
CHAPTER 3

ASSESSMENT OF STORMWATER MANAGEMENT ACTIVITIES AND PROGRAMS IN COOK COUNTY

3.1 Introduction

This chapter assesses the current stormwater management activities and programs in Cook County. The information in this chapter has been combined with the review of the current stormwater management framework provided in Chapter 2 to identify inconsistencies and gaps which exist in the present system. This assessment will serve as a benchmark on which to base and develop the District's countywide stormwater management program.

Stormwater management questionnaires were sent to all of the municipalities, townships and drainage districts located within Cook County in February 2006. The survey requested information on existing stormwater management programs, including the following:

- Community concerns regarding stormwater management
- Planning and inventory of stormwater facilities throughout the community, capital improvement projects, and the maintenance of stormwater facilities
- Coordination of water resources-related projects and efforts between other local, regional, state and federal authorities
- Regulatory standards including those for stormwater, floodplain, water quality, soil erosion and sediment control, stream and wetland management, as well as the regulatory framework

The District received completed questionnaires from 79 municipalities, 9 townships and 4 drainage districts. In addition, 10 questionnaires were completed by the District for municipalities which did not respond, but did have applicable information posted on the Internet. A summary of the responses and findings, along with a copy of the questionnaire, can be found in Appendix A.

The assessment that follows is based on a three-part review: the questionnaire responses, the agency roles in Chapter 2, and the water resource studies and ordinances within Cook County. The assessment is intended to reveal the adequacy of local programs with respect to the goals of the Cook County Stormwater Management Plan (CCSMP). The assessment uses the same functional categories established in Chapter 2:

- Administration and Management
- Regulation
- Planning
- Maintenance

3.2 Administration and Management

This functional element comprises the administrative and management activities that support a stormwater management program.

3.2.1 Assessment of Administration and Management

The majority of this assessment is based on the questionnaire responses, which are discussed below.

Administration

- On a local level, the municipalities, Cook County agencies, and the District have primary responsibility for administration and management of stormwater activities in Cook County.

Community Concerns

- In most communities, the top priority concerns were drainage problems followed by overbank flooding. A small portion of communities (9%) indicated that water quality, soil erosion and sediment control were the number one concern.

Public Education/Involvement for Water Quality

- Of the communities that responded to the question about having public education on water quality, more than half (62%) indicated that they had performed some public education-related activities towards stormwater management and water quality.
- The programs that are being implemented by the communities with public education and involvement consist of website information, newsletters, informational mailings or handouts at the community's office, public information announcements on cable TV, Earth Day activities, and school visits and programs.
- No countywide programs exist to educate the public on generalized stormwater issues and the role residents play in addressing stormwater flooding and water quality.

Coordination

- Approximately 41% of the communities have coordinated efforts with their neighboring communities or other agencies to address maintenance, plan capital improvement projects, and develop stormwater standards. These coordination efforts involved a combination of municipalities, townships and municipal conferences; regional agencies and authorities such as the Forest Preserve District of Cook County (FPDCC), highway authorities and state agencies, such as Illinois Department of Natural Resources – Office of Water Resources (IDNR-OWR) and Illinois Environmental Protection Agency (IEPA).

Data Collection/Storage

- Approximately 61% of the communities have an inventory of stormwater information, ranging from paper maps to computer spreadsheets to Geographical Information System (GIS) maps.
- Of the communities that keep stormwater inventories, approximately 75% update them on a regular basis. The inventories include such items as storm sewer atlases, locations of natural features (such as wetlands, lakes and streams), detention pond locations and other water resources-related features.

Regional/State/Federal Involvement

- Communities are accessing the regional, state and federal technical assistance and training opportunities as discussed in Chapter 2.
- IDNR-OWR and Federal Emergency Management Agency (FEMA) are becoming more involved in education of citizens and public officials, particularly in relation to flood proofing and enforcement of floodplain rules.

3.2.2 Gap Analysis for Administration and Management Functions

The following discussion compares the CCSMP goals that relate to administration and management with the questionnaire responses, and analyzes the gaps, overlapping authorities and inconsistencies. Applicable goals are presented—identified by letter as introduced in Section 1.8—followed by a summary of the findings.

Goal D) Promote responsible land use practices in all areas of the watersheds of Cook County, particularly within floodplains and floodways.

Public information and education will increase the awareness of responsible land use practices. The questionnaire responses reveal that communities are already attempting to address this goal. This goal will be further explored during development of the countywide regulatory program discussed in Chapter 7.

Goal F) Require cooperation and consistency in stormwater management activities between the government entities having stormwater jurisdiction, and clearly define the roles and responsibilities of each entity.

The wide range of questionnaire responses indicates that there are many inconsistencies between community regulations and programs. The Watershed Management Ordinance (WMO) will provide consistency throughout the county by defining minimum standards to be enforced countywide. However, municipalities will be permitted to enforce more stringent standards than the WMO.

Goal G) Coordinate with surrounding counties to ensure minimal negative impacts of inter-county stormwater runoff flows.

Some coordination exists in dual county municipalities and other municipalities that have intergovernmental agreements and capital improvement projects with surrounding counties. Insufficient coordination with surrounding counties will be addressed by the stormwater management program.

Goal H) Coordinate with watershed councils to provide for the short and long term maintenance of natural waterways, manmade drainageways, and stormwater management facilities in new and existing developments.

Communities are currently the main providers of short-term and long-term maintenance of water resources related facilities. With advice from the Watershed Planning Councils (WPCs), maintenance can shift to a watershed-focused strategy.

Goal I) Seek to maximize available revenue sources in undertaking comprehensive watershed planning and stormwater facility construction activities, thereby leveraging and reducing reliance on the stormwater funds raised by levy.

The District has the ability to raise stormwater funds with a tax levy. The tax levy is applicable to areas located within the District's corporate boundaries. The District's corporate boundaries encompass approximately 93% of the land area and 98% of the assessed valuation of Cook County. Although this levy may fund portions of the stormwater management program, the District will develop Detailed Watershed Plans (DWPs) and capital projects in a manner that complies with state and federal funding criteria. The District will seek state and federal funding for the implementation of the countywide program where appropriate.

Goal K) Develop and maintain a comprehensive hydrologic, hydraulic, demographic and cartographic database using the best available and most appropriate technology to manage the stormwater, flood and water quality data needs of the program.

Approximately 61% of the municipalities responding to the questionnaire have stormwater databases for a variety of stormwater facilities and natural features. The goal of developing a comprehensive database will be addressed by establishing a countywide stormwater management GIS database.

Goal L) Promote the awareness and understanding of stormwater management issues by the practitioner and the layperson through ongoing public information and education.

As stated in the findings for public involvement for water quality, many communities have public information and education programs. The programs, however, are varied in method and frequency of communication. The countywide stormwater management program must establish a consistent program that includes public education and training.

3.3 Regulation

This functional element represents the regulatory standards that are part of a stormwater management program. This section summarizes municipal, township and county regulatory standards and evaluates the ability of the local, state and federal standards to meet the goals of the CCSMP. This assessment is based on the stormwater management questionnaire that solicited responses on local, state and federal regulatory standards. Local ordinances and available water resources studies were used to complete the regulatory analysis.

3.3.1 Assessment

The assessment of existing regulatory programs covers five areas:

- Stormwater and Detention
- Floodplain Management
- Water Quality
- Soil Erosion and Sediment Control
- Stream and Wetland Protection

3.3.1.1 Stormwater and Detention

Table 3.1 summarizes the stormwater standards for the municipalities responding to the questionnaire. Findings related to the 67 respondents to the questionnaire's section on stormwater drainage and detention standards are discussed below. These respondents represent 75% of the communities that returned the questionnaire.

Stormwater and Detention Standards

- The IEPA National Pollutant Discharge Elimination System (NPDES) stormwater program requires that all new construction activities disturbing over one acre prepare a stormwater pollution prevention plan. The plan is required to address stormwater runoff in addition to construction site runoff.
- The Chicago Metropolitan Agency for Planning (CMAP) has a model stormwater drainage and detention ordinance that stipulates 100-year and 2-year discharge rates for detention, and contains regulations about water quality and protection of onsite depressional storage and wetlands. Many communities have used this model as the basis for their ordinances.

Questionnaire Findings

Of the communities with stormwater drainage and detention standards,

- All require control of the 100-year event. Approximately 37% use a release rate of 0.15 cfs/acre. 31% of the remaining use a release rate equal to the 3-year pre-development discharge from the site, similar to the District's existing methodology. 7% of communities use a 100-year release rate of 0.10 cfs/acre, similar to DuPage County's ordinance. 25% use other release rate calculation methods.
- 69% use the modified rational method for determining detention requirements, 22% use the hydrograph routing methodology, and 9% use other methodologies.
- 25% regulate the two-year event; with approximately 82% of those using a release rate of 0.04 cfs/acre.
- Approximately 64% of the communities protect onsite depressional storage volume.
- 33% allow online detention; only 27% allow floodway detention.
- 31% allow detention in wetlands.

Table 3.1 Stormwater and Detention Regulatory Requirements

Regulatory Requirement	YES given by %*	NO given by %*
Regulate Runoff Volumes	81	19
Regulate Runoff Rates	91	9
100-year Allowable Release Rate	100	0
3-year	31	
0.15 cfs/acre	37	
0.1 cfs/acre	7	
Other	25	
2-year Allowable Release Rate	25	75
0.04 cfs/acre	21	
Other	4	
Rainfall Data	100	0
Bulletin 70	63	
Technical Paper 40	25	
Other (or not specified)	14	
Methodology to Determine Detention	100	0
Modified Rational Method	68	
Hydrograph Routing Methodology	22	
Other	10	
Depressional Storage Compensation	64	31
Detention Allowed in Floodplain (online)	33	67
Detention Allowed in Floodway	27	73
Detention Allowed in Wetland	31	69

*Percentages based on 67 respondents to stormwater section of questionnaire

3.3.1.2 Floodplain Management

Table 3.2 summarizes the floodplain management standards for the local agencies within Cook County. Findings related to the 82 respondents that have a floodplain management ordinance are discussed below.

Floodplain Management Standards

- The minimum state floodplain ordinance requirements are sufficient to meet the standards for participation in the National Flood Insurance Program (NFIP).
- The minimum state floodplain ordinance requirements are not sufficient to prevent increases in flood stage since no compensatory storage is required for flood fringe fill activities.
- The state minimum requirements only protect mapped floodways, mapped floodplains without designated floodways, and floodplains with drainage areas greater than one square mile.

Questionnaire Findings

Of the communities that have a floodplain management ordinance,

- Approximately 91% have adopted a floodplain ordinance that meets the minimum state requirements.

- Approximately 46% included protection of hydrologic functions, water quality, aquatic habitat, recreation, and aesthetics in the floodplain ordinance's purpose statement. A breakdown of the percentages of communities protecting specific features is shown in Table 3.2.
- Approximately 95% require compensatory storage for fill in the floodplain (compensatory storage for fill in the floodway is mandated by IDNR-OWR). The majority of the compensatory storage ratios vary from 1.0:1 to 1.5:1.
- Approximately 29% require compensatory storage for fill of depressional storage areas.
- 23% are Community Rating System (CRS) communities in the NFIP. 33% are interested in learning more about the CRS program.

Table 3.2 Floodplain Regulatory Requirements

Regulatory Requirement	YES given by %*	NO given by %*
Has community adopted IDNR-OWR model ordinance?	91	9
NFIP CRS Program	23	77
Does Purpose Statement Address:		
Hydrologic Functions	94	6
Water Quality	72	28
Recreational Uses	46	54
Aquatic Habitat	57	43
Aesthetics	54	46
Appropriate Uses more restrictive than IDNR-OWR	15	85
Onstream Impoundments Discouraged?	69	31
Channel Modification Discouraged?	76	24
Compensatory Storage for Floodplain	95	5
1.0:1 ratio	27	
1.5:1 ratio	51	
Other	22	
Mitigation Ratios for Wetlands	27	68
1.0:1 ratio	27	
1.5:1 ratio	32	
Other	41	
Compensatory Storage for Depressional Storage	29	71
1.0:1 ratio	54	
Other	46	

*Percentages based on 82 respondents to floodplain section of questionnaire

3.3.1.3 Water Quality

The findings related to water quality standards for the 89 communities responding to the water quality section of the questionnaire are discussed below.

Water Quality Standards

The NPDES Phase II program is the main vehicle for water quality regulation within Cook County.

Questionnaire Findings

Of the communities responding to the water quality section of the questionnaire, 64% have an NPDES Phase II permit or are in the process of obtaining the permit.

3.3.1.4 Soil Erosion and Sediment Control

Table 3.3 summarizes the findings of the soil erosion and sediment control regulations among the Cook County communities. Findings related to the 64 respondents to the questionnaire's section on soil erosion and sediment control are discussed below.

Soil Erosion and Sediment Control Standards

- Under the federal NPDES stormwater program, the IEPA requires the preparation of a stormwater pollution prevention plan to address construction site runoff for all new construction activities over one acre.
- CMAP has a model soil erosion and sediment control ordinance. The CMAP model recommends regulating development greater than 5,000 square feet. In addition, CMAP recommends regulating developments greater than 500 square feet when located in the vicinity of streams, lakes, and wetlands.

Questionnaire Findings

72% of the questionnaire respondents stated that they have soil erosion and sediment control standards. Of these communities,

- 77% apply soil erosion and sediment control standards to all development regardless of size. Most of the remaining communities have a one-acre disturbance limit; above this limit, soil erosion and sediment control must be applied.
- 75% have a list of principles or construction standards that serve as guidelines when preparing site development and erosion control plans.
- All but one community require maintenance of soil erosion and sediment control throughout the duration of the project. Of these, 30% require inspections at critical stages to confirm that the measures are working properly.

Table 3.3 Soil Erosion and Sediment Control Regulatory Requirements

Regulatory Requirement	YES given by %*	NO given by %*
Is there an acreage threshold	23	77
List of Construction Standards	75	25
Scheduled Maintenance during Construction	98	2
Inspection at Critical Stages	30	70

*Percentages based on 64 respondents to soil erosion and sediment control section of the questionnaire

3.3.1.5 Stream and Wetland Management

Table 3.4 summarizes the stream and wetland management standards for the local agencies within Cook County. Findings related to the 35 respondents to the questionnaire's section on stream and wetland management are discussed below.

Stream and Wetland Management Standards

- Under Section 404 of the Clean Water Act, the United States Army Corps of Engineers (USACE) regulates the discharge of dredged or fill material into wetlands or other Waters of the United States. When a permit is required, the USACE has the authority to protect a range of wetland functions. The USACE authority does not extend to the protection of isolated wetlands.
- The Interagency Wetlands Policy Act of 1989 [20 ILCS 830 et seq.] (IWPA) is intended to "ensure that there is no overall net loss of the state's existing wetland acres or their functional values resulting from state-supported activities." The IWPA also gives State agencies the duty to "preserve, enhance and create wetlands where necessary to increase the quality and quantity of the State's wetland resource base." (20 ILCS 830/1-4). The Illinois Department of Natural Resources (IDNR) is the administrator of the IWPA and formulates rules and regulations necessary for its implementation. The IEPA is a member of the Interagency Wetlands Committee and the IDNR serves as the chair of the Committee. The Committee conducts numerous activities such as development of rules and regulations for the implementation and administration of the IWPA, development of technical procedures for wetland delineation, evaluation of wetland restoration, development of research programs for wetland function and restoration, preparation of reports regarding wetland status, and development of educational materials to promote wetland protection.

Questionnaire Findings

39% of the questionnaire respondents have stream and wetland protection standards. Of these communities,

- Approximately 71% require a setback or buffer for streams, lakes, and wetlands.
- 57% require mitigation measures for development within stream and wetland environments.

Table 3.4 Stream and Wetland Management Regulatory Requirements

Regulatory Requirement	YES given by %*	NO given by %*
Modifications to Environment Prohibited	37	66
Development in Buffers Controlled	71	29
Mitigation for Modifications to Environment	57	43

*Percentages based on 35 respondents to stream and wetland management section of questionnaire

3.3.1.6 Permit Review and Enforcement

Most communities have a village engineer or engineering consultant responsible for stormwater management related permit review and enforcement. Public works, planning, and building and zoning departments are involved in permit reviews and

enforcement in a number of communities. The regulatory standards most often cited as requiring the most enforcement action are soil erosion and sediment control and floodplain filling.

3.3.2 Gap Analysis for Regulatory Functions

The following discussion compares the CCSMP goals that relate to regulation with the questionnaire responses, and analyzes the gaps, overlapping authorities and inconsistencies. Again, the applicable goal from Section 1.8 is presented, followed by a summary of the findings:

Goal A) Protect existing and new development by minimizing the increase of stormwater runoff volume beyond that experienced under predevelopment conditions and by reducing peak stormwater flows.

There is currently no uniform countywide, state or federal requirement for regulation of runoff volume or rates. Many communities have standards that they have developed based on CMAP model ordinances and other sources, but they vary in levels of protection. The WMO will set minimum uniform standards to be applied throughout the county.

Goal C) Establish comprehensive basin plans within each watershed, which quantify, plan for and manage stormwater flows within and among the jurisdictions in those watersheds.

Some watershed plans have been developed in certain watersheds to plan for and manage stormwater flows. DWPs will be developed under the countywide stormwater management program and may lead to watershed specific stormwater regulations. The watershed planning program is described in Chapter 6.

Goal D) Promote responsible land use practices in all areas of the watersheds of Cook County, particularly within floodplains and floodways.

Currently very few communities regulate land use practices beyond those stipulated in Illinois Department of Natural Resources – Office of Water Resources (IDNR-OWR) floodplain regulations. The countywide regulations will address land use practices in floodplains and floodways across the county.

Goal E) Establish uniform, minimum, countywide stormwater management regulations while recognizing and coordinating with those stormwater programs effectively operating within Cook County.

The WMO must develop countywide minimum stormwater management standards. Many communities have ordinances and regulations for stormwater programs, and the WMO will stipulate that communities may continue to regulate to a standard more restrictive than the WMO.

Goal F) Require cooperation and consistency in stormwater management activities between the government entities having stormwater jurisdiction, and clearly define the roles and responsibilities of each entity.

In some areas of stormwater management (for example, wetlands regulated by the USACE), state and federal agencies regulate development activities. These regulations must be accommodated in the countywide stormwater management program. Coordination between agencies is essential.

Goal J) Protect existing water resources, including lakes, streams, floodplains, wetlands, and groundwater, from detrimental and unnecessary modification so that their beneficial functions are maintained and public expenditures and damages are minimized.

Protection of water resources from detrimental modifications is essential, but few communities fully regulate such activity. The WMO will, at a minimum, encourage the use of Best Management Practices (BMPs) to achieve this goal.

Goal M) Reduce or mitigate the environmentally detrimental effects of existing and future runoff in order to improve and maintain water quality and protect water related environments.

Many communities regulate runoff rates for stormwater detention. In order to achieve this goal, the use of BMPs will, at a minimum, be encouraged within the WMO.

Goal N) Control sediment and erosion in and from any source, such as drainageways, developments, construction sites, and agricultural areas.

Controlling soil erosion and sediment is a major concern for most communities. Many communities have an NPDES Phase II permit and have adopted a set of construction standards for sediment and erosion control. The minimum standards of the WMO will include regulations for sediment and erosion control for all communities.

Goal O) Consider water quality and habitat protection measures in all stormwater management activities within Cook County.

The NPDES program is designed to protect water quality by minimizing discharge of pollution from developments. Currently, IEPA permits are required for construction sites greater than one acre. The WMO may address developments on site areas of less than one acre.

Goal P) Preserve and enhance existing aquatic and riparian environments and encourage restoration of degraded areas.

Only a few communities have regulations that limit or prohibit development of aquatic and riparian environments. The WMO will address this goal with minimum standards. Educational programs or other motivation may encourage restoration of degraded environmental areas.

Goal S) Be in compliance with all applicable state and federal laws.

The WMO must be in compliance with all state and federal laws.

3.4 Planning

This function of stormwater management represents the planning efforts that have been completed or are being completed in Cook County.

3.4.1 Assessment

An in-depth analysis of individual watersheds is not part of the CCSMP. This analysis will be completed in the DWPs to be developed under the countywide stormwater management program. This section summarizes local capital improvement projects from the communities that completed questionnaire responses.

The majority of the communities that responded to the questionnaire have watershed studies, stormwater master plans, or water quality studies. Higher percentages (up to 79%) reported water resources-related capital improvement projects.

Watershed Studies

- Approximately 51% of the questionnaire respondents stated that they had a study or master plan completed for their community.
- Of communities with studies or master plans, 76% of these efforts were completed by the individual community.
- 24% of the communities have watershed studies that were completed by state and federal agencies.

Capital Improvement Projects

- 79% of the responding communities completed capital improvement projects relating to stormwater management.
- The three most popular capital improvement projects were storm sewer infrastructure improvement and installation (72%), detention projects (27%), and channel stabilization and flood control projects (23%). Many communities have completed all three.

Mapping

Some communities have prepared maps for stormwater drainage planning purposes. These maps may be used to determine drainage problems and to identify the need for future studies.

Approximately 75% of the communities that keep stormwater infrastructure inventories update the inventory on a regular basis. The inventories include such items as storm sewer atlases, locations of natural features such as wetlands, lakes and streams, and detention pond locations.

3.4.2 Gap Analysis for Planning Functions

The following discussion compares the CCSMP goals that relate to planning activities with the questionnaire responses, and analyzes the gaps, overlapping authorities and inconsistencies. The applicable goal is presented, followed by a summary of the findings:

Goal B) Identify and remedy existing regional and local flooding problems to the extent feasible.

Some communities have addressed flooding problems with capital improvement projects, yet flooding remains a problem throughout Cook County. The focus of the DWPs will be to address regional flooding problems. The District will solicit input from the WPCs, various agencies, and stakeholders during the development of the DWPs to identify regional flooding issues. The District, through its Stormwater Management Phase II program, may assist municipalities and agencies within Cook County to address local drainage problems and set up a program for purchasing flood prone and flood damaged property.

Goal C) Establish comprehensive basin plans within each watershed, which quantify, plan for and manage stormwater flows within and among the jurisdictions in those watersheds.

While some communities have regional flood studies or other studies, there are many locales within Cook County where flood and stormwater information is unknown. For this reason, the countywide stormwater management program will prepare DWPs to identify and address regional flooding problems.

Goal G) Coordinate with surrounding counties to ensure minimal negative impacts of inter-county stormwater runoff flows.

Some communities that border other counties are already sharing or coordinating stormwater information, plans or stormwater projects. The preparation of DWPs will support coordination between communities and counties that share watershed boundaries.

Goal K) Develop and maintain a comprehensive hydrologic, hydraulic, demographic and cartographic database using the best available and most appropriate technology to manage the stormwater, flood and water quality data needs of the program.

Many communities have stormwater maps and databases for a variety of stormwater facilities and natural features. The goal to develop a comprehensive database will be addressed by establishing a countywide stormwater management GIS database. The District will make efforts to obtain GIS data from Cook County, state and federal agencies, municipalities and townships for incorporation into the countywide GIS database.

Goal S) Be in compliance with all applicable state and federal laws.

Development of a WMO that is in compliance with state and federal laws will ensure the same compliance for all planning efforts.

3.5 Maintenance

Maintenance involves the upkeep of property and equipment related to constructed stormwater infrastructure. It includes maintaining the natural function of streams, lakes and wetlands.

Approximately 64% of the responding communities indicated they had a regular stormwater infrastructure maintenance program.

3.5.1 Gap Analysis for Maintenance Functions

The following discussion compares the CCSMP goals that relate to maintenance standards with the questionnaire responses, and analyzes the gaps, overlapping authorities and inconsistencies. The applicable goal is presented, followed by a summary of the findings:

| Goal B) Identify and remedy existing regional and local flooding problems to the extent feasible.

Some communities have addressed flooding problems with capital improvement projects and associated maintenance. Uniform countywide maintenance standards have not been developed to decrease or remedy flooding problems. The countywide stormwater management program may establish recommendations for minimum standards for maintenance.

Goal H) Coordinate with watershed councils to provide for the short and long-term maintenance of natural waterways, manmade drainageways, and stormwater management facilities in new and existing developments.

There is little coordination among communities and jurisdictions for maintenance activities. With the establishment of the WPCs, planning for maintaining stormwater infrastructure and natural environmental features within watersheds can be developed across jurisdictional boundaries.

Goal P) Preserve and enhance existing aquatic and riparian environments and encourage restoration of degraded areas.

The majority of maintenance activities that preserve and enhance aquatic and riparian environments are done by communities that have developed master plans. Efforts to identify those responsible for maintenance within these environments will be made during the preparation of the DWPs.

3.6 Summary

Despite the many programs within communities that address a number of the CCSMP goals, not all of these goals are being met within the existing stormwater management framework. Many stormwater management problems that communities face can be alleviated with the establishment of a countywide stormwater management program.