlog of projects to be implemented that grows each year. The current funding process makes it difficult for the Village to adequately plan and implement projects.

Typical Stormwater Program Costs

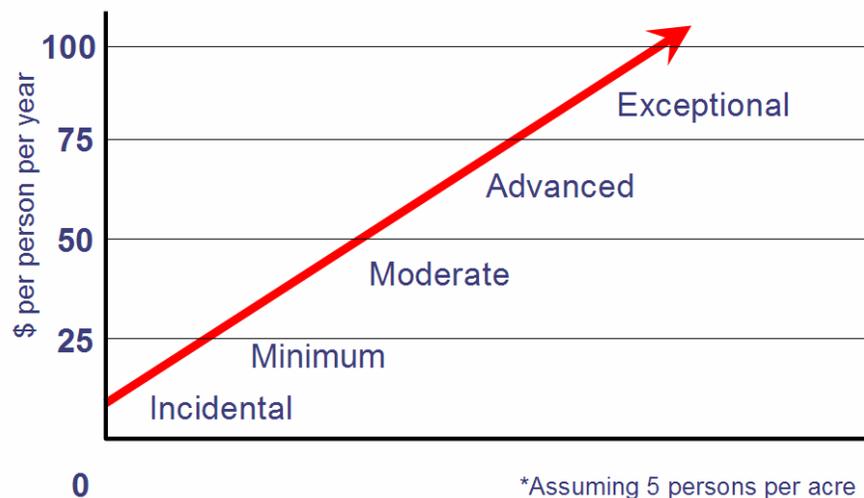
A typical stormwater program places an emphasis on capital improvements and operations/maintenance, as illustrated in the figure below. In recent years, water quality has also consumed a significant portion of a typical stormwater budget.



Typical Stormwater Program Components
 Source: AMEC Earth & Environmental (used with permission)

Stormwater program costs are based on program complexity.

Overall stormwater program costs vary by the complexity of the program, and, as illustrated in the following figure, the intended level-of-service.



*Assuming 5 persons per acre
 Figure Source: AMEC Earth & Environmental (used with permission)

Typical per capita stormwater program costs range from \$50 to \$75.

Given the complexity of the Village’s stormwater program (due to TMDL requirements, ordinance requirements, and redevelopment pressures), it is expected that the Village would have a program between the “moderate” and “advanced” stage. At this level-of-service, the stormwater program can be expected to cost \$50-\$75 per capita per year. For the Village’s current population of 49,000, this translates to an annual stormwater program cost range of \$2.4 million to \$3.7 million.

Preliminary Stormwater Budget Needs

The Village currently spends approximately \$1.2 million per year on operation and maintenance of the stormwater system. This budget does not provide necessary funding for proactive maintenance activities, long-term capital improvement needs and regulatory compliance commitments. Until these programs and their anticipated costs are developed, preliminary estimates must be made to determine budget needs.

Stormwater Program Activity	Explanation	Annual funding required
Capital Improvements Includes \$8 million in existing projects and additional projects identified during planning efforts	Required to reduce backlog of identified projects and to implement future stormwater projects, including mandated water quality components, improvements in redeveloped areas and extension of facilities to areas without infrastructure	\$ 1,000,000
GIS Includes addition of 1 dedicated stormwater GIS technician	Required for federal NPDES requirements, basin planning, maintenance program	\$75,000
System Operation & Maintenance Includes addition of 5 staff members	Required for implementation of comprehensive maintenance program	\$1,300,000
Regulatory Compliance Includes additional staff efforts to meet new regulatory requirements	Required for: Federal NPDES permitting, TMDL & water quality requirements, public education	\$200,000
Permits/Inspections Includes current staff levels	Required for: Regulatory compliance	\$475,000
Basin Studies Includes detailed analysis to determine system deficiencies and identify needed capital projects	Required for: Federal NPDES requirements, CIP planning	\$100,000
Program Development Includes effort to develop needed programs, such as maintenance, funding, CIP planning	Required for: Program implementation	\$50,000
	Total	\$3,200,000

An annual stormwater program of \$3.2 million can meet the Village's needs.

An annual stormwater program funding level of approximately \$3.2 million is recommended for the Village of Downers Grove. This is within the middle of the range (\$2.4 million to \$3.7 million) determined by the per capita funding guideline, as described earlier in this section.

Funding

The Village currently funds stormwater programs through the General Fund. The downside of this funding method is that the taxes can be redirected to other higher-profile municipal programs, often leaving the stormwater program under-funded for several years.

Various stormwater funding mechanisms, as described below, can provide temporary or permanent additional income.

Funding Alternative	Advantages	Disadvantages
General fund (property tax)	Easily accessible	Not dedicated to stormwater, can be redirected, may require tax increase
Sales tax	Reliable source	Burden on local consumers, not property owners impacting stormwater system
Stormwater utility	Dedicated source, fee directly related to impact on stormwater system	May be perceived as a tax
Bond issues	Can be paid off from general fund or stormwater utility	Funds can be reappropriated, debt limits may restrict
Special assessments	Targets property owners directly benefiting from project	Difficult to administer
Plan review/inspection fees	Fees generated from activities impacting staff resources	Does not generate significant funds
Grants	Additional funds for stormwater-related projects	Generally limited projects with education focus, limited availability
Low-interest loans	Interest rates well below market rates	Less flexibility with use of funds, must meet funding agency requirements
TIF Districts	Can generate additional funding for infrastructure	Limited to areas meeting criteria, local taxing bodies often resist

It is apparent that the Village will need to find new revenue sources in order to meet ongoing NPDES commitments, CIP goals, increased maintenance responsibilities, and staffing requirements.

A stormwater utility provides an equitable method to fund stormwater programs.

Many communities throughout Illinois and the United States have chosen a Stormwater Utility to fund their programs, as it represents the most equitable method to collect revenue from those who place a measurable demand on the existing stormwater infrastructure. Over 500 communities in the United States have adopted Stormwater Utilities, including the Illinois communities of Rolling Meadows, Rantoul, Bloomington, Normal, Rock Island, Moline, and Morton.

Adopting a Stormwater Utility will allow the Village to meet its ongoing stormwater program budget needs and will protect those funds from being redirected to other non-stormwater programs. A Stormwater Funding Feasibility Study should be completed to explore potential rate scenarios and revenue projections prior to utility implementation.

Specific funding recommendations include:

Conduct a Stormwater Utility Feasibility Study to determine the appropriate funding level and methods and provide a roadmap to full implementation

Charge a stormwater impact fee of \$14,000 per redeveloped acre.

Priorities

The recommendations presented in this section were developed to address the stormwater program needs identified during the study, and should be implemented as quickly as possible. Key priority recommendations listed below, however, are critical and should be addressed immediately.

