



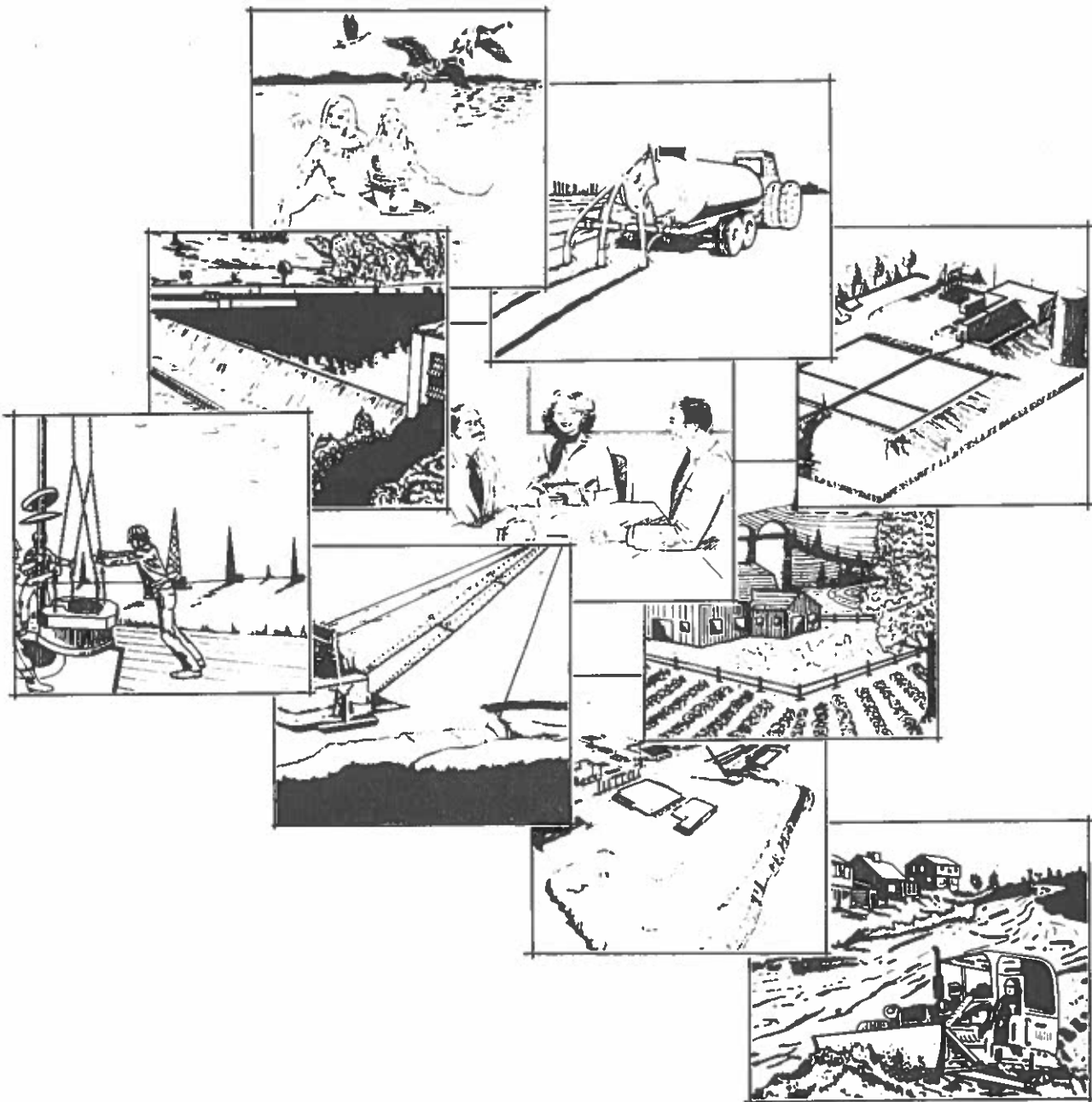
Illinois
Environmental
Protection Agency

Bureau of Water
2200 Churchill Road
Springfield, Illinois 62794-9276

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Illinois Water Quality Management Plan



**THE ILLINOIS WATER
QUALITY MANAGEMENT PLAN**

Prepared by:

**ILLINOIS ENVIRONMENTAL PROTECTION AGENCY
BUREAU OF WATER
DIVISION OF WATER POLLUTION CONTROL**

In Cooperation With:

GREATER EGYPT REGIONAL PLANNING AND DEVELOPMENT COMMISSION

NORTHEASTERN ILLINOIS PLANNING COMMISSION

**SOUTHWESTERN ILLINOIS METROPOLITAN AND
REGIONAL PLANNING COMMISSION**

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EXECUTIVE SUMMARY

The purpose of the Illinois Water Quality Management Plan is to consolidate and streamline portions of approved State and Areawide WQM plans in order to facilitate their usage in the operations of all designated WQM agencies. The WQM Plan represents a joint effort by the four agencies with WQM planning responsibilities. The four agencies involved are: Illinois Environmental Protection Agency, Greater Egypt Regional Planning and Development Commission, Northeastern Illinois Planning Commission and the Southwestern Illinois Metropolitan and Regional Planning Commission. There are several reasons which promoted the unifying of existing state and areawide plans. The first is the need to compile existing WQM plans in a convenient administrative format. At the state level, there is a need to improve the process of WQM Plan consistency review for NPDES permit or Title II Construction Grant determinations. For local officials there is a need to clearly define designated management agency responsibility and highlight recommendations for future action. This is a necessary step in the continuing process of WQM plan implementation. A second reason for WQM Plan consolidation is to provide an orderly transition from plan development to implementation of programs. There has been a considerable public investment to establish credibility in the process Section 208 created, both from a planning and implementation standpoint. The cessation of funding for Section 208 WQM planning has resulted in the need to incorporate this planning process into the ongoing Agency water pollution control program.

Following public review and any subsequent revision, this document will become the certified State and Areawide WQM Plan document. Prior Areawide WQM planning documents represent a supplemental information base and an expression of local consensus. Their status with designated areawide agencies will be determined by each such agency after consultation with Illinois EPA. Following the completion and review of the Illinois WQM Plan, annual updates and amendments to the plan will be published in the Agency's Division of Water Pollution Control Program Plan. The Program Plan will serve as a vehicle to circulate and document plan changes. The amendment process for point sources will be conducted in accordance with the adopted "Procedures and Requirements for Conflict Resolution in Revising Water Quality Management Plans". The following pages contain a brief synopsis of the continuing policies and recommendations found in the Illinois Water Quality Management Plan. The more detailed policies and recommendations can be found in the appropriate chapter in the plan.

Chapter Two -- Point Source Control: Control of point sources in Illinois is provided through the regulatory structure established by the Illinois Environmental Protection Act (Act) and subsequently through the Illinois Pollution Control Board (Board) Rules and Regulations. The emphasis of the Illinois WQM Plan for point sources is directed specifically towards NPDES and construction grant determinations and

their conformance with the Illinois WQM Plan. From a statewide perspective, the control of point source discharge is a necessary component in a comprehensive strategy for water quality management. The primary responsibility for control of point sources is shared between the State and local designated management agencies.

- * The emphasis of the WQM Plan is to ensure that those State and local programs involved with point source control are carried out in an efficient and effective manner.
- * It is the primary responsibility of the State to ensure that the process of construction grant award, NPDES permit issuance and compliance monitoring are undertaken in accordance with all applicable state and federal requirements. The issuance of new NPDES permits constitutes an amendment to the approved WQM Plan.
- * Designated local management agencies are primarily responsible to ensure the quality of its effluent, the efficient provision of service within its facility plan area, the effective enforcement of applicable sewer use and pretreatment ordinances as well as the encouragement of water or energy conservation strategies (as appropriate). Facility plans should be implemented by local designated management agencies as approved by Illinois EPA. Amendments to these plans should be conducted in accordance with established Agency procedure.
- * Continued regulation of combined sewer overflows is a beneficial and essential element of an effective statewide WQM plan. Local treatment authority plans for controlling combined sewer overflows must comply with applicable Pollution Control Board rules.

Chapter Three -- Agriculture: The control of water quality impacts from agricultural activities is the foundation of a comprehensive strategy for the abatement of nonpoint source pollution. The responsibility for control of agricultural nonpoint source pollution is shared among federal, State and local agencies and the individual farm operator and is based on a program of voluntary compliance. The policies and recommendations contained in the plan reflect the institutional and program changes which were first suggested in the initial plan in 1979.

- * The WQM Plan recommends expanded development of a program of education and research efforts directed towards agricultural nonpoint source pollution in five primary areas of concentration: erosion and sedimentation, livestock waste management, silviculture, pesticide use and fertilizer application.
- * The Illinois Department of Agriculture and the 98 soil and water conservation districts have continued responsibility for technical services, cost-sharing and direction of the soil erosion control program.

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- * The Illinois Department of Agriculture and the 98 soil and water conservation districts have continued responsibility for technical services, cost-sharing and direction of the soil erosion control program.

- * The Illinois Environmental Protection Agency (IEPA) and the Illinois Pollution Control Board (IPCB) have continued responsibility for water quality monitoring, progress accountability and enforcement of the provisions of the water quality related elements of the agricultural nonpoint source control program.
- * The State has the primary responsibility for assuring the efficient and effective use of fiscal, technical and personnel resources related to soil erosion and water quality nonpoint management objectives. Local, State and federal agencies should cooperate to assure adequate compliance monitoring and assessments are made. Local voluntary support is encouraged.
- * The State, through the Department of Agriculture, should continue to provide funding to accelerate the rate of soil survey completion in order to provide full coverage of the State with modern surveys.
- * The Illinois EPA should continue to upgrade and refine its program for administering the Illinois Pollution Control Board's Livestock Waste Regulations (Agriculture Related Pollution, Ill. Adm. Code, Title 35, Subtitle E, Chapter I, Part 501). Problem feedlots will continue to be prioritized on a "worst case first" basis for follow-up action. Compliance with existing regulations should be pursued on a voluntary basis whenever possible. To defray compliance costs, livestock operators should be informed of sources of financial relief and lower cost alternatives for waste management.
- * The Illinois Department of Conservation, Division of Forest Resources and Natural Heritage (IDOC-FRNH) is the primary agency responsible for directing technical assistance and educational programs for forestry operations. The recommendations contained in the State Forest and Related Resources Plan, developed by IDOC-FRNH, should be implemented.
- * Reduction in fertilizer contributions to high nitrate concentrations and elevated nutrient levels should be controlled through sound fertilizer management practices.
- * Continued emphasis should be placed on the development and implementation of an effective program of pesticide waste management.
- * Cooperative agreements should be undertaken by the Agency with other State and Federal agencies to evaluate pesticide problems resulting from their use in agricultural production. Pesticide use surveys and water quality monitoring programs should be coordinated and effectively employed in the evaluation process.
- * Integrated pest management programs are encouraged.

Chapter Four -- Construction: The emphasis of the WQM Plan, with regard to construction nonpoint source control, is preventative in nature. Construction nonpoint source pollution is not as widespread as other types of nonpoint source pollution in the State, but when it occurs it is usually significant. Effective programs for mitigating the impacts of construction nonpoint source control can be established using existing techniques and authorities. This is especially true at the local level. Additional coverage of this problem can be through improvement in administrative procedures and site practices by the developer of a site, whether they be either a private or public entity. From a statewide perspective, the control of construction non-point source pollution is a necessary support to the agricultural erosion and sedimentation control program.

- * The WQM Plan emphasizes the development of technical and administrative guidance tools to assist responsible units of government and agencies in the selection of best management practices (BMPs) and administrative mechanisms for the needed nonpoint source control.
- * Designated Management Agencies (DMAs) responsible for the control of construction nonpoint sources include municipal and county governments, soil and water conservation districts throughout the state as well as various state agencies (IEPA, IDOT, IDOC, and the ICDB).
- * It is the primary responsibility of the state to control construction nonpoint source pollution arising from state sponsored or directed activities. State Agencies responsible for regulating and reviewing construction related activities, such as IEPA, IDOT, DWR and IDOC, should consider necessary conditions in permits for water resource related projects to prevent pollution from these activities.
- * All counties and municipalities should carry out some or all of the following preferred control practices for local nonpoint source pollution: Adopt and enforce standards and specifications for erosion and sedimentation control in developing areas; Adopt and enforce model ordinances which contain minimum standards for control in those areas currently under development; and where possible, better use of both local and state personnel, through training and education programs.

Chapter Five -- Urban Runoff: From a statewide perspective, the control of urban runoff is a necessary component to prevent impairment of water uses in an urban setting. Local units of government have primary responsibility for the control of urban runoff. Urban runoff studies in eight standard metropolitan statistical areas across Illinois indicated that lead, copper and iron exceed the existing general use water quality standards 25 to 30 times per year as a result of urban runoff at various points within each study area, and that the once a year maximum may be 15 to 20 times the standard. The Plan stresses three ways to reduce urban

runoff pollution: 1) by controlling the design, construct, and maintenance of the drainage network; 2) by preventing pollutants from entering the drainage network; and 3) by treating stormwater to remove pollutants before polluted runoff reaches a waterway.

- * Research which will give technical and administrative guidance to the responsible units of government should continue. This includes continued analysis of National Urban Runoff Program (NURP) results to maximize its transferability throughout the State, analysis of the impact of urban stormwater on beneficial water uses, the relationship between air and water quality, and the standardization of technical and administrative urban stormwater runoff control practices.
- * In northeastern Illinois, all appropriate municipal and county governments should implement measures to work toward a reduction in BOD in urban stormwater runoff from separately sewered areas.
- * Municipalities and counties should adopt and enforce appropriate and adequate stormwater detention ordinances. Such ordinances should be consistent with the minimal standards set forth in the model ordinances developed by either the Northeastern Illinois Planning Commission (Suggested On-Site Stormwater Detention Basin Ordinance, January 1980) or Southwestern Illinois Metropolitan Planning Commission (Model Stormwater Detention Ordinance for Developing Areas, January 1982).
- * It is the primary responsibility of the local, state or federal agency to control urban runoff contributions arising from their individually directed activities and facilities. Preferred control practices are administrative procedures for personnel training, improved equipment utilization and scheduling as well as controlled application programs for de-icing or other related right-of-way clearance programs.
- * A program of education/information transfer should be initiated. The program would: 1) acquaint developers and local officials with the need for use of proper stormwater management techniques, 2) establish and promote anti-litter activities, and 3) inform homeowners of the proper use and application of fertilizers and pesticides.

Chapter Six -- Mineral Extraction Oil Brine Disposal: The Illinois Water Quality Management Plan identified seepage from brine holding pits, injection operations and abandoned wells as the major sources of brine pollution in Illinois. Oil brine pollution is particularly significant in Central and Southern Illinois. The major impact of brine damage in this area is the contamination and resultant decrease in productivity of the soil. The WQM Plan stresses that strict enforcement of existing regulatory guidelines for the disposal of oil field brines is essential for the protection of currently utilized and potential groundwater sources as well as surface water quality. From a statewide perspective,

the control of oil field brine is a necessary component for the compliance management of groundwater and surface water quality as well as the soil erosion control program.

- * The State has primary responsibility through the Gas and Oil Division of the Department of Mines and Minerals (DMMR) for the control of water quality impacts from oil field brine. The control of erosion and reclamation of soil and water resources is a local responsibility.
- * Technical guidance is necessary to aid in the selection of Best Management Practices to prevent water quality degradation and restore degrade soil and water resources.
- * Designated local management agencies should continue to inventory and categorize areas of oil field brine damage and should work for brine damage reclamation.

Chapter Seven -- Mineral Extraction/Mining: The Plan summarizes work of various agencies on methodologies to assess water quality problems and on assessment of mine reclamation techniques. Studies of GERFDC, SIMAPC and other agencies showed that abandoned coal mining operations, closed before recent reclamation laws, constitute a majority of potentially polluting mine sites.

- * Control of pollution from mining activities is necessary to protect waters of the State. Reclamation of abandoned mines and mine waste sites can improve water quality for legitimate uses. Water quality priorities for reclamation should be as follows: (1) public water supply watershed and (2) general use water.
- * The maintenance of water quality affected by mining and quarry operations should be assured through interagency cooperation during permit review and the hearing process.

Chapter Eight -- Hydrographic Modification: The Plan defines hydrographic modifications as activities which alter stream channels in such a way that flow patterns are changed. Estimates indicate that one-third or 12,000 miles of the total streams mileage in Illinois has been altered. In Illinois, primary decision-making on hydrographic modification projects rests with the U.S. Army Corps of Engineers and the Illinois Department of Transportation, Division of Water Resources. From a statewide perspective, the control of pollution resulting from hydrographic modification procedures is a necessary component for the maintenance of legitimate water uses in both urban and rural settings. The primary responsibility for the control of hydrographic modification impacts on water quality rests with the State.

- * Illinois EPA, under Section 401 of the Clean Water Act of 1977, will review all applications for hydrographic modifications associated with dredging under Section 404 of the Act. In addition, IDOT, Division of Water Resources and Illinois EPA will jointly review all applications for permits for hydrographic modification under Section 10 of the federal "Rivers and Harbors Act of 1899" and Sections 65 and 70 of "An Act in Relation to the Regulation of the Rivers, Lakes and Streams of the State of Illinois."
- * Districts organized under the Illinois Drainage Code are considered designated management agencies for the control of hydrographic modification impacts. Local public and private interests, including drainage districts, should consider hydrographic modification alternatives that are less likely to cause water quality degradation in lieu of channel deepening and widening projects.
- * The modification of permits and operation plans for existing impoundments for the improvement of water quality should be encouraged. Procedures for assuring adequate consideration of water quality impacts for proposed impoundments should be guaranteed.
- * The Army Corps of Engineers should cooperate with the State and local jurisdictions in the siting of suitable dredge disposal areas, consistent with the provisions of Section 404(t) of the Clean Water Act of 1977 to maintain federal interest in navigation.

Chapter Nine -- Groundwater: The Illinois WQM Plan summarizes the nature of groundwater problems in Illinois. A large number of Illinois communities depend on groundwater as a water supply. However, numerous sources of contamination threaten this inadequately protected resource. Groundwater protection in Illinois is accomplished predominantly through remedial action. Although this approach provides a reasonable degree of protection, better management of groundwater is needed. Protection of groundwater quality is a necessary component of an overall water quality management strategy and implementation responsibility is shared between state and local governments.

- * The emphasis of the WQM Plan is to ensure the conjunctive management of ground and surface water.
- * Areas which have a high potential for groundwater contamination should be identified and protected from pollution. The Illinois State Water Survey, Illinois Geological Survey, Illinois EPA and the U. S. Geological Survey should monitor groundwater in areas of high usage.
- * Additional state and/or local control of contamination sources, based on existing authorities, should be actively pursued.
- * A groundwater education program needs to be undertaken in order to underscore the importance of protecting underground water resources.

Chapter Ten -- Groundwater/Residual Waste: Residual waste is material (sludge) which is separated from point discharges of industrial, municipal or private waste treatment plants. This waste may contain pathogens, heavy metals, toxic or hazardous material which can cause water pollution. The WQM Plan emphasizes the need for the conservation and reuse of wastes. Needs include the better use of existing sludge management systems and education programs.

- * The State, through Illinois Pollution Control Board Rules contained in Chapter 7 (Solid Waste) and Chapter 9 (Special Waste Hauling Regulations) is responsible for the regulations of solid waste disposal practices. In addition, the State is responsible for sludge disposal resulting from the operation of publicly owned treatment works through IPCB rules in Title 35, Subtitle C, Chapter I, Water Pollution.
- * The Plan recommends consideration of disposal alternatives through Section 201, landfill compliance with IPCB regulations, proper practices in soil application, continued enforcement of hazardous or toxic standards and permits and education for those who work with sludge.
- * The preferred method for disposal of domestic septage, land application, should be encouraged. Specific wastewater treatment plants should be permitted by the IEPA to receive domestic septage. Special consideration is given to conditions during winter when land application is not possible for septage that contains hazardous or toxic wastes.
- * The disposal of water treatment plant residues or sludges should be evaluated on a case-by-case basis.
- * Responsible local agencies should implement the most cost-effective sludge disposal/utilization schemes consistent with applicable regional and subregional residuals disposal plans.
- * The Septage Disposal Plan adopted by NIPC is made a part of the Illinois WQM plan for application in its area. Specific recommendations are developed for sludge management in NIPC area communities.

Chapter Eleven -- Groundwater/On-Site Disposal: The Illinois Water Quality Management Plan emphasizes that properly installed on-site systems are of sufficient structural and mechanical integrity to be received as reliable wastewater treatment options. A key area for improving performance of on-site systems is in the procedures for improving quality assurance in terms of design, installation and management of systems. From a statewide perspective, the control of adverse water quality impacts from on-site disposal systems is a necessary component in the conjunctive management of ground and surface water. The responsibility for the proper use and placement of on-site systems is shared between the State and local units of government.

- * The State has primary responsibility, through the Illinois Department of Public Health (IDPH) and those counties acting as designated agents of the State, to ensure the effective enforcement of the Private Sewage Disposal Code. In those instances where urban or county health departments act as local independent authorities, they are primarily responsible for enforcement of the appropriate private sewage disposal ordinances or codes.
- * It is the primary responsibility of the State to ensure that the administration and application of the IDPH Private Sewage Disposal Code and the IEPA Construction Grant Program be closely coordinated.
- * The education/information function should be stressed. This includes both the public and private sectors. All state and local agencies involved with on-site disposal should be kept informed of current developments in on-site disposal technology, and should provide on-going training for their staff. The development of a regular schedule and program of training seminars on septic tank installation and maintenance for licensed contractors and new applicants is encouraged.

Chapter Twelve -- Stream Use/Water Quality Standards: The present Illinois Water Quality Standards have been in effect since 1972. The uses that a given water will support should be directly reflected by the water quality standards assigned to it. The identification of attainable stream uses and supporting water quality criteria are the cornerstones of the water quality management planning process. The primary responsibility for the establishment of water quality standards and their revision rests with the Illinois Pollution Control Board.

- * The emphasis of the Illinois WQM Plan is to ensure that water quality standards are established and maintained in a manner consistent with the 1970 Environmental Protection Act. This includes the review of existing water quality standards, establishing a process to tailor water quality standards to existing and potential uses of a stream segment and ensuring that public water supplies are protected from degradation.
- * The Illinois EPA will work with adjoining states to assure that waters flowing into Illinois meet applicable Illinois water quality standards at those points of entry.
- * The designated areawide WQM agencies will assist the Illinois EPA in the process of developing attainable water quality standards for water bodies in those areas.

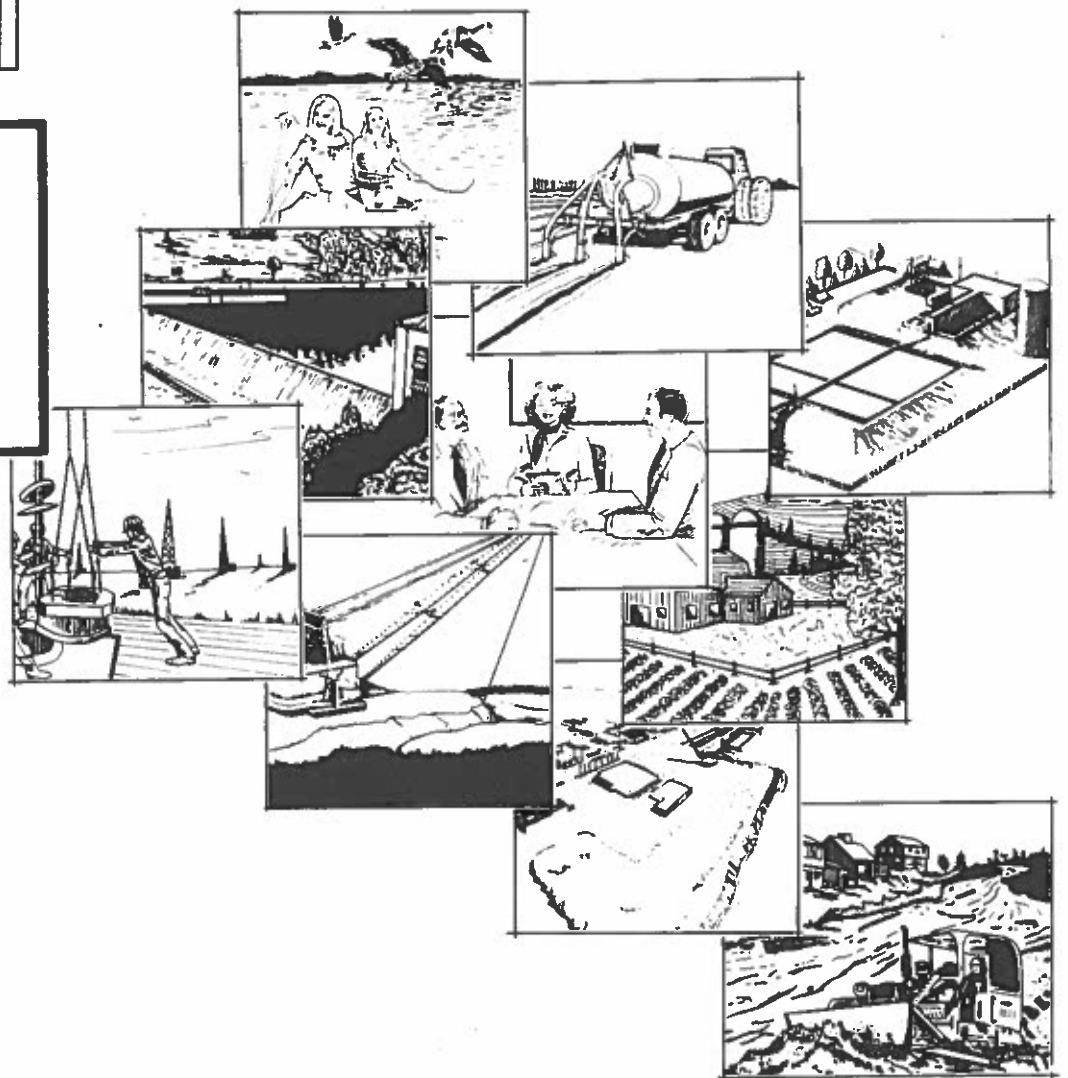
Chapter Thirteen -- Management: Effective treatment and control of existing sources of pollution and the prevention of future water quality problems are dependent on an effective management system being established to implement the WQM plan. From a statewide perspective, an effective management system is the key factor in maintaining and implementing the WQM Program.

- * The Water Quality Management Plan emphasizes the development of an acceptable and workable Statewide WQM management structure based on the existing state and areawide management systems established in the four Illinois certified and approved WQM Plans.
- * This WQM Plan identifies and designates as WQM agencies all entities necessary for the implementation of an effective Statewide WQM program.

OVERVIEW

PART

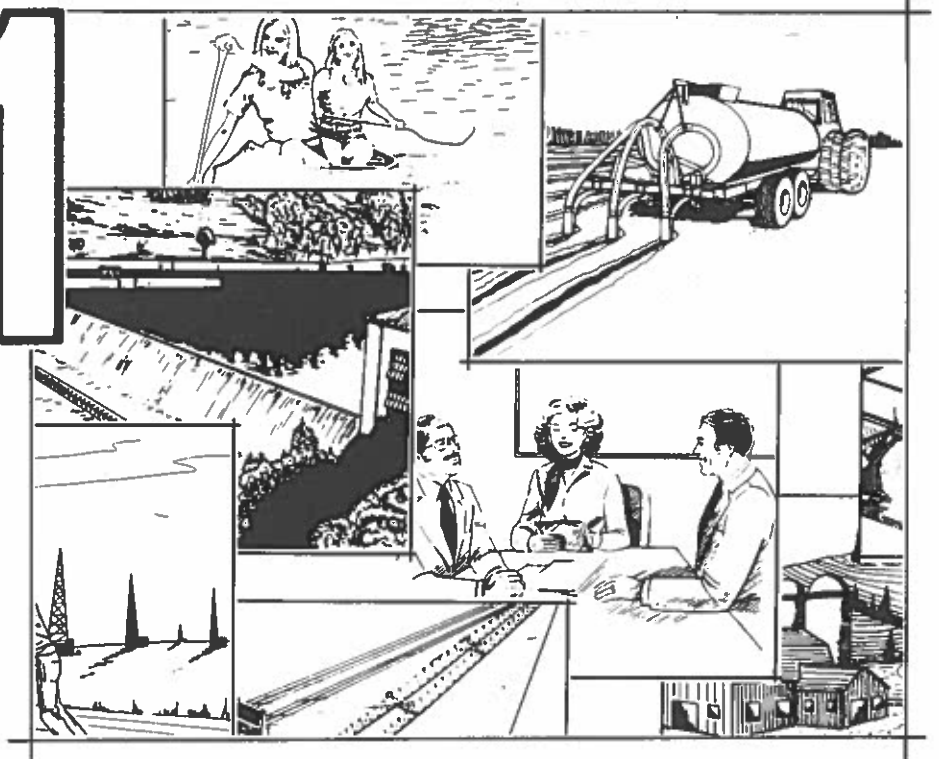
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INTRODUCTION

CHAPTER

1



CHAPTER ONE: INTRODUCTION

I. PURPOSE

Section 303(e) of the Clean Water Act requires that the State develop a continuing planning process (CPP) which integrates operating policies, procedures and practices that comprise the functional and planning elements of the Agency's water quality management (WQM) program. The purpose of the Illinois Water Quality Management Plan, presented in this document, is to consolidate and streamline portions of approved state and areawide WQM plans in order to facilitate their usage in the routine operations of all designated WQM agencies.

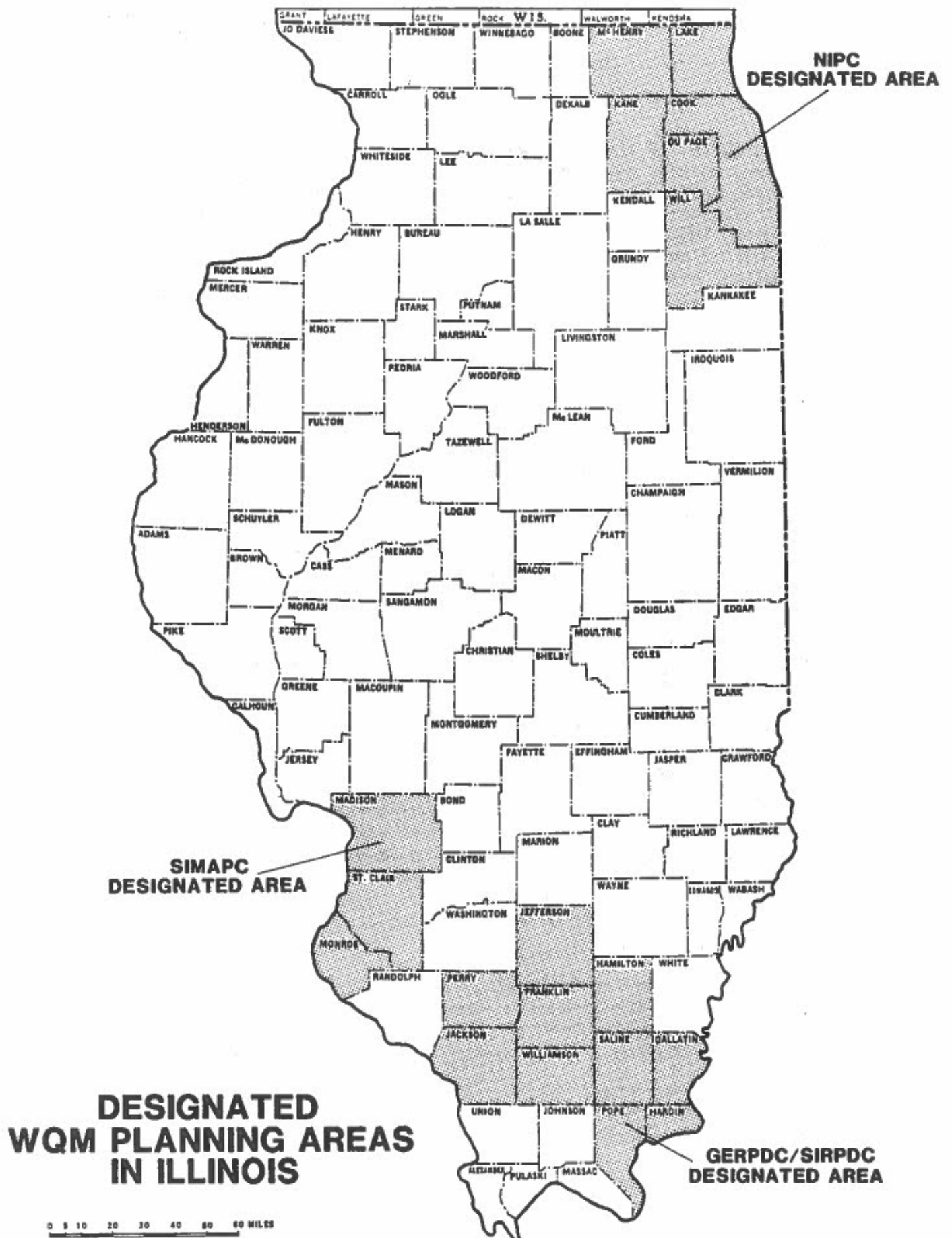
Four Water Quality Management (WQM) plans have been approved within the State of Illinois: three areawide plans covering 19 counties; and the State WQM Plan covering the remaining 83 counties. The areawide plans have been developed by three designated regional WQM plan agencies: Northeastern Illinois Planning Commission (NIPC), Southwestern Illinois Metropolitan and Regional Planning Commission (SIMAPC) and Greater Egypt Regional Planning and Development Commission (GERPDC). The State plan has been developed and maintained by the Illinois Environmental Protection Agency (IEPA). All three areawide WQM plans have been broadly integrated with the State WQM plan but operational procedures need to be refined to effectively use WQM plans in an administrative framework. The WQM consolidation effort has been directed toward identifying desired base information, establishing an appropriate format for all four WQM plans, and promoting efficient procedural mechanisms to expedite WQM plan consistency determinations.

II. DEVELOPMENT OF STATE AND AREAWIDE WQM PLANNING PROGRAMS

WQM planning authority and responsibility for 19 counties has been delegated to areawide planning agencies designated under the provisions of Section 208. These agencies (NIPC, SIMAPC and GERPDC) were specifically designated by the Governor as being best qualified to undertake WQM planning in their respective areas. WQM planning for the remaining 83 counties in the State was conducted in accordance with Sections 208 and 303(e). Under these authorities, WQM plans were developed by the three designated areawide agencies and Illinois EPA.

Water quality management planning, on a statewide basis, has been accomplished in three phases: Phase I WQM plans completed by IEPA under Section 303(e) authority; Phase II and III plans and programs developed by state and areawide agencies under Section 208 funding.

The Phase I Basin Plans for 14 basins identified as planning areas were completed by IEPA prior to July 1, 1976. These plans developed a complete and accurate inventory of wastewater dischargers which were originally included in the NPDES permit program (excluded were such point source categories as storm sewers, small livestock



feedlots, and agricultural field drainage tiles). Phase I plans documented ambient water quality conditions and problems which would not be solved by implementation of the point source regulatory controls alone. This resulted in a segment-by-segment listing of water quality standards violations which were expected to continue in the absence of additional controls on point or nonpoint sources.

Phase II planning (Section 208 Planning) started in 1975 with the designation of the NIPC, SIMAPC and GERPDC WQM planning areas. The areawide Phase II planning strategies emphasized the development of comprehensive WQM plans which produced locally acceptable and politically feasible recommendations for point and nonpoint source control and institutional arrangements for plan implementation. In 1976, IEPA was delegated the WQM planning responsibility for the nondesignated portion of the State. The Phase II strategy of Illinois EPA emphasized nonpoint source assessment and problem solving approaches. Institutional arrangements for plan implementation were the main focus in those problems areas where it appeared likely implementable solutions could be developed, within the initial WQM planning period. The agricultural nonpoint source element and lake programs were developed during Phase II. Phase II planning also served as the problem assessment stage for groundwater, construction erosion and urban runoff. Development of program expertise for agricultural nonpoint source control was assigned high priority. Phase III provided for the transfer of this experience to other nonpoint source problems. Additionally at the end of Phase II planning, the Governor designated the Illinois EPA and the three areawide agencies as continuing planning agencies required under the Clean Water Act Amendments of 1977.

Phase III elements included all those planning and program activities that were undertaken since May of 1979. The State and areawide programs during Phase II plan development tended to look at the general relationships between water quality conditions and the applicability of technical or institutional control options. These initial studies revealed those areas in which the information base and/or causative relationships were not sufficiently developed for decision-making purposes. Since the completion of the initial plan development phase in the 208 program, attention has been directed towards attainment of an adequate data base, the transfer of information and control approaches, and the implementation of control strategies for problem resolution. The development of the Illinois Water Quality Management Plan serves as the transition from Section 208 planning to a continuing water quality management program.

III. THE CONCEPT AND ORGANIZATION OF THE ILLINOIS WQM PLAN

The WQM Plan represents a joint effort by the four agencies with WQM planning responsibilities. The four agencies involved are: Illinois Environmental Protection Agency, Greater Egypt Regional Planning and Development Commission, Northeastern Illinois Planning Commission and the Southwestern Illinois Metropolitan and Regional Planning Commission. In addition to WQM planning responsibilities,

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Illinois EPA also retains certain implementation responsibilities. Other implementation responsibilities are assigned or recommended to the appropriate local governmental units and other state agencies for both point and nonpoint source control.

There are several reasons which promoted the unifying of existing state and areawide plans. The first is the need to compile existing WQM plans in a convenient and expedient administrative format. The need for convenience and workability is applicable for both local and state level decision-makers. At the state level, there is a need to improve the process of WQM Plan consistency review for NPDES permit or Title II Construction Grant determinations. For local officials there is a need to clearly define designated management agency responsibility. This is a necessary step in the continuing process of WQM plan implementation.

A second reason for WQM Plan consolidation is to provide an orderly transition from plan development to implementation of programs. There has been a considerable public investment to establish credibility in the process Section 208 created, both from a planning and implementation standpoint. The cessation of funding for Section 208 WQM planning has resulted in the need to incorporate this planning process into the ongoing Agency water pollution control program. Program choices need to be made in light of this fiscal reality. This includes identifying ways in which the current WQM planning process can be merged into base Agency program activities.

The consolidating of State and areawide WQM plans provides the following benefits from both a State and local perspective:

1. Records statewide and areawide policies which make up the general management strategy for both point and nonpoint source;
2. Provides a concise compilation of pertinent data needed in consistency determination for grant and permit issuance;
3. Formats existing WQM plans into a standard style to simplify their use;
4. Denotes roles and responsibilities of designated management agencies;
5. Establishes a simple routine process to update and amend the WQM plan through the use of Agency's Annual Program Plan;
6. Incorporates water quality management planning considerations into base program (Sections 106 and 205(j)) activities and;

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7. Defines the minimum water quality management planning requirements for plan continuity.

The merging of State and areawide WQM Plans has been undertaken in two distinct parts. Part of this effort entailed the development of a document entitled 208 Planning in Illinois. This report contains abstracts for all FFY 1977 through 1981 projects completed with WQM planning funds by the respective State or areawide planning agency. This provides a convenient compilation of 208 work activities and facilitates information transfer among interested parties. The second part of this effort is the Illinois WQM Plan itself.

The Agency has worked with the three areawide agencies to develop a document which will fulfill these objectives. All four currently certified and approved WQM plans have been subject to the same level of scrutiny and revision. Revision in the context of the consolidation process is the reformatting of plans based on the administrative use of these documents over the past several years. Under contract, the areawide WQM agencies provided the following assistance during the consolidation effort:

1. Detailed facility planning area (FPA) boundary mapping in areas with complex boundary issues;
2. Identification of currently inconsistent FPA boundary alignments;
3. Tabular accounts of specified point source data jointly agreed to as necessary for decision-making and;
4. Summary narratives of point and nonpoint source recommendations contained in the initial approved WQM plans as modified by subsequent amendments.

Based on this information, a joint work effort merged this information together into one unified document. Following public review and any subsequent revision, this document will become the certified State and Areawide WQM Plan document for the purposes of consistency review. It will be the singular reference document for such reviews. Prior WQM planning documents represent a supplemental information base and an expression of local consensus. Prior WQM planning documents and those currently under development by designated areawide agencies represent a major source of guidance for management agencies in establishing their programs. While not a basis for consistency reviews, they should be routinely considered by management agencies working in the respective areas of the state. Their status with designated areawide agencies will be determined by each such agency after consultation with Illinois EPA.

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Following the completion and review of the initial plan consolidation effort, annual updates and amendments to the plan will be prepared by the Agency in cooperation with the Areawide WQM agencies and published in the Agency's Division of Water Pollution Control Program Plan. Public involvement process on plan amendments being considered may be conducted by the designated areawide WQM agencies. The Program Plan will serve as a vehicle to circulate and document WQM Plan changes. The amendment process for point sources will be conducted in accordance with the adopted "Procedures and Requirements for Conflict Resolution in Revising Water Quality Management Plans."

The WQM Plan is comprised of four distinct parts. Part One provides the basic conceptual framework and objectives of the plan. Part Two outlines the process for point source decision-making consistency within the WQM Plan. It also highlights the basis for regulatory action, how certain regulatory decisions form amendments to the WQM Plan and what other types of decisions result in amendments (changes) to the WQM Plan. There is also a discussion of the concept of conflict resolution and a definition of the term in the context of the WQM Plan.

Part Three of the WQM Plan is divided into ten major areas which were identified in the initial 208 water quality management plans. These sections are: agriculture; construction; urban runoff; mineral extraction-oil field brine disposal; mineral extraction-mining; hydrographic modification; groundwater; groundwater-residual wastes; groundwater-on-site disposal; and stream use/water quality standards. Each major section contains two headings: plan findings, and continuing policies and recommendations.

The plan findings section summarizes the common pollution problems identified in all four Water Quality Management Plans. Specific problems identified in respective State and WQM agency plans are highlighted. A brief generic definition of the problem and its impact on the waters of the state is provided in those instances where site specific identification does not exist.

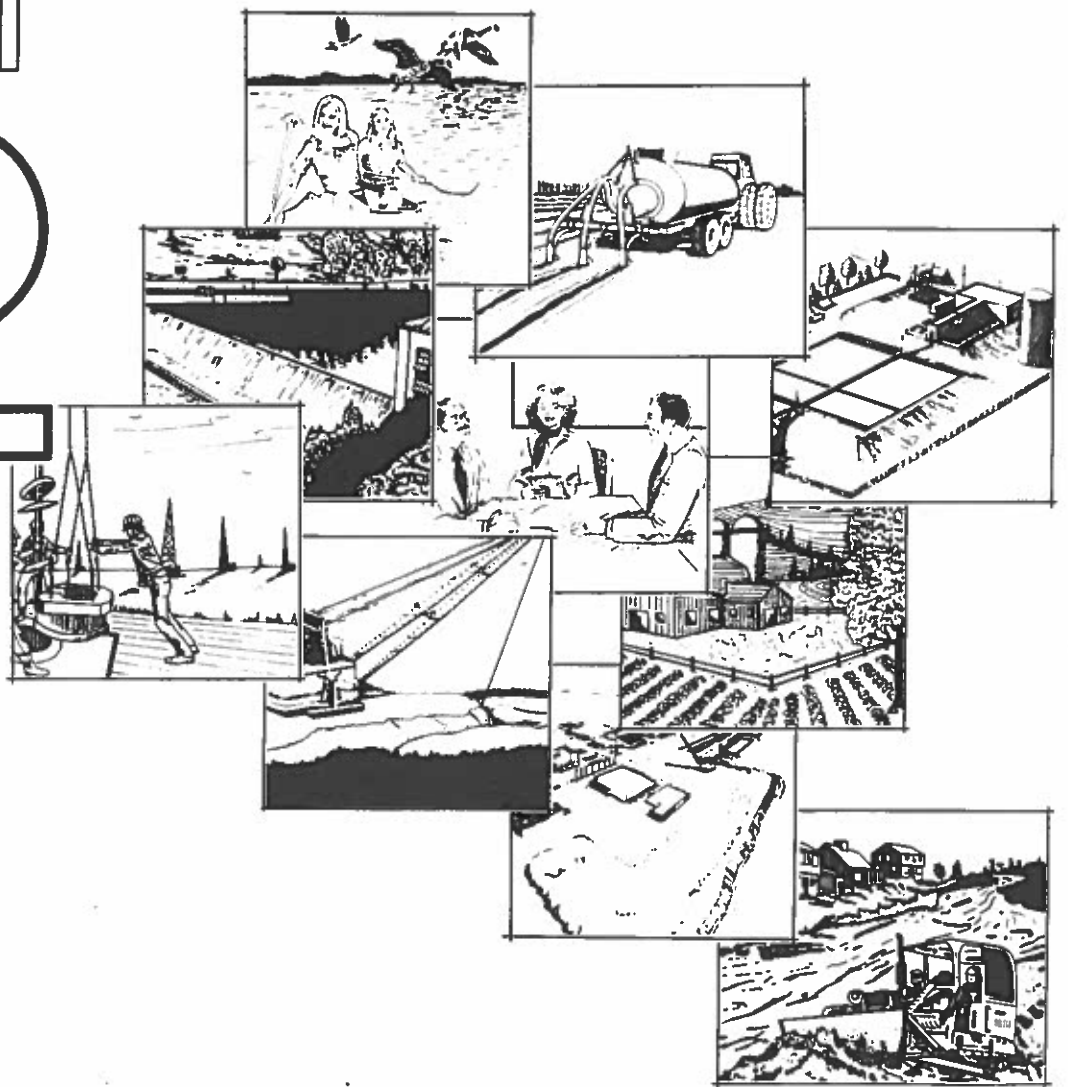
The second section contains policies and recommendations for the ten major chapters. These statements are derived from the initial plan findings, specific problem solving recommendations and applicable results from projects which were undertaken utilizing Section 208 WQM planning funds.

Part Four of this document discusses Management. As part of the on-going process of WQM planning and implementation, locally comprised advisory boards were created in the three designated areas. These groups serve in a facilitator role, particularly with regard to exercise of implementation responsibilities by local designated management agencies and maintenance of the certified WQM Plan. A general discussion of these groups, their activities and their relationships to areawide planning agencies are covered. This section also includes a description and discussion of designated management agencies for various point and nonpoint source areas.

POINT SOURCES

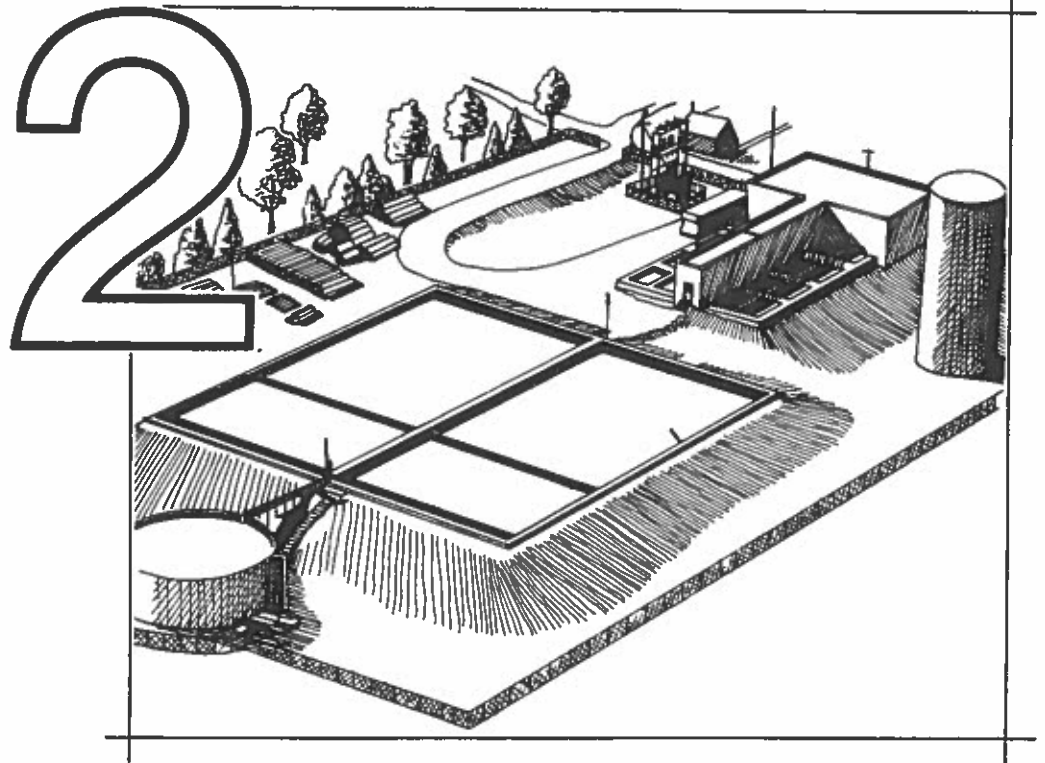
PART

2



POINT SOURCE CONTROL

CHAPTER



CHAPTER TWO: POINT SOURCE CONTROL

I. REGULATORY AUTHORITY AND ACTIVITY

Control of point sources in Illinois is provided through the regulatory structure established by the Illinois Environmental Protection Act (Act) and subsequently through the Illinois Pollution Control Board (Board) Rules and Regulations. The Agency administers the National Pollutant Discharge Elimination System (NPDES) permit program and incorporates the effluent limits into the individual permits. The Agency also reviews plans and specifications for wastewater treatment facilities through construction permit reviews and the construction grants authorization program. This review provides assurance that the design of the treatment facility is adequate to meet the effluent limits contained in the NPDES permit, the Act and Board rules.

In addition, other regulatory controls are placed on publicly owned sewage treatment plants. Approval must be obtained from the Agency for an expansion or modification to the sewer system tributary to the treatment plant that would increase the load to the plant by more than 1500 gallons per day. This review assures that a sewer system expansion does not overload the treatment plant. If overloading is expected, approval of new sewer system additions are withheld until additional plant capacity is provided. Further, plans and specifications for proposed sewer systems are reviewed to determine if the design is consistent with sound engineering practices. This review also assures that an NPDES permitted treatment plant will not serve areas outside the facility planning boundaries in conflict with Section 208 of the Clean Water Act.

General state and areawide strategies have been developed for control of municipal wastewater and their residual solids. Specific strategies are necessary in each case to assure that the general strategies are implemented. These have been developed either in the form of a "Facilities Plan," prepared by the communities utilizing federal or state grant funds as a preliminary requirement for construction grant monies, or have been prepared by the State or the designated WQM Planning agencies in the form of Municipal Needs Analysis (MNA). The latter were prepared for communities which had not received a construction grant at the time of initial WQM plan development and did not have a facilities plan. The recommendations of these facilities plans and MNA's have been incorporated into this WQM Plan along with policies for control of point and nonpoint source pollutants. Together they make up a comprehensive strategy for meeting water quality standards.

The recommendations of a facilities plan may be implemented through either federal or state construction grant programs and with local funding. A facilities plan is detailed and sufficient for implementation. All municipal needs analyses are subject to

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verification, correction, and in some cases even a complete change at some future date, if grant funds are sought for the community. The general needs analysis is replaced by a detailed and updated facilities plan information as it is completed by the individual community and approved by the Agency.

Other activities are undertaken in support of the construction grant award and NPDES permit issuance process outside of the context of WQM Plan consistency review. Construction grant funding priorities are established according to the "Criteria for Determining Construction Grant Priorities for Municipal Sewage Treatment Works Needs," promulgated by the Agency in March of 1979. Additionally, a portion of the construction grant allocation to the State is set aside in support of innovative and alternative wastewater treatment technologies. Pollution Control Board regulations also require that every existing, on-line wastewater treatment facility be under the supervision of an operator who has been certified by the Agency to operate the facility (Ill. Adm. Code, Title 35, Subtitle C, Chapter I, Part 312). The Agency conducts an extensive out-reach program of training and technical assistance to assure compliance with these regulations.

The Agency also evaluates the level of operation and maintenance given to publicly-owned, private and industrial treatment works and monitors their performance to assure compliance with permit standards. The industrial pretreatment program conducted by the Agency is also considered part of the process of NPDES compliance assurance. It encompasses designated publicly-owned treatment works, including the maintenance of inventories of all industrial wastes conveyed to these treatment plants. The Agency has also extended its cooperative in-stream sampling and lake monitoring program through local voluntary efforts.

Finally, the Illinois EPA in cooperation with the U. S. Environmental Protection Agency, U.S. Geological Survey and the U.S. Food and Drug Administration provides a program of laboratory quality assurance to assist public and private treatment plants cooperative laboratory activities and field work supplement these relationships. All these activities in grants priority, compliance assurance, operation and maintenance, operator certification, laboratory quality control and cooperative monitoring form the pragmatic basis for implementation beyond the framework of the WQM Plan.

II. BASE DATA AND CONSISTENCY REVIEWS FOR GRANT OR PERMIT CONFORMANCE

A number of point source grant, permit and compliance determinations regarding designated management agencies (DMA's) at some point in the course of the decision-making process must be screened against the WQM Plan. The purpose of the Point Sources section is to establish the relationship between the Illinois WQM Plan and certain specific Agency regulatory and grant functions. This relationship is limited to those items directly relevant to the Agency in terms of the efficient execution of its regulatory and functional responsibilities. Consequently, the point source portion of the Illinois WQM Plan has the following objectives:

1. Recording of statewide and areawide policies which make up the general management strategy for point source control;
2. Identification and definition of base data required for grant and permit determinations;
3. Establishment of a uniform amendment procedure to assure the integrity of the base data as it is modified by changing circumstances;
4. Establishment of an annual process for Plan update and revision and the mechanism to carry out notification of changes to the public, and;
5. Provision of conflict resolution procedures which allow for expedient and accountable determinations of fact related to point source WQM issues.

The emphasis of the WQM Plan for point sources is directed towards consistency between the Illinois WQM Plan and NPDES and construction grant determinations. The relationship of the NPDES program in terms of the WQM plan is described in 40 CFR 35.1533-4(a) (Relationship to other programs), dated May 23, 1979:

- (a) Relationship to the NPDES program -- In accordance with Section 208(e) of the Act, no NPDES permit may be issued to any point source which is in conflict with an approved WQM plan. Under 40 CFR 35.1521-3(a), conditions for incorporation in permits under 208(e) are established during WQM planning. Permit conditions identified under Section 208(e) may be superseded by applicable, more stringent NPDES permit requirements.

The relationship of the construction grants program to existing WQM plans is described in 40 CFR 35.2102 (Interim final rules - Grants for Construction of Treatment Works), dated May 12, 1982:

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The project shall be consistent with the approved element of any applicable water quality management (WQM) plan approved under Section 208 or Section 303(e) of the Act; and the applicant shall be the wastewater management agency designated in any WQM plan certified by the Governor and approved by the Regional Administrator.

Based on these requirements, the Agency identified the following items as base data for the point source consistency reviews:

1. Geographic location of facility planning area (FPA) boundaries, contained on the FPA base maps available at IEPA and the designated areawide agencies. They are incorporated by reference as part of this plan and constitute the map of record. In general, the geographic location of FPA boundaries are as established in facility plans approved by Illinois EPA. Overlaps and boundary conflicts may be clarified through use of the Conflict Resolution Rules (see Section V).
2. Specific designated management agencies for collection, treatment and transport within the FPA(s). These are listed in a separate tabular Appendix, which is incorporated as part of this plan by reference. These include local entities which have been designated for planning, collection, transport, treatment and sludge disposal of sewage. They can be public, quasi-public or private enterprises engaged in the provision of such services; and
3. Current and planned facility treatment capacity, activation and/or termination of treatment facilities, specific identification of all facility locations and discharge points as identified in the Appendix, which is incorporated as a part of this Plan by reference.

III. POLICIES AND RECOMMENDATIONS

The policy of the Water Quality Management Plan is to undertake activities consistent with the principles and criteria below:

- 2.1 From a statewide perspective, the control of point source discharge is a necessary component in a comprehensive strategy for water quality management. The primary responsibility for control of point sources is shared between the State and local designated management agencies.
- 2.2 The emphasis of the WQM Plan is to ensure that those State and local programs involved with point source control are carried out in an efficient and effective manner.

- 2.21 Efficiency is best served by coordination and review at the local and areawide level. In designated areas, coordination and review are a function of the Areawide Water Quality Planning Agencies and their associated management structures.
- 2.3 It is the primary responsibility of the State to ensure that the process of construction grant award, permit issuance and compliance monitoring are undertaken in accordance with all applicable state and federal requirements. The issuance of new NPDES permits constitutes an amendment to the approved WQM Plan.
- 2.31 NPDES permits will identify a designated management agency (DMA) for the control of the specified point source. The denial of an NPDES permit for a facility being phased out will constitute de-designation of the specific management agency with regards to that facility. In cases where the DMA for operation of a specific facility is not the designated facility planning agency, consultation between DMA's should occur before permits are issued.
- 2.32 Permit determinations will evaluate the currently approved locations of the treatment facilities, DMA status, facility planning area, and design year flow. Permit issuance will be consistent with this evaluation unless new circumstances indicate changes are necessary (i.e. current or projected waste water flows differ from plan as a result of infiltration/inflow or loads). Agency Conflict Resolution Rules (Part 351) will be utilized as applicable. All requests for NPDES permits from other than the lead planning agency for the FPA will be referred to the lead agency prior to Illinois EPA action. In designated WQM planning areas, this will be handled as a part of the areawide review process.
- 2.321 Conformity to the WQM Plan for NPDES and construction permits will generally consist of plant location, facility planning area as well as design flow in MGD.
- 2.322 Incorporation of existing miscellaneous and privately owned point source discharges into a publicly owned system are encouraged. Determination of continuing DMA status of existing interim plants will be made at each NPDES permit review. This review will consider the scheduling of extensions from permanent facilities.

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- 2.323 The construction of new interim plants or expansion/upgrading of plants to be phased out is to be discouraged. NPDES permits for new interim treatment plants can only be issued for a temporary period of operation. Conditions of issuance shall consider the compelling need for temporary DMA designation. Approval of the NPDES permit shall be conditioned upon the necessary proof of intention to provide an orderly phase out by the lead DMA within the planning period.
 - 2.324 For permit consistency, all publicly owned and operated treatment works, privately owned and operated treatment works under ICC certificates and miscellaneous point source discharges are to be reviewed by Illinois EPA and areawide agencies against the approved base data of the Illinois WQM plan. The Areawide WQM Planning Agency will identify those provisions of the WQM Plan with which the facility may be inconsistent. Industrial process, thermal, or non-contact cooling water NPDES permits are specifically excluded.
 - 2.325 The review of privately owned wastewater treatment systems certified by the Illinois Commerce Commission (ICC), including changes in the franchise area of an existing system, will be handled in a fashion similar to a publicly owned or operated facility and permit consistency determinations.
 - 2.326 The Municipal Needs Analyses (MNA) will be used where the Facility Plan Area (FPA) has an existing designated management agency (DMA) for collection, transport or treatment. Where the FPA is completely unsewered, additional planning will be required before appropriate data will be incorporated in the WQM Plan.
- 2.33 Facility planning areas are defined as the area considered for wastewater treatment service within a twenty year planning period. Exceptions are those areas where the designated management agencies have defined an area to be entirely served by on-site treatment over the next twenty years. The Agency will take cognizance of facility planning boundaries in its review of permit applications for sewer extensions under Section 39 of the Act. In the

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review of facility plans, the Agency will consider the population forecasts prepared by the Areawide WQM Planning Agency for projects in their designated area. Consistency with facility planning boundaries must be maintained to assure that issued NPDES permits will comply with Section 208(e) of the Clean Water Act. Approval of facility plans or issuance of new NPDES permits constitute amendments to the WQM plan.

- 2.331 Facility planning area base maps have been approved by Illinois EPA for areas anticipated to require wastewater treatment. These FPA's are recorded on a series of maps available from the Agency or the designated areawide management agencies. These maps are certified as a part of the Illinois WQM plan and constitute the map of record. Overlaps may be clarified through use of the Conflict Resolution Rules.
- 2.332 Facilities planning area boundaries should be revised as necessary to reflect existing development and facilities, existing population forecasts, intergovernmental agreements on service area boundaries, and other relevant factors. In the review of facility planning boundary amendment requests, the designated areawide agencies will make appropriate recommendations to the local management agencies involved and to Illinois EPA.
- 2.333 For facility plan consistency, all facility plans for publicly owned and operated treatment works are to be reviewed by IEPA and areawide agencies where appropriate against the approved WQM Plan. Designated Areawide Agencies will make recommendations to Illinois EPA on action to take in cases of inconsistent boundary alignments.
- 2.334 Review of Federal wastewater construction grants will take cognizance of the policy directives contained within the Governor's Executive Order #4, the Illinois Farmland Protection Act, the United States Farmland Protection Act and the National Environmental Protection Act.
- 2.335 Designated areawide planning agencies will assist local designated management agencies in settling unresolved issues with respect to facilities planning and boundary alignments.

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- 2.4 Local designated management agencies are primarily responsible to ensure the quality of effluent, the efficient provision of service within its facility plan area, the effective enforcement of applicable sewer use and pretreatment ordinances as well as the encouragement of water or energy conservation strategies (as appropriate). Facility plans should be implemented by local designated management agencies as approved by Illinois EPA. Amendments to these plans should be conducted in accordance with established Agency procedure.
- 2.41 Local designated management agencies are responsible for assuring that facilities planning is closely coordinated with local government planning and decision making with respect to growth and development. Local planning and zoning jurisdictions should work closely with wastewater facility planning agencies to assure the most efficient possible use of limited facility construction funds, and to assure that site design takes into consideration water quality concerns.
- 2.42 Local designated management agencies should ensure that the design and operation of their present and future facilities carefully consider the energy implications of wastewater collection and treatment.
- 2.43 Subject to assigned priority rank and the availability of federal or state grants, municipalities and sanitary districts should complete their facilities plans, to include Inflow/Infiltration Studies and Sewer System Evaluation Studies as required by 40 CFR 35.927.
- 2.44 In northeastern Illinois, those jurisdictions using Lake Michigan water are required by the IDOT/Division of Water Resources allocation order (LMO-4) to carry out certain water conservation measures. A model conservation ordinance prepared by the Northeastern Illinois Planning Commission incorporates those measures, and is recommended for consideration by all municipalities.
- 2.45 Municipalities and counties in other portions of the State are encouraged to implement programs to reduce water usage. This is to promote resource conservation and wastewater flow reduction.
- 2.5 Continued regulation of combined sewer overflows is a beneficial and essential element of an effective statewide WQM plan. Local treatment authority plans for controlling combined sewer overflows must comply with applicable Pollution Control Board rules.

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- 2.51 The Metropolitan Sanitary District of Greater Chicago (MSDGC) should control combined sewer overflows as provided by its Tunnel and Reservoir Plan (TARP). The implementation of TARP is critical to water quality throughout the combined sewer area and in downstream rivers and canals.
- 2.52 In northeastern Illinois within the MSDGC service area, communities having combined sewers in all or portions of their corporate limits will seek federal grants to initiate and complete studies necessary to determine what facilities will be necessary to optimize local sewer systems in order to take advantage of the TARP system.
- 2.6 The coordination and evaluation of point source activities within the designated areas should be provided for through the areawide management systems established by the Illinois Water Quality Management Plan in Chapter Thirteen of this document.

IV. AMENDATORY PROCEDURES

The WQM plan serves as an operational reference for the implementing agencies. The process of plan revision, amendment, maintenance and update must be evaluated to assure success of plan implementation. The enforcement and implementation mechanism for point sources are undertaken in the construction grant award and NPDES permit issuance process (Sections 201 and 402) with conformity and consistency established between the two by WQM plans (Section 208). Consequently, WQM plan amendment and update requirements related to point sources must reflect the operational and day to day aspects of the plan.

For reference purposes, the following are the official initial WQM plan approval dates: Illinois EPA-Agricultural Plan Element October 1, 1979 and Remaining Elements March 31, 1980; SIMAPC -- December 20, 1979; NIPC -- May 1, 1980 and; GERPDC -- February 18, 1981. The identified base data for point sources is not static since it is a function of changing technical and economic considerations. Because of these facts, the need to amend the WQM plan becomes a necessary part of the consistency review process. Certain regulatory actions, when in the context of consistency with the WQM plan, constitute an amendment process. Consequently, all new facility plans approved and/or new NPDES permits issued constitute amendments to the Plan. As such, the procedures routinely used to approve facilities plans or issue NPDES permits are the official amendatory procedures to be used in those instances. The designated Areawide WQM agencies will review facility plans and certain categories of permits before amendments are approved.

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There are instances which will cause a need for the use of the Conflict Resolution Rules prior to amendment of the WQM Plan. These instances include:

- (1) Changes in approved FPA populations;
- (2) Changes in approved FPA boundaries;
- (3) Designation of new or existing authorities as point source management agencies;
- (4) De-designation of existing point source management agencies;
- (5) Incorporation of FPA's or wastewater treatment facilities not identified in the original approved WQM plan, and;
- (6) Other circumstances where a significant degree of public interest exists to warrant the use of the Conflict Resolution Rules. Changes or alterations which improve accuracy in description or correctness of data are not considered amendments to the WQM Plan which require the use of the Conflict Resolution Rules.

The Agency is the only entity which has authority to amend the WQM Plan. Areawide agencies will be asked to review and comment on proposed amendments prior to certification. Revisions or amendments of significance will be published in the Agency's Division of Water Pollution Control Annual Program Plan. This will serve as the official record for the Illinois WQM Plan as it is updated, amended or otherwise modified.

V. CONFLICT RESOLUTION

Where conflicts arise concerning point source discharges in the context of the Water Quality Management Plan, initial efforts will be made to resolve them at the local or areawide level. Conflict resolution procedures have been adopted by the Agency to assure this opportunity. The Agency has published in the Illinois Register (6 Ill. Reg. 2597, effective March 1, 1982) "Procedures and Requirements for Conflict Resolution in Revising Water Quality Management Plans." These rules contain the procedures for conflict resolution resulting from contested changes to the WQM Plan. If conflicts cannot be resolved on the local level, the review and approval of proposed changes has been delegated to the Director of the Agency. These procedures assure due process during the course of resolving consistency issues.

VI. AREAWIDE ROLE

The Areawide role in point source management is divided between the areawide WQM planning agency and the respective local advisory board for the designated area. The Areawide WQM planning agency's roles in regard to point sources are listed below:

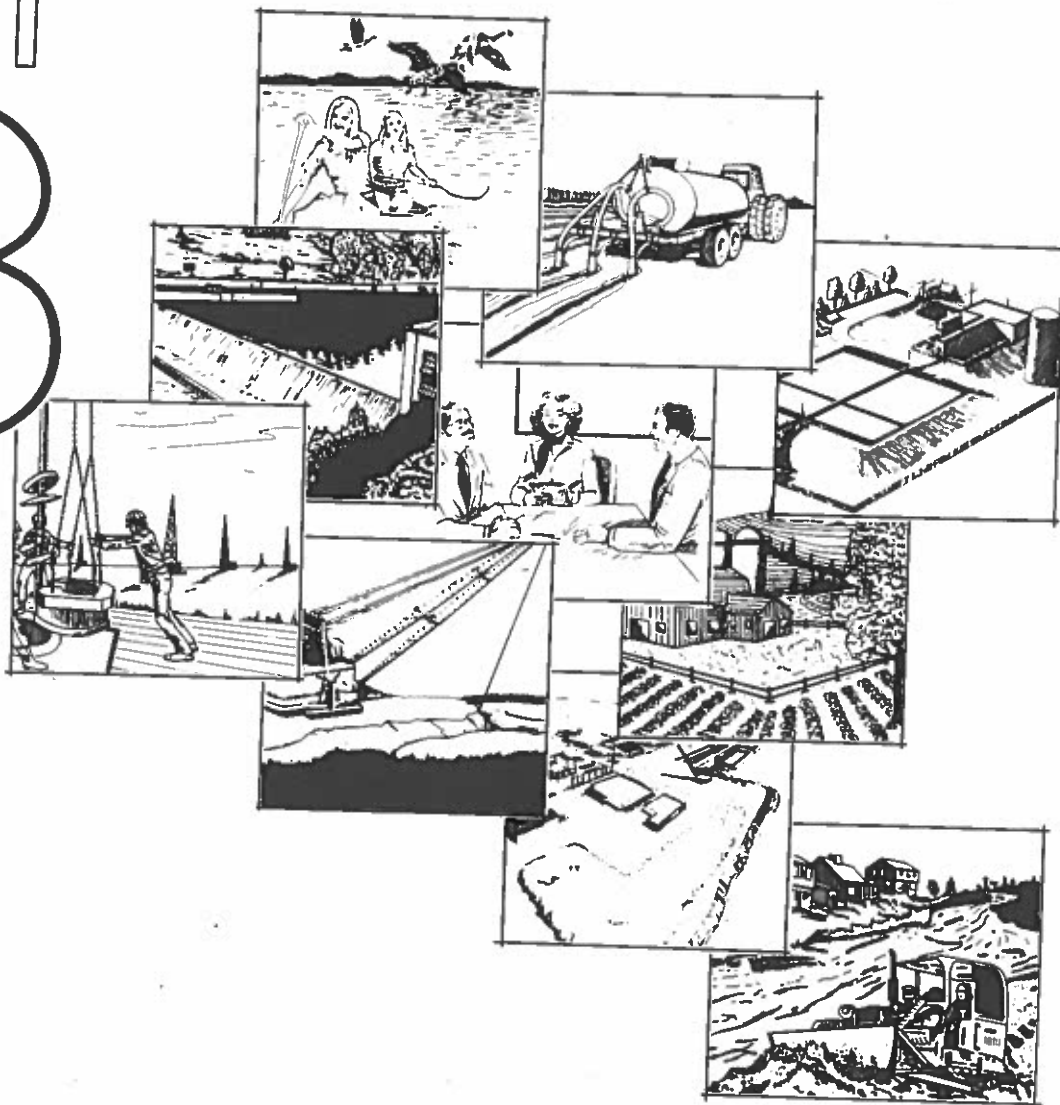
- (1) Provide reviews of point source proposals;
- (2) Recommend to the Agency revisions or amendments of the Plan necessary in their WQM planning jurisdiction;
- (3) Promote conflict resolution (as necessary) at the lowest possible decision-making level;
- (4) Maintain accurate base data for point source decision making.

A further discussion of individual areawide board responsibilities is found in Part Four of the Plan.

NONPOINT SOURCES

PART

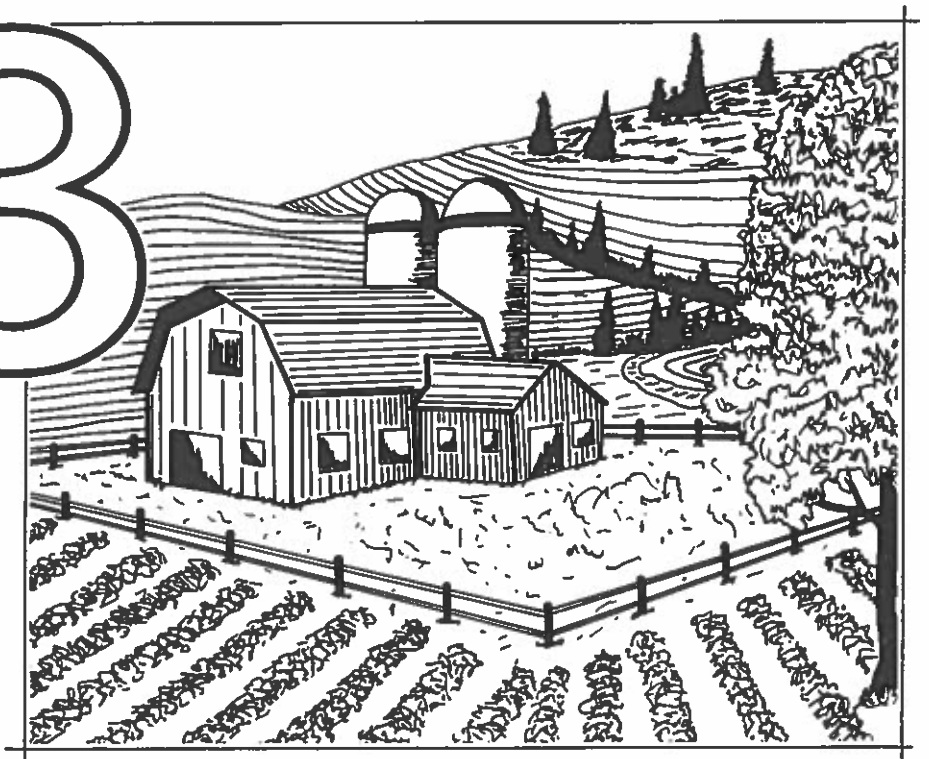
3



AGRICULTURE

CHAPTER

3



CHAPTER THREE: AGRICULTURE

SECTION A: SOIL EROSION AND SEDIMENTATION

I. WQM PLAN FINDINGS

Soil erosion is a natural process in which water, wind, ice, or gravity dislodge soil particles from the soil mass and transport the particles to new locations. Soil erosion can be divided into several categories based on the volume, velocity, and duration of runoff and the characteristics of the field and soils. Splash erosion occurs as falling raindrops impact and disturb the soil, dislodging and transporting soil particles away from the area of impact. Once the soil becomes saturated, falling rain detaches and transports soil particles, which move through a thin sheet of water flowing across the soil surface. This type of erosion is known as sheet erosion, and is responsible for the majority of soil loss in Illinois.

Rill erosion is the formation of small channels in areas of concentrated water flow. As the water is channelized, it cuts into its sides and detaches additional soil particles. Rills are estimated at 1 - 3 inches in depth. Gully erosion follows the same process as rill erosion, but is intensified by one or more of the following: increase in water volume, increase in slope or slope length, and/or increase in duration. Gullies exceed 3 inches in depth and can cut deep into the subsoil.

Large amounts of soil can be detached and transported by streambank erosion. This occurs when the erosive power of water and gravity are so great that large sections of soil and vegetation are undermined and slough from the banks. Factors affecting the rate of erosion include: rainfall patterns, soil type, slope length and steepness, conservation practices and management.

Soil erosion and sedimentation have a direct link. Sedimentation is the process of layering or depositing particulate matter on a lake or channel bottom. The product of erosion is not confined to agricultural land. Soil that is transported from the field, can impact water quality in the form of sediment. Field runoff transports eroded soil into drainage ditches, creeks, streams, rivers, and lakes. The Sediment Delivery Ratio (SDR) is the amount of sediment transported to the water body compared to the amount of sediment actually eroded. It is important to note that the amount of soil eroded from a watershed will not always equal the amount of sediment delivered to the water body. Lake bluff erosion can deliver 100% of the sediment to the lake since there is no barrier between the bluff and the lake. The amount of sediment that enters a lake from a field one mile upstream would be less than 100%, because of the obstacles (crop residue, field borders, fence rows, conservation practices, etc.) that reduce the water's velocity and, in turn, its carrying capacity. The SDR is specific to each watershed. It is not a constant value and will change as the watershed changes.

Once the sediment is delivered to the watercourse, water velocity will limit the amount of sediment, and the size of soil particles that can be carried. Higher velocities can carry larger particles and larger amounts of sediment. As velocities decrease larger particles will settle out first. This is seen in streams where the velocity has been decreased near blockages, and at the entrance to an impoundment or reservoir. The larger sand and gravel particles settle out to form a delta, while the silt and clay will be carried as suspended solids farther into the impoundment. Silt and clay may be deposited closer to the delta, only to become resuspended during the next storm event.

Depending upon the soil type, land in Illinois can lose 1 - 5 tons/acre/year (known as the tolerable soil loss or "T" value) and still retain its natural productivity over an extended period of time. If erosion rates continue to exceed the land's "T" value, it will reduce soil productivity and consequently have a negative economic impact in terms of reduced crop yields and potentially declining land values. In effect, soil erosion deprives a farm operator of the production base, and thus increases production costs. This in turn reduces profitability. Sedimentation, left in the field by early spring runoff, can smother young crops. Rill and gully erosion have the potential to uncover or wash away seed, fertilizer and pesticides. As operators farm close to or into the subsoil, the additional clay materials make tillage and planting more difficult. Decreased infiltration rates caused by additional clay can increase the rate and erosive force of water runoff. Sediment fills culverts, waterways, field lanes, and can force water to take an alternate path, which can again increase soil erosion. Excessive gully and streambank erosion can remove valuable acres from crop production.

Once the soil has entered the water course, it is transported downstream. Suspended solids increase turbidity and can impact the aquatic life that depends on sight for food gathering. Turbidity decreases penetration of light, which decreases photosynthesis and in turn vegetative cover. Turbidity increases water treatment costs as additional chemicals are needed to process the water. Layers of sediment cover spawning areas, eggs, and aquatic vegetation which will all have an impact on the aquatic population. Nutrients attached to soil particles entering the water, can increase aquatic plant growth such as algae blooms. Increase plant growth, decreases available dissolved oxygen. Reduced rates of dissolved oxygen cannot sustain existing aquatic life. Algae blooms make areas inaccessible for boats and fishing. As algae blooms die off, vegetative cover is reduced, this compounded with the reduction of water depth by sedimentation, can increase the range of water temperatures, and again decrease or limit aquatic life. Pesticides can contaminate water and aquatic organisms.

Sediment can reduce channel navigation, and make areas inaccessible by boat. Sediment decreases impoundment size as deltas are formed and can decrease flood storage capacity. Wetlands can be filled and their ability to filter out excess nutrients can be lost or severely impaired. River crossings that constrict the flow of water, will experience upstream

sedimentation. If too much sediment is deposited, and a high intensity storm event occurs, damage could occur to the crossing itself, or a nearby area, as the water finds the path of least resistance. Man-made structures, such as bridges or tressels may be lost to the force of the water.

In 1991, agricultural land in Illinois totaled 31,316,300 acres or about 87% of the state. Cropland covered 24,727,500 acres (68.5%), pastureland 3,158,400 acres (8.8%), and forest land 3,430,400 acres (9.5%). In 1982, the National Resources Inventory (NRI) showed that cropland acres alone exceeded "T", totaled approximately 9.9 million acres. The 1987, NRI concluded that rural land exceeding "T" in Illinois dropped from about 10.8 million acres to 8.4 million acres, or more than 21 percent.

The average soil loss rate per acre also showed a significant decrease from 1982 to 1987. The estimated annual rate of soil loss on a per acre basis for rural land in 1982, was 6.1 tons/acre/year. By 1987, the soil loss rate had dropped approximately 25 percent, or about 1.5 tons/acre/year to 4.6 tons/acre/year. The average soil loss rate for cropland acres dropped 23 percent, from 6.8 tons/acre/year to 5.2 tons/acre/year. If the annual per acre soil loss rates are applied to the 32 million acres of rural land in the State, total annual soil loss was reduced from 194.7 million tons to 146.5 million tons. Total statewide soil loss on the 24.7 million acres of cropland in 1982, was estimated at 166.9 million tons annually. Five years later in 1987, the number of cropland acres had increased to 25.1 million acres statewide. However, due to the reduction in the per acre rate of soil loss from 6.8 tons/acre/year to 5.2 tons/acre/year, total soil loss for cropland was estimated at 130.1 million tons/year.

According to the United States Department of Agriculture - Soil Conservation Service (SCS); from 1988-1991, 2,539,161 acres of rural land were treated to "T". Using the 1987 figure of 8.4 million acres exceeding "T" as a base from which to measure progress, a decrease of approximately 2.5 million acres of land over "T" during the last four years would indicate a current figure of about 5.9 million acres exceeding "T". In addition, it is estimated that approximately 35 million tons of soil were saved annually on all rural land treated from 1988-1991. Again, using the 1987 NRI base for estimating progress, a reduction of 35 million tons annually from the 146.5 million tons of soil loss estimated on rural land in 1987, would bring the current annual soil loss estimate to 111.5 million tons.

The following table taken from the Illinois Department of Agriculture (IDOA) 1991 Annual Progress Report, includes only those land capability classes where water erosion is the primary hazard. The land capability class groups soils according to their capability for intensive use and the treatments required for sustained use.

CROPLAND EROSION RATES BY LAND CAPABILITY CLASS

Land Capability Class	Slope Range (Percent)	Acres	Treatment Needed (Acres)	Erosion Rates ¹
I	0-2	3,972,000	869,000	3.8
II e	2-5	5,974,000	4,055,000	8.0
III e	5-15	2,264,000	1,852,000	15.7
IV e	15-20	878,000	763,000	25.0
VI e	20-30	389,000	329,000	34.3
VII e	20-30	39,000	29,000	42.9

1 - Average erosion rate in tons per acre per year for both treated and untreated cropland.

Thirty-six percent or roughly 11,200,000 acres need some form of treatment to control soil erosion. Conservation practices and land management changes, are used to reduce soil losses. Local, State, and Federal programs are designed to assist landowners to improve land management, and with the installation of conservation practices.

The 98 local soil and water conservation districts (SWCD) located in Illinois, adopted guidelines to meet the goal of "T" by 2000. The SCS and the SWCDs work toward the "T" by 2000 goal, by assisting in the development of conservation plans. These plans include management programs, crop sequences, tillage and conservation practices. There has been a dramatic increase in the completion of conservation plans since the 1985 Food Security Act was implemented. Most plans incorporate local, State, and Federal programs such as the Conservation Reserve Program (CRP), Build Illinois or Agricultural Conservation Program to help landowners implement their plans.

The purpose of the CRP is to take highly erodible cultivated land out of production under a ten-year conservation plan. In Illinois, a total of 14,912 contracts have enrolled 633,466.2 acres. An estimated 12.7 million tons of soil per year are being saved by implementing these CRP contracts. At the start of CRP, it was estimated that 1,000,000 acres of the 3.6 million acres eligible in Illinois would be enrolled. This figure takes into account that some of the eligible area was already in permanent vegetation or had not been cropped between 1981 to 1985.

Residue management can be an effective way to protect the land from sheet or rill erosion. The Conservation Technology and Information Center reported that in Illinois, 42.7%, or 9,803,896 acres of the cropland planted in 1991, was planted in some kind of conservation tillage system

(14.8% No-Till, 1.0% Ridge-till, and 27.0% Mulch-till). This is an increase over 1984 of 12.2%, or 2,562,896 conservation acres planted in Illinois.

The Build Illinois program and the Agricultural Conservation Program (ACP) provides financial incentives to landowners to install conservation practices on their agricultural land. Through the Build Illinois Program (FY 1986 - FY 1991), 6,495 projects have been installed to save approximately 2,742,185 tons of soil on 287,271 acres.

Although the data contained in this section reflect only the assistance provided individuals as reported by a particular agency, additional conservation work is completed by landowners without direct assistance. As a result, more progress in soil conservation and water quality improvement is being made than can be reported.

Agricultural land erosion and sedimentation control Best Management Practices (BMP) include, but are not limited to the following. Selection and utilization of a given BMP should result from site specific evaluations and consultations with SCS, Cooperative Extension Service (CES) and other technical sources to determine practice suitability and ensure proper design and implementation in accordance with State and Federal Rules and Regulations.

Buffer Strips	Water Control Structure
Conservation Cropping System	Subsurface Drainage
Conservation Tillage	Surface Drainage
Contour Farming	Terraces
Cover/Green Manure Crops	Critical Area Planting
Crop Residue Use	Diversions
Field Borders	Water/Sediment Control Basins
Land Use Change	Field, Farmstead and Feedlot Windbreaks
Grade Stab. Structures	Filter Strips
Grassed Waterway	Pasture Production
Irrigation Land Leveling	Pasture Rotation
Irrigation Systems	Irrigation Storage Reservoir
Irrigation Water Management	Irrigation Water Conveyance
Livestock Exclusion	Land Application
Mulching	Pasture/Hayland Mgt. and Planting
Perm. Vegetative Cover	Soil Testing/Nutrient Management
Pond	Sediment Basin
Sod Cover	Stripcropping (Contour)
Tree Planting	Greenbelts
Landscaping	Streambank Protection
Conservation Reserve Programs	Woodland Improvement
Brush Management	Wildlife Plantings
Access Road	

Others as described in SCS's "Technical Guide"

II. CONTINUING POLICIES AND RECOMMENDATIONS

It is the policy of the Water Quality Management Plan to undertake activities consistent with the principles and standards below.

- 3.1 The Illinois Department of Agriculture (IDOA) and the 98 local soil and water conservation districts (SWCD) are responsible for providing technical assistance, administration of State cost-share programs, implementation of soil erosion and sedimentation programs and for the direction of, and for, programs which strive to control soil erosion and sedimentation in Illinois.

3.11 The IDOA are responsible for the following:

- 3.111 Preparation of an annual report to evaluate progress towards reducing water pollution resulting from soil erosion. The report should include research and educational activities, progress in meeting soil erosion guidelines and standards, an updated conservation needs inventory and program implementation. This report should be completed on a yearly basis.
- 3.112 Implementation of the "Soil and Water Conservation District Act," as amended.
- 3.113 Coordination and support of educational/informational programs and needs related to soil erosion and sedimentation programs should be continued by IDOA.
- 3.114 Continue involvement in a comprehensive evaluation of the overall progress accomplished towards the reduction of soil erosion in accordance with the goals established in "T" by 2000 program.

3.12 Local SWCDs are responsible for the following:

- 3.121 Education/information development and dissemination to landowners, schools and the urban sector. This can be accomplished through the use of: demonstration farm plots; conservation farm tours; newsletters; tillage clubs; news releases; participation in Soil Stewardship Week; displays and other activities.
- 3.122 Provide assistance and cooperation to the United States Department of Agriculture Soil Conservation Service (SCS) in implementation of the "Food Security Act of 1985 and 1990."

- 3.123 Implementation of the "District Erosion and Sedimentation Control Program." Periodic review of the program and standards as established by the district and the development of revisions to the program standards as needed.
 - 3.124 Continued efforts towards, and support for State cost-share programs for application of long term erosion control practices.
 - 3.125 Planning and technical assistance to landowners for the development and implementation of resource management systems to control soil erosion and sedimentation from agricultural land.
 - 3.126 Develop comprehensive resource management plans on a hydrologic unit basis for every hydrologic unit in Illinois.
 - 3.127 Prepare annual reports which include land treatment accomplishments and water quality improvements for IDOA's annual report to Illinois Environmental Protection Agency (IEPA).
- 3.13 In April of 1980, the State adopted the "Illinois Erosion and Sedimentation Control Law." This law is more commonly known as "T" by 2000. "T" by 2000 establishes incremental goals aimed at achieving tolerable soil loss levels by the year 2000. The soil loss tolerance levels as published in the SCS Technical Guide were adopted as the official "T" values for each soil type in Illinois. The following State erosion and sediment control guidelines are the program standards for agricultural land as established by the law. The county SWCDs are responsible for implementing the "T" by 2000 program.
- 3.131 Effective January 1, 1983, to January 1, 1988, all subject land is in compliance if long term annual soil loss is at or below a value of 4T. ("T" values in Illinois range from 1-5 tons/acre year, 4T equates to 4-20 tons/acre/year.)
 - 3.132 Effective January 1, 1988, no soil loss on gently sloping land (land not exceeding 5% slope), shall exceed "T" provided this can be accomplished through conservation tillage. All other subject land is in compliance if the long term annual soil loss is at or below 2T during the period January 1, 1988, to January 1, 1994. ("T" values range from 1-5 tons/acre/year, 2T equates to 2-10 tons/acre/year.)

- 3.133 Effective January 1, 1994, to January 1, 2000, all subject land is in compliance with "T" by 2000 if the long-term annual soil loss is at or below 1.5T. ("T" ranges from 1-5 tons/acre/year, 1.5T equates to 1.5-7.5 tons/acre/year.)
- 3.134 Effective January 1, 2000, all subject land shall meet and remain at "T". ("T" = 1-5 tons/acre/year.)
- 3.2 The IEPA, being designated as the State Water Quality Management Planning Agency, is responsible for water quality monitoring, progress accountability and direction and implementation of the water quality related elements of the agricultural nonpoint source control program.
 - 3.21 Implementation of Section 319 of the Clean Water Act, focusing on the importance of controlling nonpoint sources of pollution.
 - 3.22 Continue to promote programs and policies which emphasize water quality initiatives and the cultivation of innovative nonpoint source pollution control strategies for the protection and improvement of water quality.
 - 3.23 Continue cooperation with others in identifying where and what type of nonpoint source pollution is impairing designated uses of Illinois lakes, rivers and streams.
 - 3.24 Implementation of the Illinois Nonpoint Source Management Program and continued review of and revisions to the program report as needed.
 - 3.25 Continue to administer the 205(j) grant program of the Clean Water Act to carry out water quality management planning in Illinois.
 - 3.26 Carry out the provisions of the Clean Water Act, Section 104(b)(3), for the coordination and acceleration of research, investigations, experiments, training, demonstrations, surveys and studies relating to the causes, effects, extent, prevention, reduction and elimination of pollution.
 - 3.27 Continue to work with IDOA and other organizations in the development of soil erosion and water quality initiatives and strategies.
 - 3.28 Conduct a comprehensive evaluation of agricultural sources of soil erosion, review progress towards soil erosion reduction and identify necessary changes needed to update the WQM plan.

- 3.29 The IEPA and the Illinois State Water Survey (ISWS) should monitor the impacts of agricultural nonpoint source erosion on various streams and lakes to measure progress made towards water quality and the reduction of sedimentation.

The IEPA will review the Annual Progress Report prepared by the IDOA on the accomplishments of reducing soil erosion and improving water quality in Illinois. Illinois EPA will make comments and recommendations as needed and appropriate.

- 3.3 Local, State and Federal agencies and organizations should cooperate to achieve soil erosion and water quality nonpoint management objectives. It is the State's responsibility to provide funding, personnel, and technical support to comply with the objectives and goals established for erosion control and water quality improvement.

- 3.31 The State Watershed Priority Committee should continue as the designated body for the review, evaluation and prioritization of all watershed applications and proposals for implementation. The committee should provide a forum for the exchange of information, ideas and program development between all state and federal agencies and organizations involved in soil erosion programs and water quality initiatives.

- 3.32 The State Soil and Water Conservation Districts Advisory Board will advise and assist local, state and federal agencies in the following areas: coordination of soil erosion and water quality programs; long-range planning programs; annual plans of work; priorities for programs and projects; recommendations for legislative action; resolving mutual problems; training needs; and assistance in developing annual progress reports.

- 3.33 It is highly recommended that the State continue to support and provide funding for cost-sharing on the establishment of long term erosion control practices. The continuance of the Conservation Practices Program (CPP) and the Watershed Land Treatment Program (WLTP) and the funds to implement these programs is highly encouraged.

- 3.34 The local SWCDs and the 16 land use councils of the Association of Illinois Soil and Water Conservation Districts will identify priority areas, develop plans of action and direct appropriate resources to address the problems. State and federal agencies will provide technical assistance and guidance to assist in the process.

CHAPTER THREE: AGRICULTURE

SECTION B: LIVESTOCK WASTE MANAGEMENT

I. WQM PLAN FINDINGS

Principal concerns in livestock production are with small open feedlots scattered throughout Illinois. Of 58,000 feedlots in the State identified in 1978, an estimated 4,600 beef, 1,300 dairy and 10,200 swine feedlots needed runoff controls. Of the 13,980 assessed stream miles in Illinois, 99.8 miles were found to have sources of pollution attributed to all types of feedlots, while 12.4 miles were impacted by animal holding/management areas, assessment of 206,081 lake acres in 1990 and 1991 showed all types of feedlots and animal holding/management areas to be the sources of pollution of 2,531 and 117.5 lake acres, respectively. Current statistics indicate that there were 57,300 animal feeding operations under production in 1991.

The Illinois Environmental Protection Agency (IEPA) has administered the Illinois Livestock Waste Management Program since the adoption of the Illinois Livestock Waste Regulations in 1978. The IEPA Agricultural Engineers survey livestock facilities to determine if the facilities are in compliance with the livestock waste regulations. Between 1985 and 1990, an average of 235 livestock facilities were contacted each year. Water pollution related violations were reported at 38 percent of the facilities contacted. The problem sources and their relative occurrence were: feedlot runoff - 26 percent, lagoon/pit overflows - 20 percent, general operation - 8 percent, field application - 7 percent, manure stacks - 6 percent, and discharge or dumps - 4 percent. Surveys completed prior to 1985 showed similar results.

In 1991, a Livestock Waste Runoff Survey was conducted by the IEPA and United States Department of Agriculture Soil Conservation Service (SCS). Two watersheds in Illinois were surveyed to evaluate livestock management facilities and livestock waste-handling facilities as related to their potential for having feedlot runoff. Of 110 facilities surveyed, over 70% displayed fair to poor animal waste management practices, including the lack of adequate feedlot runoff control structures. This survey further supports findings of IEPA field inspections which indicate that poor waste management practices can result in water quality degradation.

As an incentive for livestock producers to construct waste storage structures and other facilities which prevent water pollution, the IEPA administers a tax certification program which reduces the property tax value for many pollution control improvements. In order to recognize this tax reduction, the farmer must have the improvement certified by the IEPA as a pollution control facility.

Once IEPA has certified that the improvements made by the farmer qualify as a pollution control facility, the IEPA submits a copy of the certification to the farmer and to the Illinois Department of Revenue (IDOR). The IDOR assumes authority from the county tax assessment office to assess the value of the certified facilities based upon remaining useful lifetime and the salvage value (usually property taxes are based upon fair cash value). This reduces the assessed value of the certified facilities and, therefore, the property tax. Since 1985 the IEPA has issued 95 tax certifications to livestock producers throughout Illinois.

The Illinois Livestock Waste Regulations (Agriculture Related Pollution, Ill. Adm. Code, Title 35, Subtitle E, Chapter I, Part 501) apply to all animal feeding operations in the State. Livestock producers who have feedlots with greater than 1,000 animal units that discharge during a storm event of less intensity than a 25-year, 24-hour storm must obtain a National Pollution Discharge Elimination Systems (NPDES) Permit. Feedlots with 300 - 1,000 animal units must also have an NPDES Permit if they discharge during a storm event of less intensity than a 25-year, 24-hour storm, and if a discharge occurs through a man-made conveyance or stream running through the feedlot. Less than three dozen livestock facilities in Illinois have been identified as meeting these criteria.

Producers with medium to small sized facilities can comply with these regulations through the implementation of conventional waste handling facilities such as lagoons, holding ponds, etc. and through implementation of better management practices. Operators of many small feedlots can manage feedlot runoff through implementation of vegetative filter systems. In June, 1991 the Illinois Livestock Waste Regulations were amended by the Illinois Pollution Control Board to include provisions which authorize the use of vegetative filter systems at feedlots confining less than 300 animal units. These systems must be designed and operated in accordance with the Design and Maintenance Criteria Regarding Runoff Field Application Systems, found at 35 Ill. Adm. Code, Part 570, Subtitle E. These criteria were previously adopted by the Agency in 1982. Facilities with 50 or fewer animal units are exempt from the storage and handling regulations provided the location of the facility relative to waters of the State is such that there is no discharge to waters of the State, they are managed so as to prevent a discharge and so that the accumulation of manure does not threaten to cause a discharge.

Livestock waste best management practices (BMP) include, but are not limited to the following. Selection and utilization of a given BMP should result from site specific evaluations and consultations with SCS, Cooperative Extension Service (CES) and other technical sources to determine practice suitability and ensure proper design and implementation in accordance with the Illinois Livestock Waste Regulations.

Livestock Exclusion
Manure Storage Structure
Waste Treatment Lagoons (Various)
Clean Water Diversions
Vegetative Filter Systems
Pasture Rotation

Holding Pond/Settling Basin
Liquid Manure Holding Tank
Livestock Waste Utilization
Manure Incorporation/Injection
Soil Testing/Nutrient Management

II. CONTINUING POLICIES AND RECOMMENDATIONS

- 3.4 The IEPA should continue to upgrade and refine its program for administering the Illinois Pollution Control Board's Livestock Waste Regulations (Agriculture Related Pollution, Ill. Adm. Code, Title 35, Subtitle E, Chapter I, Part 501). Problem feedlots will continue to be prioritized on a "worst case first" basis for follow-up action. Compliance with existing regulations should be pursued on a voluntary basis whenever possible. To defray compliance costs, livestock operators should be informed of sources of financial relief and lower cost alternatives for waste management.
- 3.41 Agricultural Stabilization and Conservation Service (ASCS) county committees should be encouraged to maintain the WP-4 practice for animal waste control facilities on their dockets, particularly in counties with high livestock densities. Cost-share priorities should be established to mitigate the most significant waste related pollution problems.
- 3.42 The IEPA will continue to certify that various components of livestock waste management systems are functioning as pollution control devices. Concurrence with the certification by the Illinois Department of Revenue will be sought to qualify operators for property tax deferments.
- 3.43 The use of vegetative filter systems will be encouraged where equivalent pollution control can be provided at a lower cost over conventional holding pond or lagoon systems. In situations where feedlot runoff control is not otherwise attained, provisions to require the installation of vegetative filter systems will be considered.
- 3.44 Technical assistance for the design, construction and maintenance of livestock waste handling facilities should be provided by the Soil Conservation Service and Cooperative Extension Service.
- 3.45 Fact sheets, visual aids and other materials expressing sound water quality management will be developed by the IEPA, Cooperative Extension Service and other cooperating agencies for dissemination to individual livestock producers and

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producer groups and for incorporation into university, community college and high school agricultural curricula.

- 3.46 Watershed evaluations should be conducted in areas densely populated with animal feeding operations to assess the potential impact of feedlot runoff on the respective watersheds and surrounding environment. Such evaluations should facilitate implementation of nonpoint source watershed protection programs.

CHAPTER 3: AGRICULTURE

SECTION C: PESTICIDES AND FERTILIZERS

I. WQM PLAN ACTIVITIES AND FINDINGS

The initial Water Quality Management (WQM) Plan, which was adopted in 1979, reported that the use of persistent organochlorine insecticides such as DDT, heptachlor, etc., was responsible for contamination of aquatic ecosystems. Detections of these pesticides have occurred primarily in sediment and fish flesh samples. Although these pesticides have not been used in over a decade, they are still evidenced in samples collected for ongoing monitoring programs.

Organophosphates, carbamates, and pyrethroids have in most cases replaced organochlorine insecticides in agricultural operations. Because of their acute toxicity, these types of chemicals pose a potential hazard to aquatic organisms when applied near streams, ponds, and lakes under conditions conducive to drift or runoff. Herbicides used in agricultural production today are generally less toxic than the insecticides, however they are detected more frequently in ambient water quality sampling programs.

Since October 1985 the IEPA has conducted a surface water monitoring pesticide subnetwork in which 30 streams throughout Illinois are routinely monitored for commonly used herbicides and insecticides. Data have been compiled for the first five-year period which indicate several herbicides are being detected on a regular basis. Of a total of 967 stream samples collected between October 1985 and October 1990, atrazine, metolachlor, alachlor, and cyanazine were detected in 77, 49, 47 and 44 percent of the samples, respectively. The general pattern of detections indicates higher concentrations occurring in the spring and summer, likely associated with field applications and subsequent precipitation/runoff events.

In preparation for implementation of the new Federal Drinking Water Standards the IEPA Laboratory began analyzing finished water samples from surface water supplies in 1991 for a selected group of pesticides subject to regulation as well as several unregulated pesticides. The samples analyzed were submitted by the 129 supplies which utilize surface water as their primary source. All samples were collected at the public water supply treatment plant at a point in the system following treatment.

Atrazine and alachlor were detected in 78 percent and 52 percent of the surface water supplies sampled. Eighteen surface water supplies contained atrazine at concentrations above the Federal Maximum Contaminant Level (MCL). Alachlor equalled the MCL in one surface water supply. Metolachlor, trifluralin, and cyanazine which are not currently regulated by the Federal Drinking Water Program were also detected in a significant number of samples. The contamination of the surface water supplies appears to be non-point source related.

In addition to surface water concerns, the impacts of pesticide use on groundwater and, subsequently, well water supplies has become the focus of national and state level programs. A framework for managing groundwater quality by a prevention-oriented process was provided by the enactment of the Illinois Groundwater Protection Act (IGPA) in 1987. To coordinate implementation of the IGPA an Interagency Coordinating Committee on Groundwater (ICCG) was established which is chaired by the Agency and is comprised of representatives from all other state agencies which have the authority to administer groundwater related programs.

The IGPA called for an evaluation of pesticide impacts on groundwater. To satisfy this requirement in part, a pilot study of agricultural chemicals in rural private wells was completed in 1991 by the Illinois State Geological Survey (ISGS) along with other cooperating agencies. A total of 240 wells were tested representing five different geologic settings and well-type combinations. Pesticides were detected above reportable concentrations in 10 percent of the wells while nitrates occurred in 18 percent of those sampled.

In addition to the Pilot Study, Illinois Department of Agriculture (IDOA), the Cooperative Extension Service (CES) and the ISGS are engaged in a statewide survey of agricultural chemicals in rural private water supply wells. The purpose of this study is to provide a statistically valid estimate of the extent of pesticides and nitrates in rural private wells. Approximately 340 wells are being tested statewide.

The IEPA began sampling public water supply wells for currently used pesticides in 1984. To date, 718 community wells have been sampled. Pesticide analyses have been completed on 507 of the samples, and the remaining 211 are undergoing verification. One or more pesticides have been detected in 16 of the wells which represent the 13 community water supply systems. Pesticides most frequently detected are alachlor, atrazine, cyanazine, and metolachlor. The pesticide contamination has generally occurred in relatively shallow wells which are located in areas with high geological vulnerability. In addition, well site surveys, screening site inspections, and other IEPA investigations appear to indicate that the pesticide contamination is principally due to agrichemical mixing and loading operations.

The IEPA is currently developing a statewide network for monitoring community wells. The purpose of this network is to monitor the occurrence of pesticides and nitrates in Illinois community water supply wells.

Potential nonpoint source contamination of groundwater via the use of agricultural pesticides is one area being addressed under the auspices of the ICCG. A subcommittee of the ICCG, chaired by IDOA, was tasked in 1990 to develop a Pesticide Management Strategy which outlines a preventive program to protect against pesticide impacts on groundwater and provides a mechanism to respond to detections of pesticides in groundwater.

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The three primary components of the plan will include: 1) mapping of aquifer vulnerability to pesticide contamination, 2) monitoring of groundwater for the incidence of pesticide contamination resulting from normal field applications, and 3) management/enforcement of preventive and response measures.

In addition to these activities the IGPA required that the Agency in consultation with other members of the ICCG develop and the Illinois Pollution Control Board adopt comprehensive groundwater quality standards. The groundwater quality standards were adopted and became effective November 25, 1991. These regulations included a groundwater water classification system, non-degradation provisions and numerical standards which apply specifically to groundwater.

The Illinois Wellhead Protection Program (WHPP), established in accordance with Section 1428 of the Safe Drinking Water Act (SDWA), will serve to compliment the groundwater protection efforts. Federal approval of Illinois' WHPP makes the State eligible to pursue funding for the protection of certain public water supply wells from nonpoint sources of contamination through the United States Department of Agriculture - Agricultural Stabilization and Conservation Service (ASCS) Conservation Reserve Program (CRP). Over 1,500 communities in Illinois obtain drinking water from wells, and about 10,000 wells (e.g., community and non-community) serve public uses or facilities. Many of these wells are located near cropland that is eligible for CRP.

The initial WQM Plan and subsequent revisions to the plan emphasized the need for development and implementation of effective pesticide waste management and agricultural chemical containment programs.

On January 1, 1990 rules were promulgated under the Illinois Pesticide and Fertilizer Acts to create an Agrichemical Facility Containment Program. The regulations require commercial agrichemical facilities to install secondary and operational area containment structures as well as, utilize management practices, to avoid contamination. The containment program is administered via an Interagency Cooperative Agreement between the IEPA and IDOA.

Under the cooperative arrangement, an agrichemical facility owner submits a permit application to IDOA. Both the IEPA and IDOA review the application. If the design specifications of the proposed facility conform with the applicable containment standards an IDOA permit and IEPA endorsement are issued simultaneously. IDOA is primarily responsible for overseeing compliance with the containment rules while the IEPA becomes involved when chemical releases occur outside the required containment structures.

Both the IEPA and IDOA have addressed problems related to the disposal of pesticides. The IEPA organized the Adams County Pilot Farm Chemical Collection Project in June, 1988. This project involved receiving and packing waste farm chemicals for shipment to disposal facilities. Approximately 10,279 pounds of waste were processed for shipping at the

collection site. Fifty-one percent of the wastes collected were pesticides while the rest consisted of recycleable waste oils, non-recycleable waste oils and paint. Public Act 86-230 authorized IDOA to assist local non-profit organizations in conducting programs for the collection of unwanted pesticides from farmers. This act also allowed cost-sharing of up to \$25,000 per project using monies from the Pesticide Control Fund. Two such projects have been conducted, one each in Macon and Henry Counties. The Macon County project was conducted in September, 1990 when approximately 13,000 pounds of unwanted pesticides were received. In August, 1991 the Henry County farm chemical collection project was held. A total of 6,550 pounds of suspended, cancelled and unknown pesticides were collected.

Public Act 86-1026 required IDOA to develop and implement a pilot pesticide container recycling program. Demonstration projects were conducted in 1990 and 1991 in which approximately 14,700 plastic 1 and 2.5 gallon pesticide containers were collected from Macon, Menard, Morgan and Sangamon Counties. This produced about 11,000 pounds of plastic which was granulated, washed and remolded into plastic pellets. Approximately 5,500 pounds of the recycled plastic was returned to Illinois for remanufacturing into products such as field tile and fence posts. The remaining portion was remanufactured into plastic pesticide containers. In 1988 the Federal Insecticide, Fungicide, Rodenticide Act (FIFRA) was amended which mandated the adoption of regulations by United State Environmental Protection Agency (USEPA) to address pesticide container management. It is anticipated that the forthcoming USEPA regulations will provide support for State pesticide container recycling projects.

Currently there are 24 community public water supplies where nitrate levels periodically exceed levels considered to be safe for infants under six months of age. These systems are being dealt with under an enhanced enforcement program which requires commitment by water supply officials to come into compliance with the drinking water standard for nitrate within a negotiated specific time frame; provide, free of charge, water which meets the nitrate standard for use by infants six months of age or less; and notify consumers of the potential health effects of nitrate and the availability of water which has a safe nitrate level.

Similarly, the Illinois Department of Public Health (IDPH) requires notice be given by posting a warning of high nitrate content at non-community water supplies which provide water exceeding the nitrate standard. IDPH will also, upon request, provide laboratory analysis of water samples submitted by private well owners to determine nitrate content. The potential for water quality degradation is greatest when fertilizer applications exceed amounts utilized by crops, or when inadequate application procedures are practiced.

Pesticide and Fertilizer Best Management Practices (BMP) include, but are not limited to the following. Selection and utilization of a given BMP should result from site specific evaluations and consultation with SCS, CES and other technical sources to determine practice suitability and

ensure proper design and implementation in accordance with State and Federal Rules and Regulations.

Soil Testing/Nutrient Management	Integrated Pest Management Technology
Wellhead Protection Areas	Applicator Training and Certification
Backflow Prevention	Secondary Containment Structures
Limited/Restrictive Use Areas	Operational Area Containment
Pressure/Triple Rinse	Timing of Application
Equipment Calibration	Off-Season Cover Crops
Well Testing and Monitoring	Drift Control Technology

II. CONTINUING POLICIES AND RECOMMENDATIONS

- 3.5 Cooperative agreements should be undertaken by the Illinois Environmental Protection Agency (IEPA) with other State and Federal agencies to evaluate pesticide problems resulting from their use in agricultural production. Pesticide use surveys, water quality monitoring programs and watershed assessments should be coordinated and effectively employed in the evaluation process.
 - 3.51 The IEPA should continue its' ambient water quality monitoring pesticide subnetwork.
 - 3.52 Research of the effects of non-point source runoff from agrichemical applications on aquatic ecosystems is recommended.
 - 3.53 Illinois Department of Agriculture (IDOA), Illinois State Geological Survey (ISGS), and Illinois State Water Survey (ISWS) are encouraged to realize the development of statewide and county vulnerability maps which assess the potential for groundwater contamination by agrichemicals.
 - 3.54 The sediment monitoring network operated by the ISWS and the cooperative fish flesh monitoring program conducted jointly by the Illinois Department of Conservation (IDOC), IEPA, Illinois Department of Public Health (IDPH), IDOA, and the United States Food and Drug Administration should be continued.
 - 3.55 Watershed evaluations are recommended to determine the causes and primary sources of agrichemical contamination in areas where water quality problems are identified. Such evaluations should facilitate implementation of nonpoint source watershed protection programs.
 - 3.56 The IEPA should continue to develop and implement the ambient community water supply groundwater monitoring network for pesticides. This network should support efforts under the State Pesticide Management Plan.

- 3.57 Continued development and implementation of projects for monitoring and assessing agrichemical impacts on rural private wells are encouraged.
- 3.6 Identification and implementation of pesticide use alternatives is fundamental to the prevention of contamination of surface and groundwaters due to agricultural production practices.
 - 3.61 Investigations should be carried-out to identify alternative practices which help minimize surface runoff and leaching of pesticides.
 - 3.62 Producers should ensure that their Integrated Pest Management programs incorporate crop production practices and alternative pest control methods which are beneficial to the prevention of contamination of surface and groundwaters. The Cooperative Extension Service (CES) should expand and promote training and educational efforts in support of the Integrated Pest Management Program.
- 3.7 Prevention Programs should be implemented to provide protection of water resources against potential pesticide and nitrate contamination.
 - 3.71 Watershed Protection Projects should be initiated to mitigate sources of contamination within identified problem watersheds. These projects should be integrated with preventive programs which address other agricultural pollution sources.
 - 3.72 Maximum producer participation in the United States Department of Agriculture, Agricultural Stabilization and Conservation Service, Conservation Reserve Program should be realized in community water supply wellhead protection areas.
 - 3.73 The Pesticide Subcommittee of the Illinois Coordinating Committee on Groundwater (ICCG) should proceed with the development of the State Pesticide Management Plan. Such Plan should be consistent with United States Environmental Protection Agency's (USEPA) Pesticides and Groundwater Strategy, and when implemented should ensure compliance with Illinois Pollution Control Board's (IPCB) Groundwater Standards.
- 3.8 Continued emphasis should be placed on the development and implementation of an effective program of agrichemical waste management.

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- 3.81 Container recycling projects initiated pursuant to Public Act 86-1026 should be maintained and expanded into a statewide program.
- 3.82 Research and development of alternative techniques for disposal of pesticide containers where recycling is not feasible is encouraged.
- 3.83 Development of a statewide inventory of old obsolete and unuseable pesticides to aid in determining pesticide disposal options is recommended.
- 3.84 Compliance with the IDOA containment rules should be attained at all agrichemical facilities in the state. Such compliance should be facilitated through continued implementation of the Interagency Agreement between IEPA and IDOA.
- 3.85 Guidance should be provided to producers to facilitate the installation of appropriate on-farm containment systems.
- 3.9 Increases in fertilizer contributions of high nitrate concentrations and elevated nutrient levels should be controlled through sound fertilizer management practices.
 - 3.91 Soil testing procedures and fertilizer application techniques and rates identified in the Illinois Agronomy Handbook are recommended.
 - 3.92 IEPA and IDPH should continue to implement the State and Federal regulations which require community and non-community water supplies to provide Public Notice whenever the nitrate content exceeds the drinking water standard. IDPH should also continue to make analytical service available to persons wishing to have samples of their well water analyzed for nitrate content.

**CONSTRUCTION
SITE EROSION
CHAPTER**



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CHAPTER FOUR: CONSTRUCTION SITE EROSION

1. WQM PLAN FINDINGS

Soil erosion is the removal of soil by water, wind, ice, or gravity. Raindrops strike the soil surface at a velocity of approximately 25-30 feet per second and can cause splash erosion. Raindrop erosion causes particles of soil to be detached from the soil mass and splashed into the air. After the soil particles are dislodged, they can be transported by surface runoff which results when the soil becomes too saturated to absorb falling rain or when the rain falls at an intensity greater than the rate at which the water can enter the soil. Scouring of the exposed soil surface by runoff can cause further erosion. Runoff can become concentrated into rivulets or well defined channels up to several inches deep. This advanced stage is called rill erosion. If rills and grooves are left unrepaired and erosion and sediment controls are not implemented, they may develop into gullies when more concentrated runoff flows downslope.

Sediment deposition takes place when the rate of surface flow is insufficient for the transport of soil particles. The heavier particles, such as sand and gravel, are less readily transported than the lighter silt and clay particles. Previously deposited sediment may be resuspended by runoff from another storm and transported further downslope. In this way, sediment is carried intermittently downstream from its upland point of origin.

Erosion and sedimentation from areas undergoing urban land development represents a serious environmental hazard. Urban land development frequently occurs near streams, rivers and lakes. These waterways provide a critical habitat and nursery ground for many aquatic species and migratory waterfowl. The negative impact of large sediment influxes on aquatic organisms is substantial. The initial effect is a drastic reduction in the number and density of species associated with the bottom. Aquatic vegetation is often destroyed as a result of burial or reduction of sunlight essential for growth. Many species of fish, which are dependent on the bottom organisms for food, or plant life for refuge, are therefore excluded from the damaged habitat. The reduction of sunlight by suspended sediment impairs primary production (i.e., the process by which sunlight is utilized by certain organisms to produce carbon and oxygen) and may reduce oxygen levels in the water to a point where aquatic life cannot survive. Migratory waterfowl also utilize nearshore plant and shellfish communities as a food source during their annual migration. The reduction of waterfowl in recent years has been attributed, in part, to habitat destruction from sediment derived from development activity.

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Sedimentation in developing areas may also create terrestrial hazards and damage water supply and drainage systems. The sedimentation in these areas is very costly in terms of the expense involved in correcting the damage. Sediment fills drainage channel and plugs culverts and storm drainage systems, thus necessitating frequent and costly maintenance. Sediment accumulation also reduces the stormwater conveyance and storage functions of streams, detention basins, and floodplains, leading to increased potential for flooding. Municipal and industrial water supply reservoirs lose storage capacity, navigable channels must continually be dredged and the cost of filtering muddy water preparatory to domestic or industrial use may become excessive.

Sediment yields in streams flowing from already urbanized drainage basins vary from approximately 200 to 500 tons per square mile per year. In contrast, areas undergoing urbanization often have a sediment yield of 1,000 to 100,000 tons per square mile per year. For very small areas, where construction activities have drastically altered or destroyed vegetative cover and the soil mantle, sediment derived from one acre of land may exceed 20,000 to 40,000 times that obtained from adjacent undeveloped farm or woodland in an equivalent period of time.

Deposition tends to occur as the velocity of streams transporting sediment decreases. Stream channels and navigable rivers become obstructed by large sediment deposits. As a result, their hydraulic capacity is reduced, causing an increase in subsequent flood crests and flood damage; and the possibility of attendant personal injuries and deaths.

Erosion and subsequent sedimentation also impairs recreational uses of waterways. The aesthetic attraction of many streams, lakes and reservoirs used for swimming, boating, fishing and other water related recreational activities is destroyed by excessive erosion and the resultant sedimentation and turbidity.

As of January 1, 1988, all applicants requiring and receiving an IEPA construction permit for wastewater facilities must identify and utilize practices meeting specific standards and specifications in order to reduce construction erosion to the maximum extent possible. IEPA will routinely conduct followup investigations on permitted construction sites to insure that erosion control practices have been implemented and are functioning properly.

Construction erosion and sedimentation control best management practices include but are not limited to:

Mud/Dust Control
Detention Basins
Topsoiling
Vegetative Stabilization
Land Grading
Subsurface Drainage
Rock Outlet Protection
Erosion Blanket

Sediment Trap/Basin
Earth Dike
Straw Bale Dike
Silt Fence
Temporary Swale
Stabilized Construction Entrance
Grade Stabilization Structures
Mulch

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Perimeter Dike Swale
Storm Drain Inlet Protection
Sodding
Revegetation With Trees

Diversions
Grassed Waterway/Swales and Outlets
Others as described in Illinois'
"Greenbook" and "IEPA's Standards
and Specifications for Soil
Erosion and Sediment Control".

II. CONTINUING POLICIES AND RECOMMENDATIONS

It is the policy of the Illinois Water Quality Management Plan to undertake activities consistent with the principles and standards below.

- 4.1 From a statewide perspective, the control of construction nonpoint source pollution is a necessary adjunct to the agricultural erosion and sedimentation control program.
- 4.2 The WQM Plan emphasizes the development of technical and administrative guidance tools to assist responsible units of government and agencies in the selection of best management practices (BMPs) and administrative mechanisms for the needed nonpoint source control. Major program objectives include:
 - 4.21 Standardization of technical and administrative guidance for construction erosion and sedimentation control practices; and
 - 4.22 Maximization of the education and information transfer functions. This includes both the private and public (local and State) sectors.
- 4.3 Designated Management Agencies (DMA) responsible for the control of construction nonpoint sources include municipal and county governments, soil and water conservation districts (SWCD) throughout the State as well as IEPA, Illinois Department of Transportation (IDOT), and Illinois State Toll Highway Authority. In addition to the aforementioned, others such as the Association of Illinois Soil and Water Conservation Districts, Areawide Planning Agencies, Illinois Department of Conservation (IDOC), and Illinois Department of Energy and Natural Resources are DMAs responsible for providing technical assistance and conducting educational programs related to construction erosion.
- 4.4 It is the primary responsibility of the State to control construction nonpoint source pollution arising from State sponsored or directed activities. For example, as a condition for the approval of a Facilities Plan or Facility Planning Area modification, the IEPA may require that the applicant address the need for a soil erosion and sediment control ordinance or plan to mitigate the potential direct and indirect adverse environmental effects that may result as a consequence of IEPA's approval. State projects should employ appropriate control elements necessary to assure compliance with the

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Illinois Environmental Protection Act of 1970. The establishment of standardized soil erosion and sedimentation control guidelines for all State funded construction should be evaluated. State agencies responsible for regulating or reviewing construction related activities, such as IEPA, IDOT, and IDOC, are encouraged to develop procedures and specifications for controlling erosion and sedimentation. These State agencies should include conditions in permits to control construction erosion. In addition, programs should be established to assure that adequate review and coordination takes place among agencies to assure protection of the State's water resources.

- 4.5 All counties, municipalities, and other local authorities should carry out the following preferred control practices for local nonpoint source pollution:

4.51 Adopt and enforce standards and specifications for construction erosion and sedimentation control;

4.52 Adopt and enforce an ordinance consistent with the models listed in 4.6 which contains minimum standards for control; and

4.53 Where possible, make better use of personnel through training and education programs.

- 4.6 Existing manuals, model ordinances, county SWCD programs and standards, and shared personnel programs available for local DMA consideration include:

4.61 Standards and Specifications

Standards and Specifications for Soil Erosion and Sediment Control (Illinois Environmental Protection Agency: October, 1987)

Illinois Procedures and Standards for Urban Soil Erosion and Sedimentation Control (Association of Illinois Soil and Water Conservation Districts: July, 1988)

Illinois Field Manual for Implementation and Inspection of Erosion and Sediment Control Plans (Association of Illinois Soil and Water Conservation Districts: June, 1990)

Standards and Specifications for Erosion and Sedimentation Control in Developing Areas (Southwestern Illinois Metropolitan and Regional Planning Commission: April, 1980)

4.62 Model Ordinances

Model Soil Erosion and Sediment Control Ordinance (Northwestern Illinois Planning Commission: September, 1991)

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Model Soil Erosion and Sedimentation Control Ordinance
(Southwestern Illinois Metropolitan and Regional Planning
Commission: October, 1978)

4.63 SWCD Programs

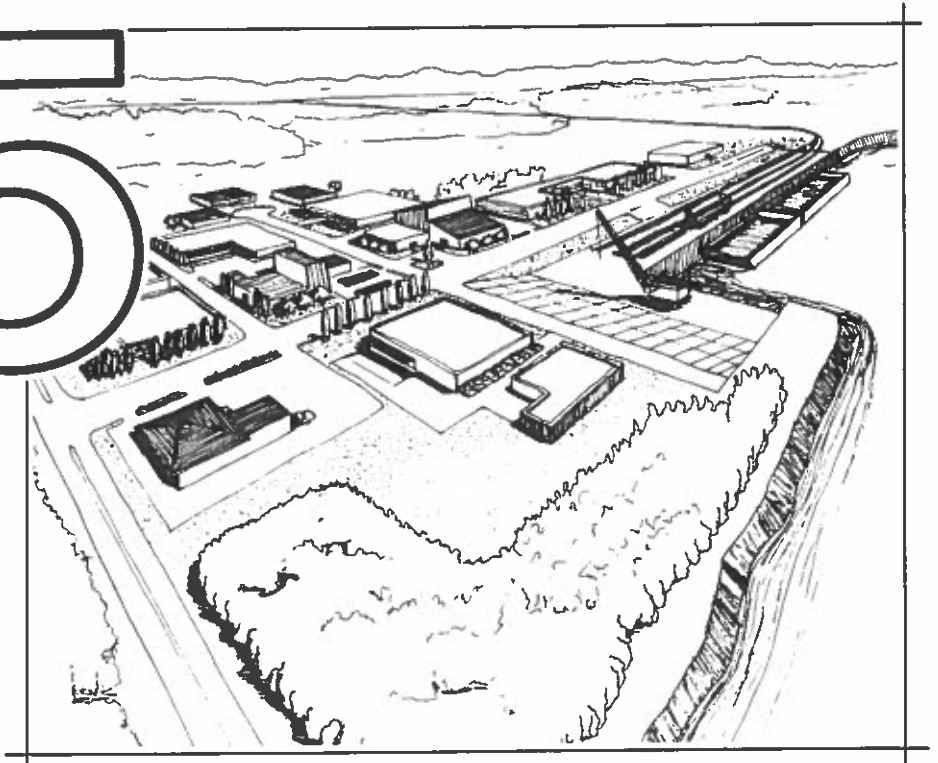
In accordance with the Illinois Soil and Water Conservation Act, as amended, each SWCD must promulgate erosion and sediment control programs consistent with State guidelines. The programs and standards, which establish minimum performance criteria for respective SWCD jurisdictions, are effective January 1, 1983 for affected areas.

- 4.7 The coordination, support and monitoring of local construction nonpoint source management programs should be provided for through the areawide management system established by the Illinois Water Quality Management Plan in Chapter Thirteen of this document.

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URBAN RUNOFF CHAPTER

5



CHAPTER FIVE: URBAN RUNOFF

I. WQM PLAN FINDINGS

Urbanization in a watershed is generally associated with undesirable changes in water quality and hydrology unless appropriate development measures are employed. Factors involved in the urbanization process such as the loss of natural water storage and an increase in the proportion of impervious area will increase runoff volume and velocity. This excess runoff is typically diverted into road gutters, storm sewers, and lined channels which ultimately discharge to lakes or streams. Receiving waters will experience higher peak discharges and shorter times to reach peak discharge. In addition to increased flooding potential, these higher flows may result in adverse physical alteration (i.e., channel erosion and widening, floodplain elevation) of the receiving body of water and increased pollutant loading.

Pollutants that collect on urban surfaces include nutrients, solids or sediment, oxygen demanding substances, bacteria, chlorides, oil and grease, heavy metals, inorganic chemicals, and organic chemicals. Unless properly controlled, these pollutants will be suspended or solubilized in runoff from rainfall or snowmelt and transported to receiving waters. Pollutant constituents and concentrations in urban runoff are intimately related to the land use at its point of origin and may vary considerably from site to site within a given city and from one city to another.

Sediment and other particulate materials discharged to receiving waters via urban runoff may increase turbidity; reduce light penetration; impair feeding, reproductive, and respiratory processes of fish; suppress photosynthesis; reduce water storage capacity; smother bottom invertebrates; impair recreational and aesthetic values; increase water treatment costs; and hamper navigation. Furthermore, sediment also acts as a vehicle to transport other pollutants in urban runoff to receiving waters. Excessive levels of nutrients (i.e., phosphorus, nitrogen) in urban runoff can cause algal blooms and undesirable plant growth in receiving waters. Sources of nutrients include organic matter such as lawn clippings and improper and excessive fertilizer use. Orthophosphate from auto emissions may also be a source of nutrients in areas with heavy automobile traffic. Eutrophication caused by excess nutrients may result in reduced oxygen levels, strong odors, the release of toxins, and other undesirable effects. Oxygen demanding substances include vegetative debris, paper, food scraps, and animal and human wastes. Decomposition of such organic matter by microorganisms depletes dissolved oxygen levels in water. Stormwater may be contaminated with harmful bacteria from animal and human wastes. Applications of de-icing salts may result in increased chloride concentrations in urban runoff and ultimately in receiving waters. High concentrations of chlorides can adversely affect plant life and are potentially toxic to many freshwater organisms. Oil and grease contain various hydrocarbon compounds, some of which are known to be toxic to aquatic organisms at relatively low concentrations. Common sources of

hydrocarbons in urban runoff include leakage of crankcase oil and other lubricating agents from automobiles, spillage at oil storage and fueling facilities, and improper disposal of waste oil. Other organic chemicals such as pesticides and PCBs may be present in urban runoff. Organic chemicals are a concern because they may be toxic to aquatic life and pose a threat to human health through contamination of drinking water supplies, food fish, and shellfish. Trace metals in urban runoff may pose a threat in terms of their toxic effects on aquatic organisms and their potential to contaminate drinking water supplies. Metals in urban runoff are associated with such sources as atmospheric deposition from automobile emissions, galvanizing and chrome plating operations, rusting metal debris, and wear on tires.

Best management practices to control urban runoff pollution include but are not limited to the following:

Wet Detention Basins	Trenches and Ponds
Dry Detention Basins	Porous Pavement
Street Sweeping	Grassed Swales and Filter Strips
Catch Basins	Artificial Wetlands
Infiltration Pits	Diversion to Treatment Plant
Rock Outlets	Sodding and/or Seeding
Paved Waterways	Ponds
Diversions	Sediment Filters
Grade Stabilization Structures	Vegetative Bank Stabilization
Open Space Land Acquisition	Source Control Programs

II. CONTINUING POLICIES AND RECOMMENDATIONS

It is the policy of the Water Quality Management Plan to undertake activities consistent with the principles and standards below.

- 5.1 From a statewide perspective, the control of urban runoff is a necessary component to prevent impairment of water uses in an urban setting. Local units of government have primary responsibility for the control of urban runoff.
- 5.2 The WQM Plan emphasizes continued research for the development of technical and administrative guidance to assist responsible units of government and agencies in the selection of best management practices and administrative mechanisms for the needed nonpoint source control. Major program objectives include:
 - 5.21 Implementation of urban runoff monitoring programs and analysis of results to maximize their transferability throughout the State. Further studies should continue to assess the impact of urban runoff pollution on beneficial water uses and urban runoff pollution control practices or strategies.
 - 5.22 Standardization of technical and administrative urban stormwater runoff control practices.

5.23 Maximization of the education and information transfer functions. A program of education and information transfer would: (1) acquaint developers and local officials with the need for the use of proper urban stormwater management techniques, (2) establish and promote urban stormwater management activities, (3) inform the public of the proper use and application of fertilizers and pesticides, and (4) inform the public of the proper disposal of used motor oil and household hazardous wastes.

5.3 All counties, municipalities, and other local authorities should carry out the following preferred control practices for local urban stormwater pollution control:

5.31 Municipalities and counties should adopt and enforce adequate stormwater management ordinances, as appropriate. Such ordinances should be consistent with the minimal standards set forth in the model ordinances developed by either the Northeastern Illinois Planning Commission (Model Stormwater Drainage and Detention Ordinance, July 1990) or Southwestern Illinois Metropolitan and Regional Planning Commission (Model Stormwater Detention Ordinance for Developing Areas, January 1982).

5.32 Municipalities and counties should adopt measures to control surface runoff from open storage areas containing material stockpiles which may be carried away by stormwater runoff or seepage.

5.33 Existing stormwater management facilities should be maintained to provide the full hydrologic and pollution control benefits for which they were designed.

5.34 Opportunities for retrofitting existing stormwater management facilities to provide for water quality benefits should be investigated and implemented where appropriate.

5.35 Local ordinances should require a clear assignment of ownership and maintenance responsibilities for stormwater management facilities at the time of their development.

5.36 Local governments should encourage the application of performance zoning concepts that contribute to the reduction of urban stormwater pollution. Planned unit developments with minimal impervious surfaces which maintain infiltration and thereby reduce runoff are an example of this concept.

5.37 Appropriate stormwater best management practices and housekeeping procedures should be encouraged.

5.4 It is the primary responsibility of the local, State or Federal agency to control urban runoff contributions arising from their individually directed activities and facilities. Preferred control practices include implementation of appropriate BMPs and administrative procedures for personnel training, improved equipment utilization and scheduling as well as controlled application programs for de-icing or other related right-of-way clearance programs. Furthermore, state actions, such as approvals for Facilities Plans or Facility Planning Area (FPA) modifications, must address the need for urban stormwater quality management plans or ordinances to mitigate the potential direct and indirect adverse environmental effects that may result as a consequence of the proposed activity within the environmental assessment section of the Facilities Plan or FPA modification.

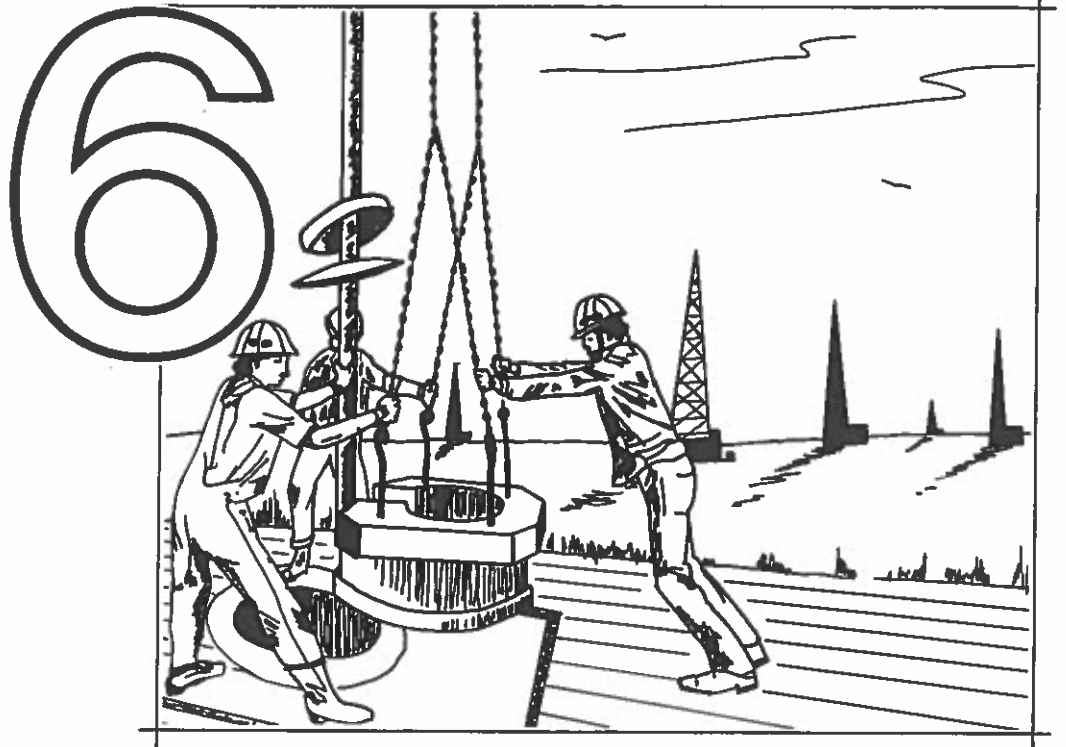
5.41 Municipalities, township, county and State highway organizations, the Illinois State Toll Highway Authority, and facility engineering departments at State and Federal installation should develop programs to control the application of de-icing materials, to train personnel in proper storage and application methods, and to use proper equipment in order to minimize any negative water quality impacts.

5.5 The coordination, support and monitoring of local stormwater management programs should be provided for through the areawide management system established by the Illinois Water Quality Management Plan in Chapter Thirteen of this document.

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MINERAL EXTRACTION - OIL BRINE DISPOSAL

CHAPTER



CHAPTER SIX: MINERAL EXTRACTION - OIL FIELD BRINE DISPOSAL

I. INITIAL WQM PLAN FINDINGS

The plan summarized the findings of an initial oil field brine disposal assessment completed by the 208 staff in 1978. Three major sources of brine pollution in Illinois oil fields were identified: (1) seepage from brine holding pits (2) injection operations and (3) abandoned wells. Field observations and preliminary review of the rules and regulations concerning brine disposal pits indicated that current regulations and/or their enforcement might be inadequate in preventing the pollution of soil and groundwater from brine.

During field investigations, groundwater contamination at four study sites was found to be more extensive than anticipated. The data indicated substantial seepage from beneath the four brine holding ponds. Analysis of stream samples obtained at a study site in Bond County exhibited chloride concentrations above the General Use water quality standard of 500 mg/l. This was due to highly saline waters seeping from beneath a nearby brine holding pond into the aquifer which serves as a recharge source for the stream. Chloride concentrations recorded 200 feet downstream from the pond were virtually equivalent to those recorded within the pond, while those upstream of the site were well below the 500 mg/l standard. This indicated that improperly handled brines can have a major effect on surface water quality.

It was noted that a larger incidence of brine related pollution appeared to emanate from older facilities. This is due in part to the advanced corrosion of well casings. Because of the damaging effects of brine pollution and the volume of salt water disposed of daily, strict enforcement of existing regulatory guidelines for the disposal of oil field brines is essential for the protection of currently utilized and potential groundwater sources.

In the Greater Egypt area, oil field brine was identified as a significant problem. The major impact of brine damage in this area is the contamination and resultant decrease in productivity of the soil. This results in the killing of vegetation and the inability to re-establish vegetative cover on brine contaminated soil, causing increased erosion. The surface water chloride concentrations in the ten county area, while rarely violating state general use water quality standards were generally much higher than the rest of the State. High chloride levels were noted in several tributaries of the Saline and Big Muddy Rivers.

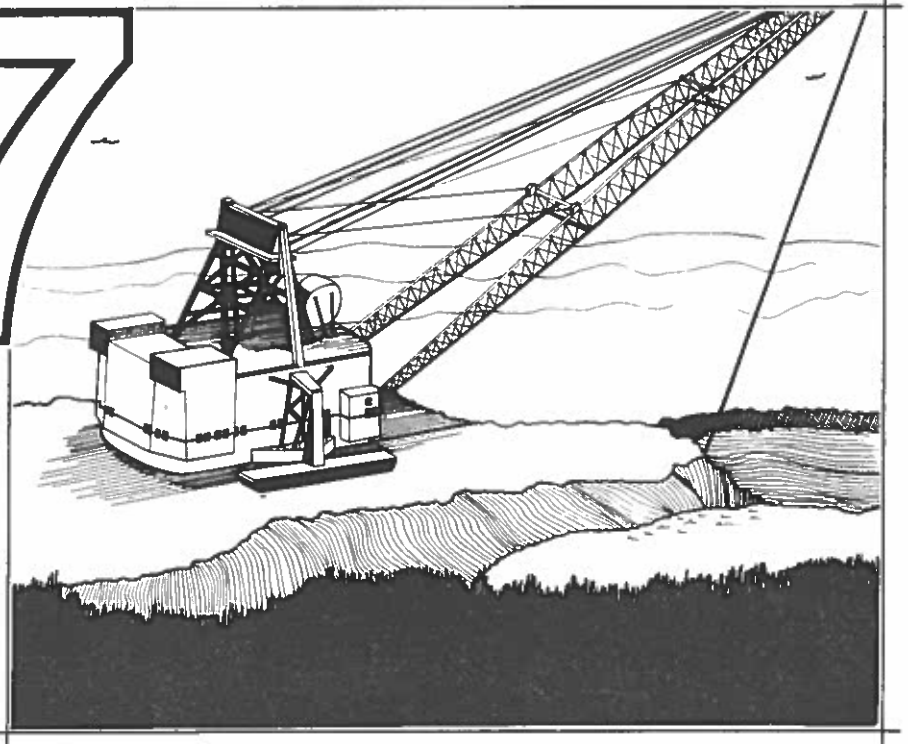
II. CONTINUING POLICIES AND RECOMMENDATIONS

It is the policy of the Water Quality Management Plan to undertake activities consistent with the principles and standards below:

- 6.1 From a statewide perspective, the control of oil field brine is a necessary component for the conjunctive management of groundwater and surface water quality as well as the soil erosion control program. The State has primary responsibility through the Gas and Oil Division of the Department of Mines and Minerals (DMMR) for the control of water quality impacts from oil field brine. The control of erosion and reclamation of soil and water resources is a local responsibility.
- 6.2 The emphasis of the WQM Plan is to develop technical guidance to assist in the selection of Best Management Practices for the mitigation of water quality impacts and restoration of degraded soil or water resources. Operational management of wells, storage, transport and injection of oil field brine should be considered as a means to mitigate water quality and erosion impacts on brine damaged land. It is suggested that symposia or workshops on restoration of brine damaged soils be conducted as part of the BMP guidance development process.
- 6.3 Designated local management agencies, in the context of the areawide management framework, should continue to inventory and categorize areas of oil field brine damage. The type of special erosion control practices needed in oil producing counties should be investigated in order to establish the basis for a standard program of reclamation procedures. Steps should be taken to establish brine damage reclamation as a standard ASCS docket item.
- 6.4 The State has primary responsibility to control oil field brine impacts. The objective of the regulatory program is to assure water quality impacts associated with oil production are minimal and that the State regulatory enforcement process is well coordinated between DMMR and Illinois EPA.
 - 6.41 Cooperative investigations performed by DMMR and Illinois EPA Division of Water Pollution Control field personnel, as part of the complaint response procedure, are recommended.
- 6.5 The coordination, support and monitoring of oil field brine nonpoint source management programs within the designated areas should be provided for through the areawide management systems established by the Illinois Water Quality Management Plan in Chapter Thirteen of this document.

MINERAL EXTRACTION - MINING CHAPTER

7



CHAPTER SEVEN: MINERAL EXTRACTION - MINING

I. INITIAL WQM PLAN FINDINGS

The Greater Egypt Regional Planning Development Commission (GERPDC) with the Southeastern Illinois Regional and Planning Development Commission (SIRPDC) served as the lead agencies evaluating this problem in a designated 208 ten-county area in southern Illinois. No formal studies were performed by the Illinois EPA on coal mining-related water pollution as it was anticipated that the Southern Illinois 208 study would produce a methodology to address water quality problems affected by mine wastes and a thorough review of the effectiveness and costs of abandoned mine reclamation techniques. The Plan therefore, summarized the work conducted on the assessment and abatement of coal mining-related pollution problems. A summary of the environmental problems, data collection efforts, and regulatory and analytical responses were presented in the Plan.

Within the GERPDC area two types of mineral mining were evaluated - fluorspar and coal mining. The threat to water quality from current fluorspar mining was determined to be small. However should mining activity increase in volume or present regulations be relaxed the impact on water resources could increase. The impacted areas would contain some high quality waters.

A model was developed from locally collected data to identify watersheds where cost-effective mine-related corrective measures would result in improved water quality. It also identified specific mine-impacted watersheds where significant improvement is not anticipated, regardless of cost-effective techniques. The study provided basin level estimates of costs associated with recommended control measures, as well as projected water quality. A biological investigation which determined mean species diversity in six mine waste affected streams was also conducted.

The major impact from past coal mining on water quality was the degradation of the stream and riparian habitats due to acid mine waste drainage. Studies of this problem established that water quality conditions for Crab Orchard Creek, Pond Creek, and Middle Fork of the Saline River would worsen, if corrective measures were not undertaken. Modelling studies suggested that water quality problems resulting from sulfate generation will persist in the Beaucoup Creek and South Fork-Saline River watersheds. The inherent overburden characteristics of the spoil were identified as providing background generation of pollutants in the South Fork of the Saline River, aggravating an existing critical situation from old and/or abandoned refuse and slurry ponds.

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In the SIMAPC designated agency there were three active coal mines, two underground and one surface mine. Studies conducted by SIMAPC and other agencies showed that the majority of potentially polluting mine sites were abandoned operations active prior to the more recently enacted pollution control and reclamation laws. Gob and slurry sites associated with abandoned underground mines in Madison and St. Clair Counties were identified as constituting the majority of problem sites within the designated area.

The NIPC Plan evaluated sand and gravel, limestone, dolomite and peat mining operations in the region and concluded that such activities did not present significant water quality problems. Coal was mined extensively in the Braidwood-Wilmington area of southwestern Will County. Operations have long since ceased and are not expected to resume. Existing state and federal regulations, with respect to permits, were considered adequate for the prevention of problems in the future.

II. CONTINUING POLICIES AND RECOMMENDATIONS

It is the policy of the Water Quality Management Plan to undertake activities consistent with the following principles and standards.

7.1 From a statewide perspective, the control and mitigation of point and non-point source pollution from active mining or quarrying activities are necessary to protect waters of the State, and to upgrade water quality in stream segments affected by mining. The State has primary responsibility to protect stream segments and reservoirs from existing and potential mine related impacts through: Illinois Pollution Control Board's regulatory and NPDES permitting provisions in Title 35: Environmental Protection, Subtitle D: Mine Related Water Pollution, Chapter 1 and; Department of Mines and Minerals (DMMR), Land Reclamation Division, through the responsibilities outlined in the State Permanent Program for Surface Mine Reclamation. Designation of lands unsuitable for mining is a responsibility of the Department of Mines and Minerals, based on the recommendation of the Department of Energy and Natural Resources.

7.2 Remedial activities for restoration of water quality in stream segments polluted as a result of past mining are a responsibility of the Department of Mines and Minerals (DMMR), Abandoned Mined Lands Reclamation Council (AMLRC). The emphasis of the Illinois Water Quality Management Plan is to ensure that reclamation of the State's eligible abandoned mined lands will provide the water quality improvements necessary to assure legitimate uses. In carrying out this program, attention should be given to the following:

7.21 In consideration of off-site effects for eligible sites, first priority for reclamation be given to those sites which affect streams in public water supply watersheds.

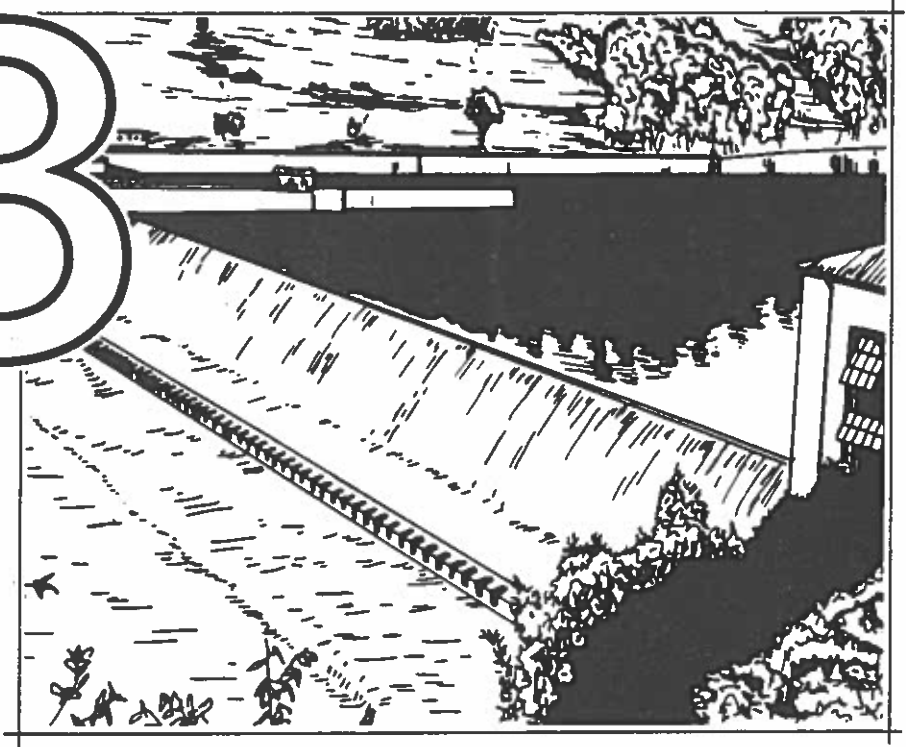
- 7.22 Clean-up of pollution sources at abandoned mine sites in a sequence that will give the best chance of reaching water quality levels necessary for desired stream use in each stream segment or other hydrologic unit.
 - 7.23 Gathering of information regarding the possible water quality effects of subsidence due to standard and long wall operations.
 - 7.24 Chemical and biological water quality parameters in specific hydrologic units should be used to assess the need for reclamation and establish site priorities. Levels of reclamation success should be determined through trend monitoring of the same parameter.
 - 7.25 Segments of Sugar Creek (Williamson County), the South Fork of the Saline River, Sycamore Creek, Little Crab Orchard Creek (Williamson County), Panther Creek, Eagle Creek and Bankston Fork should receive consideration as examples of waters with heavy abandoned mined land pollutant impact in Southern Illinois. These are recommended for intensive surveys to establish their consideration by AMLRC for pollution source clean up.
 - 7.26 A system for reporting progress in water quality improvement due to reclamation of abandoned mines which includes biological support data and water quality monitoring programs should be established and carried out by AMLRC.
 - 7.27 Acidic materials disposal methods which serve to reduce subsidence danger in mined out areas should receive preferred consideration. Additional cost effective methods to deal with severe acid mine waste pollution should be sought.
 - 7.28 Experimental reclamation activities that demonstrate alternatives to current practices should be encouraged. New technologies and increased choices should be explored, provided that equal or improved effectiveness can be established.
- 7.3 The emphasis for current surface mining and quarry operations is on the maintenance of water quality through interagency cooperation during the permit review and hearing process. Maintenance of an efficient and effective monitoring and inspection system is called for in Illinois Pollution Control Board Regulations in Part 406 of Chapter 1, Subtitle D, Title 35, (Environmental Protection).

April 15, 1983

- 7.31 With regard to lands unsuitable for mining, the emphasis is on the preservation of water quality in water supply and recreational water bodies. Application of significant and effective special control and monitoring measures for acid mine drainage and increased mineralization in reservoir watersheds is considered a viable alternative to a declaration of lands unsuitable for mining in most areas if these special measures are assured.
- 7.32 The emphases regarding fluorspar mining, quarries and aggregate production are maintenance of a permit application review process, monitoring for possible water quality impacts and encouragement of studies which evaluate these impacts and the effectiveness of current pollution control requirements.
- 7.4 The coordination, support and monitoring of mine related non-point source management programs within the designated areas should be through management systems established by the Illinois Water Quality Management Plan in Chapter Thirteen of this document.

HYDROLOGIC MODIFICATION CHAPTER

8



CHAPTER EIGHT: HYDROLOGIC MODIFICATION

I. WQM PLAN FINDINGS

Hydrologic modification may be defined as activities which alter the geometry and physical characteristics of a body of water such as a stream, wetland, or lake. Modification activities include dredge and fill, wetland drainage, streambank and lakeshore alteration or destabilization, dam construction, stream channelization, flow regulation, bridge construction, and removal of riparian or lakeside vegetation. As reported in IEPA's "Illinois Water Quality Report: 1988-1989", hydrologic and/or habitat modification, primarily lake shoreline erosion and stream channelization, are responsible for 83 percent of Illinois' lakes experiencing less than full use support. Hydrologic modification was also identified as being the source of use impairment for 3,916.6 river miles out of 13,122.7 river miles assessed (30 percent). Data retrieved from the Illinois Stream Information System indicates that of Illinois' 25,479.1 miles of assessed streams, 21.6 percent have been channelized and 23.6 percent have been leveed. It has been estimated that over 80 percent of the natural wetlands in the State have been drained or otherwise destroyed.

Modification of floodplains and wetlands may adversely affect the beneficial uses of water resources in a number of ways. Floodplain and wetland conversion may destroy the soil and vegetation conditions that trap and assimilate sediment, nutrients, and other pollutants. Valuable fish and wildlife habitat may be lost through inappropriate floodplain and wetland modification. The ability of wetlands and floodplains with porous groundcover to effectively absorb and store water and to recharge underlying aquifers may be impaired by modification activities such as narrowing the natural floodplain and reducing the surface roughness by eliminating vegetation or filling a wetland. As a consequence of the reduced available storage and resistance for flood flows, the rate and severity of downstream flooding will intensify. Furthermore, construction in the floodway can decrease the cross sectional flow area and the conveyance of flood flows.

Channel modification includes any construction which modifies the physical dimensions of the stream channel (i.e., straightening, enlargement, relocation) in such a way that flow patterns change. An extreme form of channel modification, channelization, results in a significant alteration of the channel cross-section and/or the relocation of the stream from its natural course. The stabilization of streambanks by lining the channel with artificial materials such as rip-rap or concrete constitutes channel modification as does reservoir construction involving channel excavation or damming. Other forms of channel modification include clearing (the removal of vegetation from streambanks), snagging (the removal of large debris from the channel), and maintenance dredging (excavation of accumulated sediment from the streambed).

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Channel modification projects are conducted for the purpose of obtaining specific benefits but typically result in unintended negative environmental impacts affecting aquatic wildlife, hydrology, and water quality. The type and degree of environmental impact depends upon the original composition of the natural community, construction activity undertaken, construction methods used, soil type or erosive potential, and other factors. Removal of streambank vegetation and the stream shading it provides may increase the water temperature as a consequence of increased solar input. Higher water temperatures in modified channels can impair respiration, retard growth, lower disease resistance, and interrupt the spawning cycle for some fish. The increased solar input may enhance the growth of algae and other aquatic plants. The warmer water associated with modified channels has a lesser capacity to hold dissolved oxygen than cooler waters having canopy shading. Removal of streamside vegetation also involves the removal of an important source of food and energy for aquatic communities. The removal of in-stream debris may eliminate the protective cover used by fish for resting or spawning and for invertebrates that cannot withstand the higher current velocities in the open stream. Construction activities in or near a stream and the removal of streamside vegetation increases the potential for erosion and the introduction of large quantities of particulate matter to the stream.

Channelization increases the slope and velocity of the modified stream. A channelized stream has its flow concentrated in a minimal area with a maximal velocity which increases the unit stream power and enhances its capability to erode streambanks and transport sediment. The channelized stream no longer has a release for this energy as provided in meandering and gradual channel reshaping. Therefore, the channel flow may erode streambanks and bottoms in an alternating manner in an attempt to re-establish a sinuous course.

Channelization activities typically create straight channels of uniform depth, eliminating or reducing the natural pool and riffle sequence. Pools and riffles serve as a naturally effective means of reducing unit stream power and the erosive energy of a stream and act as a sediment trap during low and medium flow conditions. For the modified channel, as well as for the waters to which it discharges, this enhanced erosive capacity creates a great many water quality and other problems in terms of suspended sediment and sedimentation. A more detailed discussion of the adverse environmental impacts associated with suspended sediment and sedimentation can be found in Chapter Four of the WQM Plan.

The diversity of aquatic habitat is diminished as a result of the elimination or reduction of pool and riffle areas and stream flow obstructions. Channel modification that reduces habitat diversity by creating a basically uniform stream water depth, velocity, and bottom type may prevent previously present stream organisms from living in this modified channel. Channelization also reduces stream sinuosity and length thereby reducing the total quantity of aquatic habitat area. The sediment deposition pattern of a channelized stream is altered to reflect the homogenous flow characteristics of the channel. This may result in lower

diversity of substrate conditions and habitat loss for some species. The increased velocity intended of channel modification projects so as to increase drainage may cause the movement of substrate that was once relatively stable. The uniform depth and reduced turbulence of channelized streams may have less aeration and thus less oxygen available to aquatic life.

The hydraulic connection between a stream and its adjacent floodplain and wetland areas may be reduced through channelization. Adjacent floodplains and wetlands may be inundated less frequently due to the increased channel conveyance associated with a channelized stream. While channelization may seem to effectively transport stormwater away from a given area it potentially increases the severity of downstream flooding. By shortening the stream and reducing the friction associated with meanders, vegetation, and bottom diversity, channelization causes peak flows to move more rapidly downstream. Channel modification projects designed to reduce the frequency and duration of flooding may also lower the water table in the floodplain which may eliminate wetlands and wildlife habitat. Floodplain plant communities may shift from moisture tolerant trees and plants to moisture intolerant species, with an accompanying change in the associated wildlife community.

Best management practices to control nonpoint source pollution from hydrologic modifications include but are not limited to the following:

Limited Clearing and Snagging	Riprap
Dam, Multiple Use	Protect Existing Vegetation
Dam, Floodwater Retarding	Reshape Banks/Sideslopes
Dike	Gabions/Wire Mattresses
Diked Floodway Channel	Willow Spikes
Open Channel Construction/Improvement	Flow Diversion
Livestock Exclusion	Check Dams
Selective Dredging	Buffer Strips
Critical Area Planting	Wooden Fences
Retards and Jetties	Vegetative Deflectors
Revegetated Riparian Corridor	

II. CONTINUING POLICIES AND RECOMMENDATIONS

It is the policy of the Water Quality Management Plan to undertake activities consistent with the principles and standards below.

- 8.1 From a statewide perspective, the control of pollution and other adverse impacts resulting from hydrologic modification procedures is a necessary component for the maintenance of legitimate water uses in both urban and rural settings. The primary responsibility for the control of hydrologic modification impacts on water quality rests with the State.

- 8.11 The emphasis of the WQM Plan is to ensure the careful use and placement of hydrologic modifications in order to prevent pollution or impairment of uses to waters of the State. The IEPA, under Section 401 of the Clean Water Act of 1977, will review all applications for hydrologic modifications associated with dredging under Section 404 of the Act. In addition, The Illinois Department of Transportation (IDOT)/Division of Water Resources and IEPA will jointly review all applications for permits for hydrologic modification under Section 10 of the Federal "Rivers and Harbors Act of 1899" and Sections 65 and 70 of "An Act in Relation to the Regulation of the Rivers, Lakes and Streams of the State of Illinois." This will be done to assure that adverse water quality impacts are minimal and balanced against flood control, drainage and navigational benefits.
- 8.12 The appropriate State agencies (IEPA; DOT/Division of Water Resources; Illinois Department of Energy and Natural Resources; Illinois Department of Mines and Minerals, and; Illinois Department of Conservation) with oversight on the implementation of surface mine abandonment and reclamation plans should establish procedures to assure that drainage patterns are restored after hydrologic modifications have been performed pursuant to current regulatory programs and the Illinois Water Quality Management Plan.
- 8.13 River bottom deposits are readily resuspended by heavily laden barges and fast moving pleasure crafts. This is particularly true in the narrow and shallow navigation channels. Measures to minimize the impact of sediment resuspension and thus improve water quality should be developed and implemented for both shallow and deep craft navigation.
- 8.14 The Army Corps of Engineers, in maintaining navigable waterways, should cooperate with the State and local jurisdictions in the siting of suitable dredge disposal areas, consistent with the provisions of Section 404(t) of the Clean Water Act of 1977 to maintain federal interest in navigation.
- 8.15 It is the primary responsibility of the State to control hydrologic modification nonpoint source pollution arising from State sponsored or directed activities. State agencies must consider necessary conditions in permits and programs involving water resource related projects to prevent pollution from these activities. State actions, such as approvals for Facilities Plans or Facility Planning Area modifications, must assure that the applicants or petitioners have addressed the need for stream, wetland, and lake management plans or ordinances to mitigate the potential direct and indirect adverse environmental effects that may result as a consequence of a proposed activity.

- 8.2 In addition to various State and Federal agencies, Designated Management Agencies (DMA) responsible for the control of hydrologic modification include municipal and county governments, soil and water conservation districts, and drainage districts.
- 8.3 Drainage districts, organized under the Illinois Drainage Code, should consider hydrologic modification alternatives that are less likely to cause water quality degradation in lieu of channel deepening and widening projects. Maintenance of the natural channel, without dredging and with minimum disturbances of bank vegetation, should be encouraged where applicable. Debris removal, stream bank stabilization measures, and control of public access are recommended. In addition, such measures as headwater and upstream impoundments, sediment traps, structures to hold tributary drainage, and grade stabilization structures should be encouraged wherever feasible as best management practices.
- 8.4 The WQM Plan emphasizes the development of technical and administrative guidance tools to encourage and assist responsible units of government and others in the selection and implementation of best management practices (BMPs) and administrative mechanisms for the needed nonpoint source control. Major program objectives include:
 - 8.41 Maximization of the education and information transfer functions. This includes education of both the private and public (local and state) sectors of the importance of stream, wetland, and lake protection and of the management techniques that are available.
 - 8.42 Standardization of technical and administrative guidance for hydrologic modification control practices.
 - 8.43 Encourage DMAs to develop cooperative relationships in managing hydrologic modifications at the watershed level.
 - 8.44 Model Ordinances
 - Model Stream and Wetland Protection Ordinance for the Creation of a Lowland Conservancy Overlay District (Northeastern Illinois Planning Commission: October, 1988).
 - Model Floodplain Ordinance (Northeastern Illinois Planning Commission: 1989)
- 8.5 All counties and municipalities should carry out the following preferred control practices for local hydrologic modification:
 - 8.51 Adopt and enforce a stream, wetland, and lake protection ordinance, consistent with State recommendations to regulate land development and hydrologic modification activities affecting water resources.

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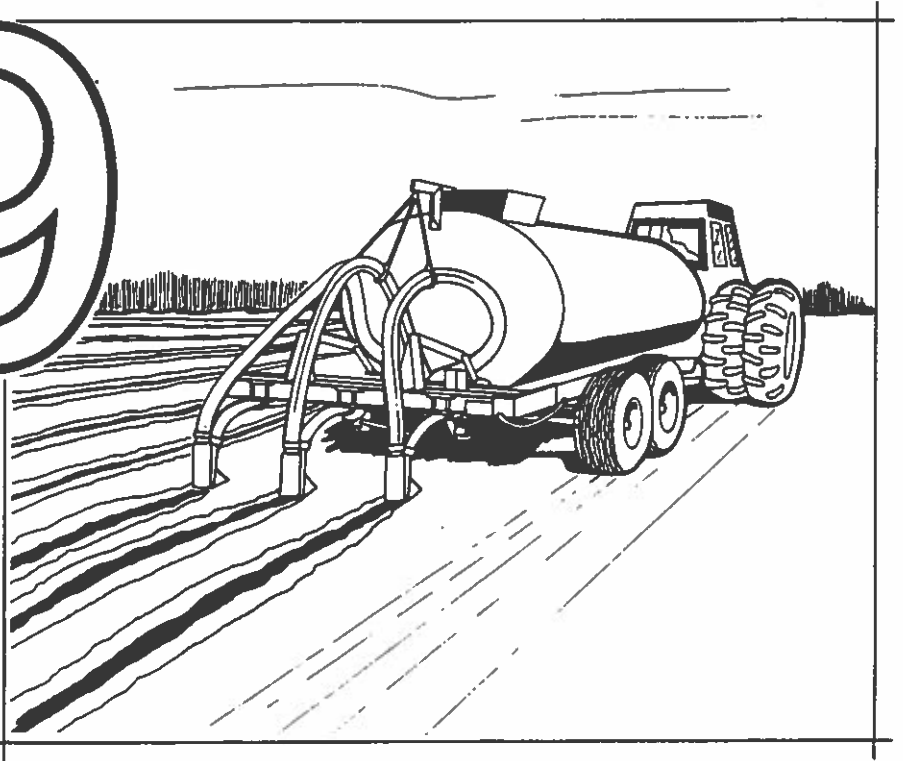
- 8.52 Adopt and enforce standards and specifications for hydrologic modification management practices.
- 8.53 Develop surface water maintenance programs consisting of volunteers and/or government representatives who conduct surveillance and mitigation of water resource deterioration.
- 8.6 The coordination, support, and review of local hydrologic modification projects should be provided through the areawide management system established by the Illinois Water Quality Management Plan in Chapter Thirteen of this document.
- 8.7 The modification of permits and operation plans for existing impoundments for the improvement of water quality should be encouraged. Procedures for assuring adequate consideration of water quality impacts for proposed impoundments should be guaranteed.
- 8.8 In northeastern Illinois, the feasibility of making structural changes to the low flow impoundments or the actual removal of the dams, should be considered with the objective of conserving super-saturated DO concentrations and/or reducing the adverse water quality impacts of these dams during low flow periods. Several opportunities have been identified:
 - 8.81 The feasibility of modifying dams on the Fox and DuPage Rivers should be examined.
 - 8.82 Opportunities for modifying low-flow impoundments and otherwise returning the flow regime of the Upper Des Plaines to a more natural state have been studied by the Northeastern Illinois Planning Commission. Further consideration should be given to design and implement the recommendations.

SR:ct,819q,sp1-6

RESIDUAL WASTES

CHAPTER

9



CHAPTER NINE: RESIDUAL WASTE

I. WQM PLAN FINDINGS

Residual waste is material (sludge) which is separated from point discharges of industrial, municipal, or private waste treatment plants. These sludges also include water treatment plant residuals as well as septage sludge. This waste stream contains any combination of pathogens, heavy metals, toxic substances, or hazardous material which can cause water pollution. Disposal of municipal and industrial sludges must conform to Illinois Pollution Control Board's regulations contained in Illinois Administrative Code, Title 35, Subtitle C, Chapters I and II as well as Illinois Administrative Code, Title 35, Subtitle G, Chapter I. Permits for disposal of sludges (excluding septage) are required from the IEPA. Alternatives available for disposal of sludges include incineration, landfills, and land application (soil incorporation).

Handling of sludges is a major expense at all plants and warrants selection of the most practicable means of sludge disposal. Regionalization of sludge disposal should be considered as an alternative, independent of regional management and operation of treatment facilities where practicable and cost-effective.

Residual waste control best management practices include but are not limited to:

Site Evaluation Requirements	Land Application
Lagoons	Runoff Control
Leachate Collection Systems	Catchment Basins
Buffer Strips	

II. CONTINUING POLICIES AND RECOMMENDATIONS

It is the policy of the Water Quality Management Plan to undertake activities consistent with the principles and standards below.

- 9.1 From a statewide perspective, the proper disposal or use of residual wastes is a necessary component in the conjunctive management of both ground and surface waters as well as the program for point source control. The responsibility for the management of residual waste is shared between the designated State and local authorities.
- 9.2 The WQM Plan emphasizes the need for the conservation and reuse of those materials presently considered wastes. This includes the better use of existing sludge management systems and disposal sites as well as the development of an education and information program highlighting the benefits of sludge as a resource.

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- 9.21 Residual materials are a resource and should be utilized to the maximum extent possible. Highest priority should be given to the use of sludge as a soil conditioner with efforts expanded to utilize sludge for this purpose.
 - 9.22 To the extent that municipal sludge material must be disposed of rather than utilized, disposal should take place in landfills that have been designated by IEPA as suitable.
 - 9.23 Sludges from industrial wastewater treatment processes containing heavy metals or toxic materials in excess of limits acceptable for land application should be disposed of in landfills that have received appropriate state permits.
- 9.3 The State, through Illinois Pollution Control Board's (IPCB) rules contained in Illinois Administrative Code Title 35, Subtitle C, Chapter II and Subtitle G, Chapter I is responsible for the regulation of solid waste disposal practices. In addition, the State is responsible for sludge disposal resulting from the operation of publicly owned treatment works through IPCB rules in, Title 35, Subtitle C, Chapter I, Water Pollution.
- 9.31 Greater emphasis should be placed on the alternatives for municipal sludge utilization during the facilities planning process.
 - 9.32 The IEPA should ensure that every solid waste disposal site and landfill complies with all regulations of the IPCB for their siting, design, construction, and operation.
 - 9.33 The IEPA should assure proper practices in the utilization of sludge on agricultural lands.
 - 9.34 The United States Environmental Protection Agency's (USEPA) standards and the IPCB's regulations for permits for the disposal of hazardous or toxic substances will continue to be enforced by IEPA.
 - 9.35 A State sponsored education program should be developed and conducted through the IEPA's financial assistance and operator training programs. These programs should be designed to familiarize treatment plant owners, operators, and design engineers with State policies and regulations concerning sludge. Use and distribution of the "Illinois EPA Sludge Regulation Guidance Document" should be encouraged.
- 9.4 The preferred method for the disposal of domestic septage is through land application and this method should be encouraged and used whenever possible. Recognizing a continuing need for the disposal of large volumes of septage at wastewater treatment plants, specific facilities should be given a permit by the IEPA to receive domestic septage when requested by the lead agency for wastewater treatment.

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- 9.41 During periods of adverse weather, or in areas where land application is not possible, septage should be disposed of in wastewater treatment plants where special tanks can hold the septage for analysis and pretreatment aeration. Alternatively, the septage should be disposed of in approved landfills.
- 9.42 Septage that contains hazardous or toxic wastes should be deposited in landfills permitted by the IEPA as suitable for hazardous waste disposal.
- 9.5 The disposal of water treatment plant residues or sludges should be evaluated on a case-by-case basis. Potential methods include discharge to sanitary sewer systems for subsequent handling in wastewater treatment plants, as well as dewatering and disposal in landfills.
 - 9.51 Substances such as radium, barium, fluoride and arsenic from natural sources which appear in water treatment plant wastes have been declared not to be a public health hazard. However, these wastes should only be disposed of in a sanitary landfill or sewer system.
 - 9.52 Agricultural application of lime sludges is encouraged where appropriate and beneficial to the land.
- 9.6 Responsible local agencies should implement the most cost-effective sludge disposal and utilization schemes consistent with regional and subregional residuals disposal plans.
 - 9.61 The Septage Disposal Plan adopted by the Northeastern Illinois Planning Commission is part of the WQM Plan for application in the areas indicated below.
 - 9.611 Septage management operations in Cook, DuPage, Lake, McHenry, and Will Counties will be under the supervision of the respective county health departments. In Kane County they will be supervised by the Kane County Environmental Division.
 - 9.612 DuPage, Lake, McHenry and Will Counties should register licensed private sewage disposal contractors and should provide such guidelines and instruction as may be needed to ensure that contractors are fully aware of current policies and standards. Kane County should continue to do so. In Cook County grease trap and catch basin wastes will be collected by State licensed private sewage disposal contractors, who are also required to have an annual county permit.

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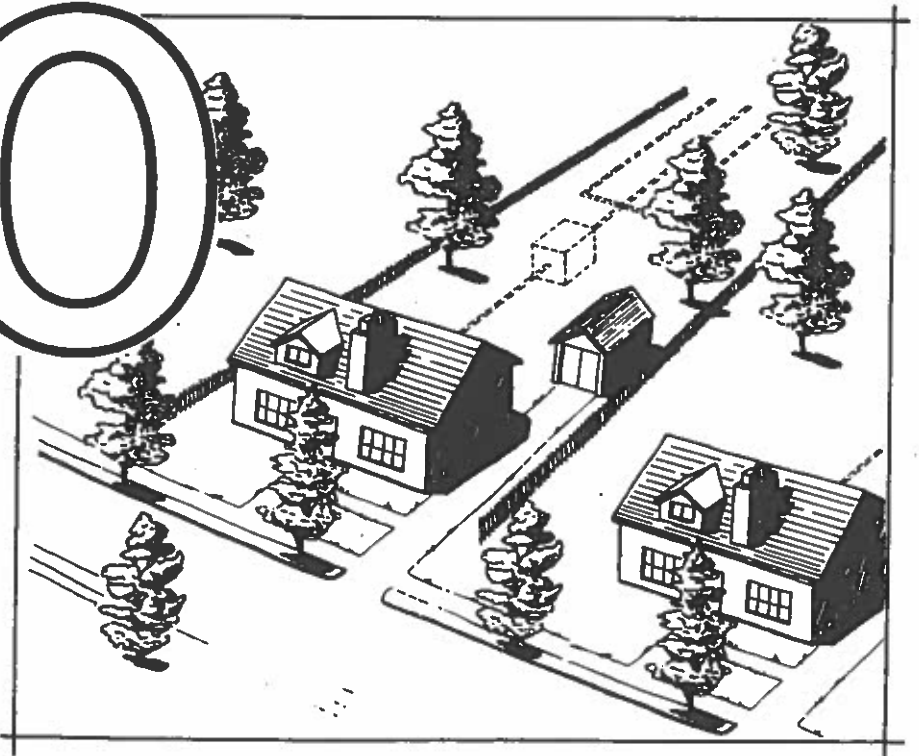
- 9.613 Lake, Kane, McHenry, and Will Counties should encourage land application of septage, along with alternative disposal methods for periods of inclement weather.
- 9.614 In Cook County, septage should be delivered to the Metropolitan Water Reclamation District of Greater Chicago for treatment and disposal. The other counties should encourage wastewater plants to provide alternative septage disposal facilities, working with treatment authorities to resolve their concerns.
- 9.615 The counties should be cognizant of the charges for local septic tank pumping services, and the disposal fees charged at alternative disposal sites, and the implications of such charges on private sewage system operations.
- 9.62 The Regional Sludge Resource Management Program adopted by Southwestern Illinois Metropolitan and Regional Planning Commission is part of the WQM Plan for application in Madison, St. Clair and Monroe counties.
- 9.63 Responsible local authorities should ensure that maximum use is made of existing sludge management systems and disposal sites.
- 9.64 Local units of government should prepare and adopt procedures for reviewing and approving new regional pollution control facilities pursuant to the provisions of "An Act Relating to the Location of Sanitary Landfills and Hazardous Waste Disposal Sites" (PA 82-682).
- 9.7 The coordination, support and monitoring of residual waste nonpoint source management programs should be provided for through the areawide management system established by the Illinois Water Quality Management Plan in Chapter Thirteen of this document.

SR:ct,1194q,sp1-4

ON-SITE DISPOSAL

CHAPTER

10



CHAPTER TEN: ON-SITE DISPOSAL

I. WQM PLAN FINDINGS

On-site wastewater disposal serves roughly three million people in Illinois. In 1980, approximately 695,000 housing units (15% of Illinois housing stock) were utilizing individual on-site wastewater disposal systems (i.e., septic tanks). The Northeastern Illinois Planning Commission (NIPC) estimated that approximately 400,000 people are served by 110,000 individual home septic systems in the NIPC region. In addition, more than 2,000 non-residential septic systems were identified as receiving the equivalent of a residential population of 20,000. In the Southwestern Illinois Metropolitan and Regional Planning Commission (SIMRPC) area, this figure was estimated at 40,000 on-site units.

The nine Illinois counties with the highest density of septic tanks were DuPage County; Lake County; Winnebago County; McHenry County; Will County; Madison County; Kane County; St. Clair County; and Rock Island County. For the period 1970-1980, 14 counties (Jackson, Kendall, McHenry, Williamson, Winnebago, Boone, Effingham, Johnson, Woodford, Jo Daviess, Grundy, Clinton, Ogle and Putnam) in Illinois showed increases in septic system density per square mile greater than 20 percent.

As reported in IEPA's "Illinois Water Quality Report: 1988-1989", on-site wastewater systems were responsible for the beneficial use impairment of 29.8 river miles and 14,085.9 lake acres. Monitoring efforts by the Illinois Department of Public Health (IDPH) suggest a relationship between groundwater contamination and on-site wastewater disposal systems. About 25% of the 15,600 water wells tested by the IDPH in 1986 had bacterial contamination problems. Over 12% exceeded the drinking water standard for nitrates. Nearly 18% of the 3,200 non-community water wells tested by the IDPH (e.g., parks, schools, restaurants, etc.) had bacterial problems. About 4% show nitrate contamination.

Virtually anything (i.e., cleaners, pesticides, food scraps) in sufficient quantity could potentially be a pollutant if contributed to a malfunctioning on-site disposal system or one not designed to properly treat the particular substance. A septic tank and drain field is the most common type of on-site wastewater disposal system and can be quite effective in removing organic matter, bacteria, and nutrients if properly designed and maintained. The septic tank traps and stores solids, oil, and grease until the accumulated sludge and floating materials can be removed during regular tank cleanings, approximately every five years, depending on use. Bacteria partially decompose solids and liquids in the tank. The remaining wastewater then flows into a drain field where it receives additional treatment as wastewater seeps into the soil and bacterial decomposition continues. Septic systems are effective only if, in addition to proper design, installation and maintenance, the proper soil conditions exist. Poor soil conditions include soils that are tightly packed, such as clays, and soils that are highly permeable, such as sandy or gravelly soils. Such soil conditions

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may result in surface and/or groundwater pollution by wastewater being forced to the ground surface or traveling too quickly to the groundwater table. Furthermore, septic systems will only last for approximately 15-20 years with proper maintenance. After this time, the system may fail as a result of rusted tanks, clogged distribution lines, and the soil around the absorption field losing its ability to treat the wastewater. Other factors such as steep slopes or the near proximity of receiving waters frequently contribute to water quality problems. Despite the problems with on-site systems, several advantages make them desirable waste disposal options in certain cases. Decentralized systems may be significantly less costly per household unit than centralized wastewater treatment systems.

The key area for improving performance of on-site systems is in procedures for improving quality assurance in terms of design, installation and management of the system. Best management practices to control nonpoint source pollution from on-site wastewater disposal systems include but are not limited to:

- Sludge removal and proper disposal every five years;
- Connection to centralized wastewater treatment systems;
- Avoid soil compaction over drain fields;
- Do not plant trees or shrubs near drain tiles;
- Do not dispose of household chemicals into on-site systems;
- Plan water use to avoid overloading the on-site system;
- Direct runoff flows away from drain fields;
- Perform routine inspections;
- Minimize dispose of non-decomposable materials into the on-site system;
- Local ordinances controlling on-site system siting, design, maintenance, and density; and
- Site-specific evaluations of soil suitability.

II. CONTINUING POLICIES AND RECOMMENDATIONS

It is the policy of the Water Quality Management Plan to undertake activities consistent with the principles and standards below.

- 10.1 From a statewide perspective, the control of adverse water quality impacts from on-site disposal systems is a necessary component in the conjunctive management of ground and surface water. The responsibility for the proper use and placement of on-site systems is shared between the State and local units of government.

- 10.2 The WQM Plan emphasizes the development of technical and administrative guidance tools to assist responsible units of government and agencies in the selection of Best Management Practices (BMP) and administrative mechanisms for the needed nonpoint source control. Major program objectives include:
- 10.21 Maximization of the education and information transfer function. This includes both the public (local and state) and private sectors. The key to effective use of on-site systems is improving quality assurance in terms of design, installation, operation, and maintenance of these systems. All information and education efforts should include material on the use and benefits of water conservation devices and practices.
- 10.3 The State has primary responsibility, through the Illinois Department of Public Health (IDPH) and those counties acting as designated agents of the State, to ensure the effective enforcement of the Private Sewage Disposal Code (6 Ill. Reg. 3095, effective March 10, 1982). In those instances where urban or county health departments act as a local independent authority, they are primarily responsible for enforcement of the appropriate private sewage disposal ordinances or codes.
- 10.310 All state and local agencies involved with on-site disposal should be kept informed of current developments in on-site disposal technology.
- 10.311 The IDPH should continue to provide information on system design, installation, maintenance, and rehabilitation. Local governments are encouraged to make this information available to home owners. This information should include a description of the benefits of home water conservation devices.
- 10.312 Local agencies assigned responsibility for septic system management and regulation (in conjunction with IDPH) should provide continued training for their staff.
- 10.313 Responsible agencies should inspect all septic systems threatening public health or causing nuisance conditions. The inspection should result in the preparation of a written list of corrective measures which are undertaken by the septic system owner.
- 10.314 Counties should encourage septic system inspections by existing local environmental health officers prior to the transfer of ownership of property. The results of the inspections should be made known to the lending institution which is furnishing the mortgage funds.

- 10.315 In areas of septic failures involving several systems, where there is no possibility of cost-effective conventional sewer service, the failing systems should be replaced by alternate on-site waste disposal or effluent transfer systems.
 - 10.316 Responsible agencies should make better use of data on soils and surficial geology in evaluating septic system locations. County and municipal zoning officials should give serious consideration to the types of soil which are present in proposed subdivisions before authorizing their platting. In addition, county and municipal zoning or health department officials should assure that percolation tests are properly conducted and the results verified.
 - 10.317 No county or municipality should approve a subdivision of land which is intended to be served by on-site disposal systems within the projected service area of a designed wastewater treatment or collection authority until that authority has been given an opportunity to review and comment upon the proposed subdivision.
 - 10.318 Each county and municipality should adopt an ordinance prohibiting the renovation or installation of any on-site disposal system where a public sanitary sewer is available for connection.
 - 10.319 Local urban and county health departments involved in administration of the Private Sewage Disposal Code should ensure that minimum performance standards for private sewage disposal contractors are adhered to. Adequate records should be maintained in order to determine eligibility for relicensure at the time of renewal. The development of a regular schedule and program of training seminars on septic tank installation and maintenance for licensed contractors and new applicants is encouraged.
 - 10.320 Each county and municipality should consider the adoption of an ordinance requiring the installation of water saving plumbing fixtures in all new construction and in the repair or replacement of existing fixtures. Plumbing codes and other relevant municipal codes should be modified as required for consistency.
- 10.4 It is the primary responsibility of the State to ensure that the administration and application of the IDPH Private Sewage Disposal Code and IEPA pollution control programs are closely coordinated.

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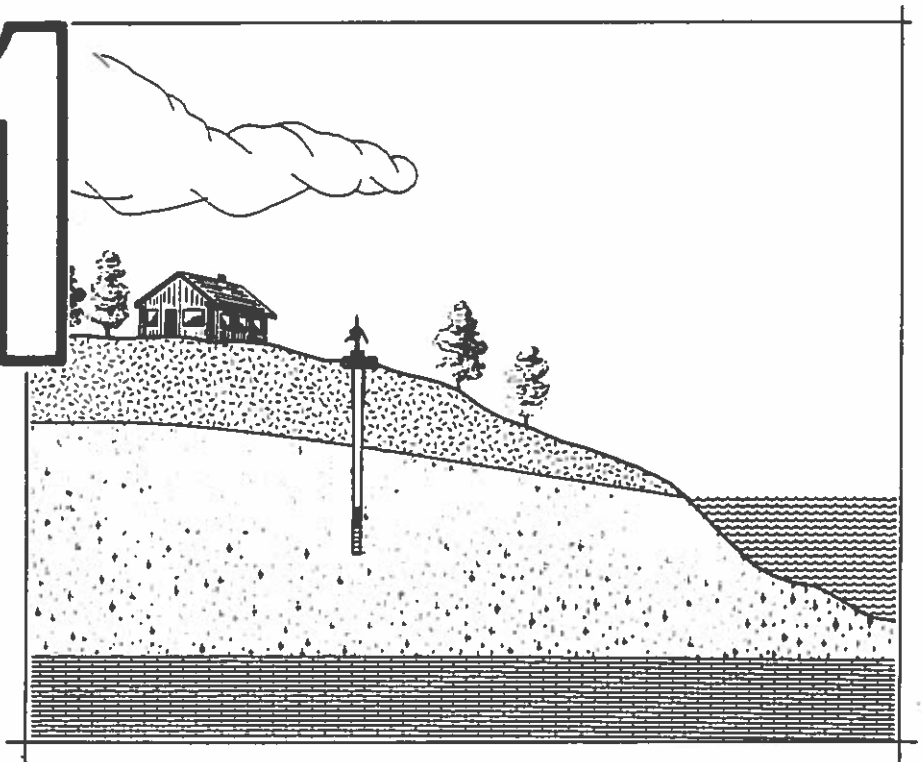
- 10.41 Procedures should be developed specifying when and where problems associated with an area of failing on-site disposal can be corrected most cost-effectively by the removal of the systems and the provision of centralized wastewater service.
 - 10.42 The formation of on-site management zones should be closely coordinated among IEPA, IDPH and local government.
 - 10.43 The State On-site Management Zone Law should be modified to allow counties to take advantage of federal funding programs for septic systems. On-site management zones could then be established under the sponsorship of the counties and local municipalities to facilitate their formation.
- 10.5 The coordination, support and monitoring of on-site disposal nonpoint source management programs should be provided for through the areawide management system established by the Illinois Water Quality Management Plan in Chapter Thirteen of this document.

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GROUNDWATER

CHAPTER

11



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CHAPTER ELEVEN: GROUNDWATER

I. WQM PLAN FINDINGS

Groundwater is a vital natural resource in Illinois. Aquifers supply over 5.5 million people (50% of the State population) with water in over 1,450 communities, which represents about 74% of the community systems in Illinois. Industry is a heavy user of groundwater, withdrawing over 24% of the total used annually. An estimated 400,000 private groundwater wells are also used for potable water supplies throughout the State. All totalled, some 1 billion gallons of groundwater are withdrawn on a daily basis.

Well site surveys provide an inventory of potential sources, routes, and other activities within minimum setback zones (200-400 feet) and within a 1,000 foot radius. As of July 1, 1991, the IEPA has completed 2,429 surveys out of 3,353 total wells and 724 well site survey reports completed out of 1,435 total communities. These surveys identified the following as major sources of groundwater contamination: petroleum sites (i.e., small quantity hazardous waste generators, autobody shops, dry cleaners, wood or metal finishing); underground storage tanks; large quantities of above ground storage of petroleum; sewage treatment plants; large quantities of hazardous substances; agricultural chemicals; salt piles; landfills; and waste treatment, storage, or disposal.

Over 2,600 community wells have been sampled for volatile organic chemicals (VOC) and volatile aromatic chemicals (VOA). Analyses from 115 wells have been confirmed to be contaminated (concentration greater than or equal to 1.0 part per billion). Of those community wells which are contaminated, the most commonly found constituents were: 1,1,1-trichloroethane, 22.5%; Trichloroethylene, 19.5%; tetrachloroethylene, 18.3%; trans 1,2-dichloroethylene, 11.8%; 1,1-dichloroethane, 8.9%; 1,1-dichloroethylene, 3.6%; chlorobenzene, 3.0%; benzene, 3.0%; toluene, 3.0%; 1,2-dichloroethane, 2.4%; xylene, 1.2%; ethylbenzene 0.6%; and carbon tetrachloride, 0.6%.

Seven hundred eighteen community wells have been sampled for pesticides. Seven wells with initial detections (approximately 1%) have been confirmed by multiple analyses to be contaminated with one or more pesticides. The constituents most commonly found in the six community wells were atrazine, 100%; alachlor, 50%; metalochlor, 50%; cyanazine, 33.3%; and metribuzin, 16.7%. The well site surveys conducted for these six community wells indicate a potential point source of pesticide contamination within the minimum setback zone. In addition, all of the contaminated wells have high geologic susceptibility (e.g., high permeable geologic materials).

Substances identified as contaminating Illinois aquifers include: volatile and synthetic organic chemicals, inorganic chemicals (including nitrates), arsenic, brine (salinity), metals, radioactive materials, pesticides and other agricultural chemicals, biological contaminants (pathogens/bacteria), total dissolved solids, natural contaminants, and petroleum products. These substances come from a number of major sources including: septic tanks, municipal and industrial landfills, surface impoundments, oil and gas brine pits, underground storage tanks, abandoned and regulated hazardous waste sites, land application of wastes (i.e., sludge), agricultural activities, and application and storage of road de-icers.

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II. CONTINUOUS POLICIES AND RECOMMENDATIONS

It is the policy of the Illinois Water Quality Management Plan to undertake activities consistent with the principles and standards below.

- 11.1 From a statewide perspective, the protection of groundwater quality is a necessary component of an overall water quality management strategy. The responsibility for implementing groundwater quality management strategies is shared between state and local governments.
- 11.2 IEPA, under PA83-1268, will implement a groundwater protection plan and statewide groundwater monitoring network. The primary objectives of the monitoring program are to develop appropriate field procedures, inventory wells, establish an ongoing monitoring network for groundwater, encompass all State aquifers supplying potable water, identify problem areas, and assess water quality at community water supplies. The Illinois State Water Survey, Illinois Geological Survey, and U.S. Geological Survey should also monitor groundwater quality in order to assure the protection and maintenance of this water resource.
- 11.3 The Illinois Groundwater Protection Act established a statewide protection based policy focused upon beneficial uses of groundwater and preventing degradation. In accordance with this Act:
 - 11.31 The IEPA shall chair an Interagency Coordination Committee on Groundwater and report progress to the Governor and General Assembly.
 - 11.32 The IEPA, Illinois Department of Energy and Natural Resources (DENR), Illinois Department of Public Health (DPH), and Illinois Department of Agriculture (IDOA) shall cooperate in the development of a groundwater education program involving groundwater principles, potential problems, policies, and protection measures.
 - 11.33 DENR shall map and assess groundwater sources and recharge areas, establish a statewide multi-agency monitoring network, and evaluate pesticide impacts on groundwater. DENR and other state agencies will conduct a variety of research activities concerning groundwater.
 - 11.34 The IEPA in cooperation with the Interagency Coordinating Committee on Groundwater, the Groundwater Advisory Council, the Interagency Groundwater Standards Technical Team and other State agencies will develop and revise, as necessary, comprehensive groundwater quality standards for submittal to the Illinois Pollution Control Board.
 - 11.35 Municipalities and counties should perform groundwater protection needs assessment and adopt setback zones around wells.

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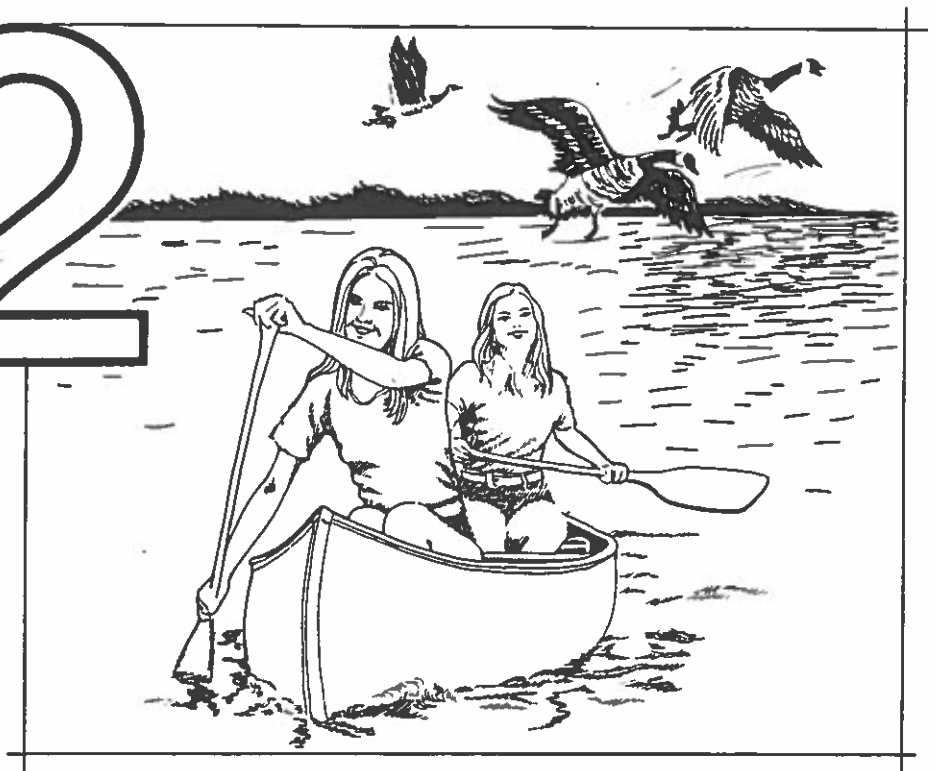
- 11.351 "The Illinois Water Well Construction Code" was amended to prohibit the location of a noncommunity, semi-private, or private water system well within 200 feet of a potential contamination source. A 75 foot setback was stipulated for any new private water supply well where the owner is the same for both the well and a potential contamination source.
 - 11.352 The "Illinois Environmental Protection Act" requires that sources and routes of groundwater contamination be specified by the IEPA. Setback zones (200 and 400 feet) between potential contamination sources and community drinking water wells shall be established to ensure prevention of future problems. With IEPA approval, maximum setbacks (up to 1,000 feet) may be established for community water wells. The IEPA will operate a certification program registering all sites posing minimum hazard and provide an exemption from setback requirements.
 - 11.353 IEPA and DENR will designate priority groundwater protection planning regions with a local planning committee and assist with groundwater protection needs assessments. Furthermore, IEPA will conduct well site surveys and issue groundwater contamination advisories.
- 11.4 The emphasis of the WQM Plan is to ensure the conjunctive management of ground and surface water. The objective of the conjunctive management strategy is to determine pollution impacts on ground and surface water quality in terms of known point and nonpoint sources.
 - 11.5 Areas which have a high potential for groundwater contamination should be identified and control programs developed for those activities that are significant sources of groundwater pollution.
 - 11.6 In areas where state and/or local authorities can act to mitigate groundwater pollution, consideration should be given to requiring site design, placement, response procedures and/or abandonment restrictions. These requirements should be directed towards existing and abandoned water supply wells, buried pipes, storage tanks, de-icing salts, industrial stockpiles, accidental spills, landfills and toxic waste sites.
 - 11.7 An information transfer and education program for public and private interests should be designed for use in part of an overall groundwater quality protection strategy. The education and information basis for public understanding on the groundwater pollution problems in Illinois is a vital part of the process of technical assistance.
 - 11.8 The coordination, support, and monitoring of local unit groundwater quality protection programs should be provided through the areawide management system established by the Illinois Water Quality Management Plan in Chapter Thirteen of this document.

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STREAM USE / WATER QUALITY STANDARDS

CHAPTER

12



CHAPTER TWELVE: STREAM USE/LAKE MANAGEMENT AND WATER QUALITY STANDARDS

I. INITIAL WQM PLAN FINDINGS

The present Illinois water quality standards have been in effect since 1972. After extensive public hearings, a "single standards" approach was adopted to protect the general use of water. Three exceptions to this philosophy were:

1. More stringent standards for Lake Michigan.
2. More stringent standards to be applied at points where water is utilized for public or food processing water supply.
3. Less stringent standards for certain waterways in the Chicago area which are either artificially constructed, altered substantially by earlier development, or generally unsuited for body contact or diverse aquatic life.

While these standards are economically equitable to various dischargers and are easy to administrate, they do not necessarily reflect the diverse physical nature and uses of the "waters of the state." The uses that a given water will support should be directly reflected by the water quality standards assigned to it. The plan suggested that the standards be restructured based on designated segment specific stream and lake uses. It was suggested that the standards be designed to reflect beneficial uses which can be supported by particular bodies of water as well as those which are economically and technically feasible.

The framework for the SIMAPC plan recommendations rested upon the need to improve existing water quality. Utilization of the Hydrocomp modeling process provided an extensive water quality evaluation in four of the ten drainage basins located within the study area. Extension of these modeling results to two similar basins yielded additional useful water quality data. Extrapolation to the four remaining basins was limited by the sparcity of available water quality data. As a result, a great deal is known about the water quality in six basins and very little in the four remaining basins. The WQM Plan recognized the need to improve existing water quality in order to meet current water quality standards. The water quality assessment of area streams identified the existence of many pollutant sources within the region both point and non-point related. In some instances the available data were adequate to identify the sources of pollution responsible for the water quality violations. However, the available information was often deficient in that it was impossible to determine that any one particular source of pollution was responsible for the violations.

In the GERPDC area, initial Water Quality Plan documents addressed the threat to stream use for water supply and recreation and used the term "high quality waters" to describe streams available for these uses in the ten-county Southern Illinois area. The ten-county area was determined to have large acreages of water supply surface waters, many recreation and back-up water supply reservoirs, and some well known high quality flowing waters and lakes, the quality of which should be maintained. The quality of these waters is threatened principally by four sources of pollution: (1) erosion from agricultural lands; (2) agricultural chemicals; (3) organic pollution from sewage treatment effluents, animal concentrations, and failing private sewage treatment facilities; and (4) acid drainage from coal mine sites. The impact of these sources results in deteriorating water quality, due to input of acid spoils, poisons, heavy metals, dissolved salts, and nutrient materials that cause eutrophication. In addition, siltation decreased the holding capacity of reservoirs. These degrading influences are seen in varying degrees in all identified waters, but are most seriously threatening to water supply impoundments.

The basic intent of Public Law 92-500 was incorporated into the goals and objectives of the NIPC Plan. The Plan lists its goals and objectives related to stream use and chemical criteria, which taken together constitute water quality standards. One of the important findings of the initial planning work was that it may be impossible to meet a 100 percent compliance level for some water quality standards. Water quality modeling studies, for example, indicated that violations of the dissolved oxygen standard are likely to occur in some streams in the future even if rigorous pollutant control strategies are implemented.

The NIPC plan also proposed a series of objectives tailored to the Region's needs. These objectives included:

- Elimination, by 1985, of all conventional and toxic pollutant discharges into the region's waterways. This included elimination of all pollutant discharges into Lake Michigan.
- Maintenance of present levels of quality in all waterways in which water quality is better than State standards, in accordance with the IPCB's Chapter 3, Rule 208.
- Compliance with appropriate effluent standards established by the USEPA and the State of Illinois, as soon as it is technologically and financially possible to achieve compliance until recommendations for changes are developed in the course of WQM planning efforts.
- Compliance, with in-stream water quality standards of the State of Illinois, except that for dissolved oxygen, a temporary standard be authorized accepting 5.0 mg/l for 95 percent of the time in water bodies classified for General Use.

- Compliance, in all underground waters, with Illinois standards for General Use and Public Food Processing Water Supplies, except where standards are violated as a result of natural conditions.
- Reduction of urban and rural stormwater runoff, and pollution carried into waterways by runoff, by all practical means.
- Provision of Best Management Practices for all nonpoint sources of pollution according to the implementation schedules recommended in this Plan.

In 1977, prompted by citizen concerns about lakes and Section 208 and 314 of the Clean Water Act, the Illinois EPA began a problem assessment of lakes and the development of a lakes program.

The lakes assessment found that approximately 78 percent of the Illinois lakes evaluated exhibited moderate to severe water quality and use impairment problems. Of the lakes exhibiting only minimal to slight impairment, a majority of those lakes was considered threatened. The major nonpoint source pollutants impairing lake quality were sediment, nutrients, pesticides, and pathogens. These pollutant inputs result in turbidity, sedimentation, nuisance growths of aquatic plants, and accumulation of toxics in these water bodies. The primary pollutant for 88 percent of all surveyed lakes was sediment, and the primary source of this sediment was agriculture-related activities.

The lakes program which developed included monitoring and lake classification to guide decision-making, development and implementation of lake/watershed management plans for public lakes under the Federal Clean Lakes Program, and technical assistance and coordination to promote planning and implementation initiatives funded by other sources.

II. CONTINUING POLICIES AND RECOMMENDATIONS

It is the policy of the Water Quality Management Plan to undertake activities consistent with the principles and standards below:

- 12.1 From a statewide perspective, the identification of attainable stream uses and supporting water quality criteria are the cornerstones of the water quality management planning process. The primary responsibility for the establishment of water quality standards and their revision rests with the Illinois Pollution Control Board.
- 12.2 The emphasis of the WQM Plan is to ensure that water quality standards are established and maintained in a manner consistent with the 1970 Environmental Protection Act, as amended.

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- 12.21 Review, where necessary, existing water quality standards to assure that the federal goal of "fishable and swimmable" waters is met where that goal is attainable.
- 12.22 Establish a process whereby water quality standards can be tailored to the existing and potential uses of a specific stream segment. Provide enforceable water quality limits for all stream segments of Illinois waters to protect attainable uses.
- 12.23 Public water supplies should be protected from degradation and, where technically feasible and economically reasonable, meet applicable criteria for raw water intakes.
 - 12.231 River Conservancy Districts and other water supply and/or management agencies should begin a program to maintain significant percentages of the water supply watersheds in forest and grasslands or convert other land cover to forest and grass acreage. With the aid of appropriate agencies, these management agencies should enforce restrictions on development, industry, mining, or quarrying activities within the watershed which may significantly affect water quality.
- 12.3 The Illinois EPA will work with adjoining states to assure that waters flowing into Illinois meet applicable Illinois water quality standards at those points of entry.
- 12.4 The designated areawide WQM agencies will assist the Illinois EPA in the process of developing attainable water quality standards for water bodies in those areas.
- 12.5 Form a statewide perspective, the management of Illinois lake resources and mitigation of use impairment problems confronting them is the focus of the lakes program. State agencies and local interests should actively support a vigorous lake protection and management program as outlined in the Governor's State Water Plan Taskforce Final Report (January 1984).
- 12.51 The Illinois Environmental Protection Agency will serve as the lead agency in lakes program development and should coordinate their activities with other State, Federal, and local agencies concerned with the various aspects of lake and watershed management.

- 12.52 Illinois' lakes program should involve an integrated multidisciplinary approach to lake use enhancement, involving watershed protection and in-lake management, and should include the following major elements: technical assistance, financial assistance, information/education, and lake assessment, monitoring, and research.
 - 12.53 The lakes program emphasizes a state and local partnership which builds on the knowledge and cooperative relationships gained through the Federal Clean Lakes Program and previous efforts. This program should promote and maintain local initiatives for lake protection and management by increasing awareness and knowledge of the ecology, value interrelationships, and management of lakes and their watersheds.
 - 12.54 Lake assessment, monitoring, and research is encouraged in order to provide adequate bases for developing management plans and evaluating progress. This includes such elements as ambient and volunteer monitoring, sediment surveys, comprehensive monitoring and evaluation, diagnostic/feasibility studies, and basin research. For key lakes, problems should be identified, solutions determined, corrective actions taken, and results documented.
 - 12.55 The Illinois EPA will maintain a lake classification system which incorporates factors such as current water quality, potential for improvement, and public benefits to rate the project potential of lakes. This will provide guidance to the major programs which help protect and enhance lake quality and usability.
 - 12.56 The Illinois EPA will work cooperatively with the Illinois and U.S. Departments of Agriculture, USEPA, the Illinois Department of Conservation, Illinois Department of Energy and Natural Resources, Illinois Division of Water Resources, and other agencies and organizations to foster cooperative relationships for lake protection and management and to target resources to critical areas in priority watersheds.
- 12.6 Lakes and reservoirs have created a unique set of management problems and demands on Illinois natural resource agencies. To adequately manage these valuable resources, the planning, development, operation, and maintenance should be well coordinated. In addition, water quality, aquatic life considerations, and multipurpose uses must be taken into account.

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- 12.61 The Illinois Department of Transportation, Division of Water Resources and the Illinois Department of Conservation should develop an interim protected instream flow standard and procedures for implementation of the interim standard for all new reservoir projects.
- 12.62 All State water resource agencies should take an active role in the pre-project planning and resolution of the multipurpose operational procedures and policies for all newly proposed reservoir projects. The Division of Water Resources is the designated lead agency for State sponsored multi-purpose reservoir projects.
- 12.63 All non-state reservoir developments should be processed as a multi-agency permit coordination review issue.
- 12.64 State water resource agencies should coordinate their activities regarding operation and maintenance issues and opportunities for existing lakes and reservoirs.

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ILLINOIS WATER QUALITY MANAGEMENT PLAN

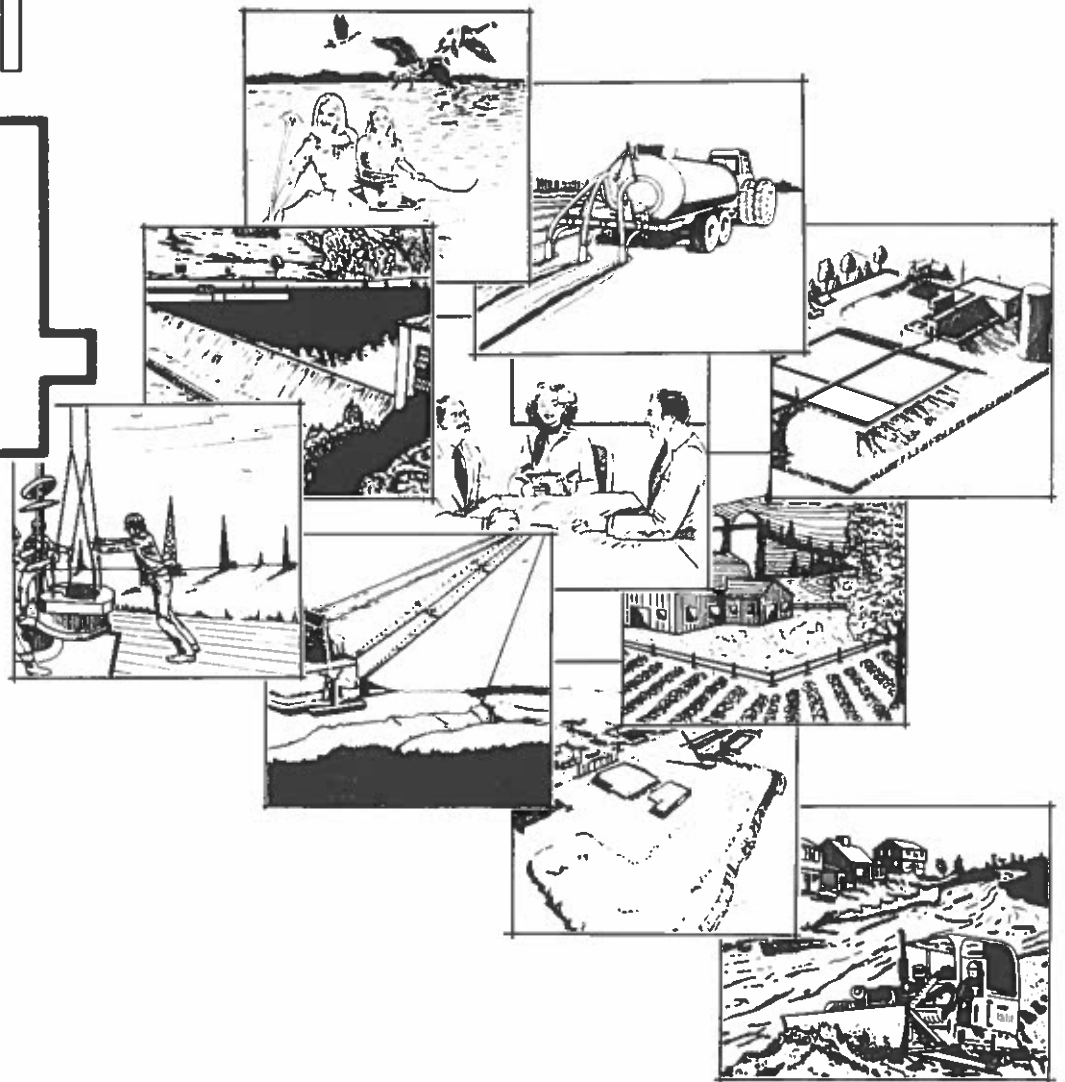
CHAPTER TWELVE
STREAM USE/LAKE MANAGEMENT
AND WATER QUALITY STANDARDS

ADDENDUM

Designated uses for Illinois streams and lakes are recorded in the Illinois Water Quality Report published biennially by the Illinois Environmental Protection Agency. The Illinois Water Quality Report also identifies the degree of use support impairment for these water resources and describes the methodology for performing this assessment.

MANAGEMENT PART

4



MANAGEMENT STRUCTURES CHAPTER

13



CHAPTER THIRTEEN: MANAGEMENT

I. MANAGEMENT HIERARCHY

Effective treatment and control of existing sources of pollution and the prevention of future water quality problems are dependent on an effective management system being established to implement the WQM plan. The goal of the management planning activities is to develop such a management system for the State of Illinois. The purpose of this chapter is to present the statewide management system. During the process of initial WQM plan development, State and areawide planning agencies had to consider what institutional alternatives were available for control of both point and nonpoint sources of pollution. All certified and approved WQM plans, both State and areawide, recommended management and implementation of authority be retained by existing State agencies and local units of government. Implicit in this arrangement was the reliance on coordination among all implementation authorities designated in the respective plans to achieve stated water quality problem solving objectives.

Since the approval of the initial WQM plans, the nature of this implementation and coordination relationship has reflected the following divisions of responsibility:

1. The Illinois EPA serving as the State coordinating agency for the functions which are related to its planning, administrative, regulatory and enforcement programs and activities;
2. The designated management agencies, both State and local, which have general statutory or administrative authority undertaking programs and implementing the recommendations of the WQM plan; and
3. The three designated areawide WQM planning agencies and their respective areawide coordinating bodies, fulfilling the functions related to continuing areawide planning, monitoring plan implementation and coordinating DMA activities.

This division of responsibility shows that while WQM planning is a shared authority between the State and areawide agencies, plan implementation authority is not. There is a direct link between Illinois EPA and other State and local DMA's. Illinois EPA has been given, by statute, regulatory authority to control and abate water pollution. The immediate responsibility for point source control lies with DMA's such as municipalities or sanitary districts. The enforcement and implementation mechanism for point sources are undertaken in the construction grant award and NPDES permit issuance process (Sections 201 and 402) with consistency established between the two by WQM plan. All these functions are derived from State statutory authority or delegated Federal authority to Illinois EPA.

Illinois EPA has not exercised regulatory authority in the area of nonpoint sources, except in the area of Section 401 water quality certification and agriculturally related NPDES permits. Responsibility for nonpoint source control has been with other State agencies and local units of government who exercise their authorities in these areas. The WQM plan establishes a coordinated relationship between Illinois EPA and these DMA's responsible for nonpoint source control. A special exception exists with regard to agriculture. Illinois EPA has entered into an agreement with Illinois Department of Agriculture, Division of Natural Resources, to be the DMA in the area of agricultural nonpoint source control. IDA/DNR, in turn, is working through the 98 Soil and Water Conservation Districts to implement WQM nonpoint plan elements. This relationship is similar to Illinois EPA's DMA point source control strategy.

II. STATE AND LOCAL DESIGNATED MANAGEMENT AGENCIES IN ILLINOIS

The identification and designation of management agencies is an inherent part of the process of the WQM plan implementation. Table 13.1 and 13.2 present the State and local designated agencies. The first column identifies the designated State agency or type of local governmental unit. The second column provides a cross-reference between the designated management agency and the appropriate plan element responsibilities. The final column identifies the general statutory provisions which form the legal basis for implementation activities.

TABLE 13.1.

STATE AND FEDERAL DESIGNATED MANAGEMENT AGENCIES IN ILLINOIS

DESIGNATED MANAGEMENT AGENCY	IDENTIFIED PLAN ELEMENT RESPONSIBILITIES	STATUTORY BASIS OF MANAGEMENT AUTHORITY
Illinois Pollution Control Board (IPCB)	Point Sources, Agriculture, Urban Runoff, Construction, Hydrographic Modification, Groundwater, Groundwater: On-Site Disposal, Groundwater: Residual Waste, Mineral Extraction: Mining, Stream Use/Water Quality Mineral Extraction: Oil Field Brine	"Environmental Protection Act", Ill. Rev. Stat., 1981, Ch. 111 1/2, Pars. 1002, 1005, 1011, 1013.
Illinois Environmental Protection Agency (IEPA)	Point Sources, Agriculture, Urban Runoff, Construction, Hydrographic Modification, Groundwater, Groundwater: On-Site Disposal, Groundwater: Residual Waste, Mineral Extraction: Mining, Stream Use/Water Quality Mineral Extraction: Oil Field Brine	"Environmental Protection Act," Ill. Rev. Stat., 1981, Ch. 111 1/2, Pars. 1002, 1004, 1011, 1021, 1039
Illinois Department of Agriculture (IDOA)	Agriculture, Construction, Hydrographic Modification, Mineral Extraction: Mining	"Soil and Water Conservation District Act," Ill. Rev. Stat., 1981, Ch. 5, Par. 106 et seq. "Watershed Protection Act," Ill. Rev. Stat., Ch. 19, Par. 128.1 et seq. "An Act in relation to carrying out purposes of Soil Conservation and Domestic Allotment enacted by Congress of United States," Ill. Rev. Stat., 1981, Ch. 5, Par. 138a et seq. "Illinois Pesticide Act," Ill. Rev. Stat., 1981, Ch. 5, Par. 801 et seq.
Illinois Commerce Commission (ICC)	Point Sources	"Certification of Convenience and Necessity Act," Ill. Rev. Stat., 1981, Ch. 111 2/3, Par. 56, Par. 55, (as amended)
Illinois Department of Transportation (IDOT)	Construction, Urban Runoff, Point Sources	Illinois Highway Code, Ill. Rev. Stat., 1981, "Ch. 121, Par. 1-101 et seq.

Illinois Dept. of Transportation Division of Water Resources (IDOR-DWR)	Construction, Hydrographic Modification Mineral Extraction: Mining	<p>"Regulation of Rivers, Lakes and Streams," Ill. Rev. Stat., 1981, Ch. 19, Par. 52, Par. 5</p> <p>"Drainage, Flood and Pollution Control Act," Ill. Rev. Stat., 1981, Ch. 42, Par. 472; P.A. 77-167, Par. 1</p> <p>"Control of Floods and Conservation of Water," Ill. Rev. Stat., 1981, Ch. 19, Par. 126, Par. 1</p> <p>"Level of Lake Michigan Act," Ill. Rev. Stat., 1981, Ch. 19, Par. 119, Par. 1</p>
Illinois Department of Public Health (IDPH)	Groundwater, Groundwater On-Site Disposal, Groundwater: Residual	<p>"Water Well and Pump Installation Contractor's License Act," Ill. Rev. Stat., 1981, Ch. 111, Sec. 7101; Par. 1 et seq.</p> <p>"Illinois Water Well Construction Code," Ill. Rev. Stat., 1981, Ch. 111 1/2, Pur. 116.111; Laws 1965, p. 3217, Sec. 1 et seq. Illinois Water Well Construction Code</p> <p>"Private Sewage Disposal Licensing, Ill. Rev. Stat., 1981, Ch. 111 1/2, Par. 115.301; P.A. 78-812, Par. 1</p>
Illinois Department of Mines and Minerals (IDMMR)	Mineral Extraction: Oil Field Brine, Mineral Extraction: Mining, Hydrographic Modification	<p>"Surface Mined Land Conservation and Reclamation Act," Ill. Rev. Stat., 1981, Ch. 96 1/2, 4501 et seq.; P.A. 77-1568, Par. 1 (eff. 9/17/71)</p> <p>"An Act in Relation to Oil, Gas, Coal and Other Surface and Underground Resources," Ill. Rev. Stat., Ch. 96 1/2, 5401 et seq.; Par. 1 et seq.</p>
Illinois Department of Conservation (IDOC)	Mineral Extraction: Mining, Hydrographic Modification, Construction, Agriculture, (Forestry), Point Sources	<p>"Prevention of Pollution Act," Ill. Rev. Stat., 1981, Ch. 127, Par. 63a5</p> <p>"Fish Code of 1971", Ill. Rev. Stat., 1981, Ch. 56, Par. 1-5 and 1-10.</p>

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Illinois State Toll Highway Authority (ISTHA)	Urban Runoff, Construction, Point Sources	"An Act in Relation to the Construction, Operation, Regulation and Maintenance of a System of Toll Highways and to Create the Illinois State Toll Highway Authority," Ill. Rev. Stat., 1981, Ch. 121, Par. 100-1 et seq.; Par. 1
Illinois Capital Development Board	Construction	"Capital Development Bond Act of 1972," Ill. Rev. Stat., Ch. 127, Par. 751, et seq.; Par. 1
Illinois Department of Energy and Natural Resources (IDENR)	Agriculture, Groundwater, Mineral Extraction, Mining	"Illinois Department of Energy and Natural Resources," Ill. Rev. Stat., Ch. 96 1/2, Par. 7401 et seq.; P.A. 82-592, Par. 1
Cooperative Extension Service (CES)	Agriculture	Agriculture Extension Work Acts of 1914, as amended; Food and Agriculture Act of 1977; Renewable Resources Extension Act of 1978; Agriculture and Food Act of 1981.
United States Department of Agriculture-Soil Conservation Service (USDA-SCS)	Agriculture	Soil Conservation and Domestic Allotment Act of 1935; P. L. 74-46 Watershed Protection and Flood Prevention Act, as amended; P.L. 83-566.
United States Department of Agriculture - Agricultural Stabilization Conservation Service (USDA-ASCS)	Agriculture	Soil Conservation and Domestic Allotment Act of 1935; P.L. 74-46. Agriculture, Rural Development and Related Agencies Appropriation Act of 1980; P.L. 96-108.
United States Environmental Protection Agency (USEPA)	Point Sources	Clean Water Act, as amended; P.L. 95-217.

TABLE 13.2
LOCAL DESIGNATED MANAGEMENT AGENCIES IN ILLINOIS

DESIGNATED MANAGEMENT AGENCIES	IDENTIFIED PLAN ELEMENT RESPONSIBILITIES	STATUTORY BASES OF MANAGEMENT AUTHORITY
Counties	Point Sources*, Construction Erosion Urban Runoff, Groundwater: Residual Wastes, Groundwater: On-Site Disposal, Hydrographic Modifications	<p>"An Act in Relation to Water Supply, Drainage, Sewage, Pollution and Flood Control in Certain Counties," Ill. Rev. Stat., 1981, Ch. 34, Pars. 3101-3123</p> <p>1970 Constitution, Article VII, Sec. 6(1) and Ill. Rev. Stat., Ch. 120, Sec. 1301 et seq.</p> <p>Ill. Rev. Stat., 1981, Ch. 34, Par. 414</p> <p>"Illinois Highway Code," Ill. Rev. Stat., 1981, Ch. 121, Par. 5-401 - 5-507</p> <p>"Private Sewage Disposal Licensing Act," Ill. Rev. Stat., Ch. 111 1/2, Par. 116.301 et seq.</p>
Townships	Point Sources*, Construction Erosion, Hydrographic Modifications, Urban Runoff	<p>"An Act in Relation to Waterwork Systems, Sewerage Systems and Combined Waterworks and Sewerage Systems in Townships having less than 500,000 Population," Ill. Rev. Stat., 1981, Ch. 139, Par. 160.31 et seq.</p> <p>"Illinois Highway Code," Ill. Rev. Stat., 1981, Ch. 121, Par. 6-101 et seq.</p> <p>"Illinois Highway Code," Ill. Rev. Stat., 1981, Ch. 121, Par. 6-401 et seq.</p>
Municipalities	Point Sources*, Construction Erosion, Urban Runoff, Groundwater: Residual Waste, Groundwater: On-Site Sewage Disposal, Hydrographic Modifications	<p>"Illinois Municipal Code," Ill. Rev. Stat., 1981, Ch. 24, Par. 11-136-1 et seq.; 11-137-1 et seq.; 11-139-1 et seq.; through 160 et seq.</p> <p>"Illinois Highway Code," Ill. Rev. Stat., 1981, Ch. 121, Par. 7-101, 7-202.2 et seq.</p> <p>"Illinois Highway Code," Ill. Rev. Stat., 1981, Ch. 24, Art. 11, Pars. 12-5, 12-6, 30-2, 30-8 & 109-1</p> <p>"Private Sewage Disposal Licensing Act," Ill. Rev. Stat., 1981, Ch. 111 1/2 Par. 116.301 et seq.</p> <p>"Illinois Highway Code," Ill. Rev. Stat., 1981, Ch. 24, Par. 11-30-8, 11-87-1</p>

Sanitary Districts	Point Sources* and Residual Waste	
		"An Act to Create Sanitary Districts in Certain Localities, to Drain and Protect the Same from Overflow for Sanitary Purposes and to Provide for Sewage Disposal," <u>Ill. Rev. Stat., Ch. 42, Secs. 247 et seq.; 298.99 et seq.; 319.1 et seq. & 501-1 et seq.</u>
Public Water Districts	Point Sources*	"An Act in Relation to Public Water Districts," <u>Ill. Rev. Stat., Ch. 111 2/3, Sec. 188 et seq.</u>
Drainage Districts	Hydrographic Modifications	"An Act to Create Sanitary Districts in Certain Localities to Drain, and Protect the Same from Overflow for Sanitary Purposes and to Provide for Sewage Disposal," <u>Ill. Rev. Stat., 1981, Ch. 42, Par. 247</u>
Soil & Water Conservation Districts	Agriculture, Construction Erosion, Mineral Extraction, Hydrographic Modifications	"Soil and Water Conservation Districts Act," <u>Ill. Rev. Stat., 1981, Ch. 5, Par. 106 et seq.</u>
River Conservancy Districts	Point Sources*, Construction Erosion Hydrographic Modification	"An Act Authorizing the Formation of River Conservancy Districts and giving such Districts Powers to effectuate river and flood control, drainage, irrigation, conservation, sanitation, navigation, recreation development of water supplies, sewerage systems and the protection of fish life," <u>Ill. Rev. Stat., Ch. 42, Par. 383 et seq.</u>
Forest Preserve Districts	Groundwater, Hydrographic Modifications	"An Act to Provide for the Creation and Management of Forest Preserve Districts in Counties having a Population of Less than 3,000,000," <u>Ill. Rev. Stat., Ch. 96 1/2, Par. 6301 et seq.</u>
Mosquito Abatement Districts	Hydrographic Modifications	"An Act Providing for the Organization, Operation and Dissolution of Mosquito Abatement Districts and Providing for the Levy, Collection and Disbursement of Taxes Therein," <u>Ill. Rev. Stat., 1981, Ch. 111 1/2, Par. 74 et seq.</u>
Surface Water Protection Districts	Hydrographic Modifications	"An Act in Relation to Surface Water Protection Districts," <u>Ill. Rev. Stat., 1981, Ch. 42, Par. 448 et seq.</u>

*Only those individual governmental units identified as designated management agencies.

III. AREAWIDE WQM PLANNING AGENCIES AND MANAGEMENT BOARDS

During initial WQM plan development, all three areawide WQM planning agencies established coordinative boards, councils or committees as an integral part of their management process. In the SIMAPC area this coordinative group is called the Areawide Management Coordinating Board (AMCB). The local governments in the GERPDC region confer through the Regional Water Quality Coordinating Council (RWQCC). The local governments in the NIPC region work through the Areawide Water Quality Steering Committee (AWQSC). In addition, the three designated areawide planning agencies - NIPC, SIMAPC and GERPDC - have certain responsibilities in the water quality management process. These responsibilities stem from the Governor's designation of them as "continuing planning agencies," as required by federal Clean Water Act legislation.

For the SIMAPC designated area, the management system recommended is generally patterned after a multiple management agencies structure. The major management system components included: (1) 82 local units of governments; (2) various agencies of the State of Illinois; (3) an Areawide Management Coordinating Board (AMCB) and; (4) SIMAPC. The local units of government, as designated WQM agencies, are responsible for the implementation of point and/or nonpoint source control. The organization which provides the necessary monitoring and coordination function in plan implementation is the Areawide Management Coordinating Board (AMCB). The AMCB, which is representative of and responsible to local DMA's, has the following membership.

- From each of the counties in the designated area, five representatives will be selected for a total of 15 AMCB members.
- The membership from each county will consist of the following:
 - one representative from the county board;
 - one representative from the SWCD;
 - two representatives from municipalities (i.e., one representative from each of two municipalities); and
 - one representative from either a municipality or a special district (sanitary district, township providing sewerage service, etc.).

SIMAPC has been designated by the Governor as the continuing WQM planning agency. As such SIMAPC is responsible for undertaking the planning and coordination process and areawide review consistent with the policies of the AMCB. The AMCB is responsible only for policy formulation and guidance within the designated area, while SIMAPC's existing policy body (the Commission and its Executive Committee)

continues to have regional comprehensive planning authority within its seven-county planning jurisdiction which includes the designated area. Therefore, the Commission and the AMCB coordinate regional comprehensive planning and WQM planning. This arrangement is formalized through a memorandum of understanding between the Commission and the AMCB, and facilitated through a "common staff."

The Greater Egypt Regional Planning and Development Commission WQM Plan recommends to the area's counties, major municipalities, and Soil and Water Conservation Districts that they mutually create and operate Regional Water Quality Coordinating Council (RWQCC). The purpose of the Council is to coordinate the implementation of the WQM planning process in the designated ten county area. The membership of the RWQCC is as follows:

- 10 Counties;
- 15 Municipalities greater than 5,000 or more and smaller municipalities that are county seats;
- 9 Soil and Water Conservation Districts and;
- 5 River Conservancy Districts.

The membership represents major agencies which have primary responsibility for implementation of the plan recommendations. Other management agencies having limited roles participate in the Council through its advisory committee structure. Three committees were established to fill an advisory role to the Council. These committees are: 1) mineral extraction; 2) nonpoint sources; and 3) point sources.

The areawide framework in the NIPC designated area is predicated on the assumption that local governments have the primary responsibility for implementing the technical portions of the WQM plan. Several voluntary, coordinative committees were established. The two primary committees were the individual countywide water quality committees and the overall regional coordinative board, the Areawide Water Quality Steering Committee (AWQSC). The AWQSC provides representation for the following designated management agencies in the NIPC area:

- 69 Municipalities Providing Wastewater Treatment Services
- 191 Municipalities Not Providing Wastewater Treatment Services
- 2 Counties Providing Wastewater Treatment Services
- 4 Counties Not Providing Wastewater Treatment Services
- 24 Sanitary Districts Providing Wastewater Treatment Services

- 22 Sanitary Districts Not Providing Wastewater Treatment Services
- 5 Soil & Water Conservation Districts
- 114 Townships Providing Road Maintenance Service

The responsibilities assigned to the countywide water quality committees included: (1) assistance to local management agencies in preparing an implementation program; (2) provide information and a forum for local agencies to coordinate water quality management efforts; (3) assist in conflict resolution arising from areawide plan implementation and; (4) participate in the continuing planning program of NIPC. The Plan recommended the establishment of countywide committees for DuPage, Kane, Lake, McHenry and Will Counties. In Cook County, the Metropolitan Sanitary District of Greater Chicago (MSDGC), acting through its elected Board of Commissioners, functions as the Countywide Water Quality Committee. Each committee serves as an advisory forum through which local governments can improve their own water quality management.

In addition to the countywide committees, there is an Areawide Water Quality Steering Committee. It is composed of representatives selected from the countywide committees, the Areawide Planning Advisory Committee and the Water Resources Technical Advisory Committees well as the nine NIPC Board of Commissioners. NIPC's role in areawide WQM implementation was related to plan maintenance, staff support to advisory committees, technical project reviews and involvement in the continuing planning process.

IV. POLICIES AND RECOMMENDATIONS:

It is the framework policy of the WQM Planning Program to undertake activities consistent with the principles and standards below:

- 13.1 From a statewide perspective, an effective management system is the key factor in maintaining and implementing the WQM Program.
- 13.2 The Water Quality Management Program emphasizes the development of an acceptable and workable Statewide WQM management structure based on the existing state and areawide management systems established in the four Illinois certified and approved WQM Plans.
- 13.3 This WQM Plan identifies and designates as WQM agencies all entities necessary to the implementation of an effective Statewide WQM program.
 - 13.31 Primary responsibility for water quality management is vested in the state through the Federal Water Pollution Control Act Amendments (FWPCA) of 1972 and the Clean Water Act of 1977. Under provisions of the federal acts the Illinois Environmental Protection Act of 1970, as amended, and the WQM Plan the Illinois Environmental Protection Agency (IEPA) is delegated the following responsibilities and authorities:

- 13.311 Planning authority and responsibility for the 83 nondesignated counties of the State.
 - 13.312 Planning oversight of areawide WQM activities and responsibility for approval and certification of changes in designated areas.
 - 13.313 Regulatory authority to control and abate point source water pollution through the Construction Grants and NPDES programs.
 - 13.314 Determination of Water Quality Management Plan consistency review criteria for Construction Grant award and NPDES permit issuance.
 - 13.315 Establishment of conflict resolution procedures related to WQM plan.
 - 13.316 Responsibility for the development and maintenance of a Continuing Planning Process related to water quality management.
 - 13.317 Responsibility for annual review and revision of the WQM Plan as part of the Illinois Water Pollution Control Program.
- 13.32 The WQM Plan also allocates plan implementation responsibilities related to the control of point and/or nonpoint source pollutants to eleven state departments and agencies. These designated WQM agencies (DMAs), their responsibilities and the statutory bases of their authorities are identified in Table 13.1 of this document.
- 13.33 Under the provisions of the FWPCA of 1972 the Governor vested WQM planning authority and responsibility for the 19 designated counties in three areawide planning agencies: (1) Greater Egypt Regional Planning and Development (GERPDC); (2) Northeastern Illinois Planning Commission (NIPC); and (3) Southwestern Illinois Metropolitan and Regional Planning Commission (SIMAPC). The WQM Plan allocates the following responsibilities within their respective designated counties to GERPDC and its Regional Water Quality Coordinating Committee; NIPC and its Areawide Water Quality Steering Committee and its associated areawide management framework and; SIMAPC through its Areawide Management Coordinating Board:
- 13.331 Maintain the approved Areawide WQM systems through the provision of technical and administrative assistance to areawide DMAs to encourage plan implementation; and the provision of technical and clerical support to respective areawide coordinating bodies established by the certified and approved Illinois WQM Plan.

- 13.332 Monitor areawide plan implementation through the review of the point source proposals for consistency with the WQM plan; and the provision of continuing dialogue with areawide DMAs to document plan implementation activities.
 - 13.333 Resolve problems and conflicts related to WQM Plan implementation at the local level utilizing the areawide management structures and processes.
 - 13.334 Maintain coordination and communication in the continuing WQM planning program through education/information activities as established by state/areawide efforts.
 - 13.335 Maintain an areawide WQM data system through documentation of consistency reviews, DMA progress in implementation, current Facility Planning Areas (FPAs) base maps and the corresponding tabular information related to waste treatment facilities.
 - 13.336 Implement the WQM plan revision process utilizing established areawide procedures for interim plan amendment recommendations and assisting Illinois EPA in the preparation of the annual WQM Plan revision.
- 13.34 The WQM Plan allocates plan implementation responsibilities related to the control of point and/or nonpoint source pollutants to eleven types of local units of government. These designated water quality management agencies (DMAs), their WQM responsibilities, and the statutory bases of their authority are identified in Table 13.2 of this document.
- 13.341 Private individuals, corporations or not for profit organizations currently owning and operating waste treatment facilities are also designated as WQM Agencies responsible for point source control.

APPENDIX ONE

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ACRONYMS

ACP:	Agricultural Conservation Program – Agricultural Stabilization and Conservation Service – United States Department of Agriculture
AMCB:	Areawide Management Coordination Board
AWQSC:	Areawide Water Quality Steering Committee
ASCS:	Agricultural Stabilization and Conservation Service – United States Department of Agriculture
BMP:	Best Management Practice
BOD:	Biochemical oxygen demand
CES:	Cooperative Extension Service, College of Agriculture, University of Illinois
CPP:	Conservation Practices Program – Build Illinois
CPP:	Continuing Planning Process
CRP:	Conservation Reserve Program
DMA:	Designated Management Agency
DMMR:	Department of Mines and Mineral Resources
DOA (IDOA):	Illinois Department of Agriculture
DWR (IDWR):	Division of Water Resources – Illinois Department of Transportation
DPH (IDPH):	Illinois Department of Public Health
ENR (IDENR):	Illinois Department of Energy and Natural Resources
EPA (IEPA):	Illinois Environmental Protection Agency
FIFRA:	Federal Insecticide, Fungicide, Rodenticide Act
FPA:	Facility planning area
GERPDC:	Greater Egypt Regional Planning and Development Commission
ICC:	Illinois Commerce Commission
ICCG:	Interagency Coordinating Committee on Groundwater

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IDOC-FR (DOR-FR): Illinois Department of Conservation - Division of Forest Resources and Natural Heritage

IDOR: Illinois Department of Revenue

IDOT (DOT): Illinois Department of Transportation

IEPA (EPA): Illinois Environmental Protection Agency

IGPA: Illinois Groundwater Protection Act

ISGS: Illinois State Geological Survey

ISWS: Illinois State Water Survey

LSC: Local steering committee

MCL: Maximum Contaminant Level

MGD: Millions of Gallons per Day

MNA: Municipal needs analysis

MSDGC: Metropolitan Sanitary District of Greater Chicago

NIPC: Northeastern Illinois Planning Commission

NPDES: National Pollutant Discharge Elimination System

NPS: Nonpoint source (pollution)

NRI: National Resource Inventory (USDA)

NURP: National Urban Runoff Program

PCB (PCB): Pollution Control Board (Illinois)

RWQCC: Regional Water Quality Coordinating Council

SCS: United States Department of Agriculture - Soil Conservation Service

SDR: Sediment Delivery Ratio

SDWA: Safe Drinking Water Act

SEWQAC: Soil Erosion and Water Quality Advisory Committee

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SIMAPC (SIMRPC): Southwestern Illinois Metropolitan and Regional Planning Commission

SIRPDC: Southern Illinois Regional Planning and Development Commission

SMSA: Standard Metropolitan Statistical Area

SWCD: Soil and Water Conservation District

SWS (ISWS): Illinois State Water Survey

T ("T"): Soil loss tolerance expressed in tons/acre/year

TARP: Tunnel and Reservoir Project (Chicago)

WHPP: Wellhead Protection Program

WLTP: Watershed Land Treatment Program - Build Illinois

WQM: Water Quality Management Program

USEPA: United States Environmental Protection Agency

VOA: Volatile Aromatic Chemicals

VOC: Volatile Organic Chemicals

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APPENDIX TWO

GLOSSARY

abandoned wells - Oil production wells which are no longer functioning. In the context of the Illinois WQM Plan, the term also refers to wells which have not been properly sealed.

aquatic ecosystem - An aquatic community, including all the component organisms, together with the aquatic environment, forming an interacting system.

artificial recharge - The process by which water is added to the zone of saturation, as recharge of an aquifer.

base program activities - In the context of the Illinois WQM Plan, this term refers to those activities directly related to the carrying out of Illinois EPA's regulatory authorities. This includes permit issuance, ambient and compliance monitoring, construction grant award, operator certification and field operation services.

benefit/risk - A comparison between the advantages and disadvantages of a project expressed in terms of economic, social, and environmental impacts.

best management practice (BMP) - A land management system which improves water quality.

biochemical oxygen demand (BOD) - A measure of the quantity of oxygen used by aerobic microorganisms in meeting their metabolic needs in water rich in organic matter.

biomagnification - The increasing concentration of a substance along succeeding steps in a food chain.

brine holding pits - A pond constructed to hold oil brine wastes so that the brine will evaporate into the atmosphere.

cesspool - A lined and covered excavation in the ground which receives the discharge of domestic sewage or other organic wastes from a drainage system, so designed as to retain the organic matter and solids but permitting the liquids to seep through the bottom and sides.

combined sewers - A sewer system which handles both sanitary sewage and storm water flow.

construction erosion - Loss of soil as a result of construction activities, normally the rate is greatest when the soil is being manipulated and decreases when surface becomes fully stabilized.

critical land - Land that because of slope or soil property requires special management to stabilize soil conditions. Usually this land requires permanent vegetation to keep soil losses within tolerance.

disposal well - A well, usually drilled used for the disposal of extraneous liquids which may or may not contaminate the groundwater.

dissolved oxygen (DO) - The amount of gaseous oxygen dissolved in water.

dredging - The removal of sediment and/or obstruction from existing channels or bodies of water such as ponds or lakes.

effluent - The discharge or outflow of liquids into the environment as a by-product of man-oriented processes.

facility planning area - A defined area, usually a city, which does or has responsibility for the treatment of liquid wastewater and their residual solids.

feedlot - A relatively small, confined land area on which a large concentration of livestock is raised.

field drainage tiles - A subsurface method of removing excess water from the soil by means of buried short lengths of burnt clay, concrete or similar material with open joints or perforated plastic pipe at specified depth and grade.

gross erosion - The total amount of soil loss expressed in tons per acre per year as calculated using the Universal Soil Loss Equation. Does not equate to the amount of soil delivered to waterways, streams, or rivers.

groundwater - Phreatic water or subsurface water in the zone of saturation.

hazardous materials - Solid waste with inherent properties which make such waste difficult or dangerous to manage by normal means including but not limited to chemicals, explosives, pathological wastes, radioactive materials, and waste likely to cause fire.

heavy metals - Metals present in municipal and industrial wastes that pose long-term environmental hazards; they include boron, cadmium, cobalt, chromium, copper, mercury, nickel, lead, and zinc.

herbicides - Any chemical agent used for the control of unwanted plants.

holding pond - A pond or reservoir usually made of earth, built to store polluted runoff.

hydrographic modification - Activities which alter the geometry and physical characteristics of stream channels in such a way that flow patterns are changed.

inflow/infiltration - The water discharged into a sewer system by design either by direct connection or indirect, such as storm flow and water entering the sewer system by defective pipes or connections.

injection operations - Either a method by which oil brine is disposed of through reinjection into compatible underground formations or a secondary recovery operation which increases oil yields.

insecticides - Any chemical agent used for the control of insects.

livestock waste - The excreta of animals, with or without the admixture of bedding or litter, in varying degrees of decomposition.

livestock waste management - The handling and management of livestock wastes in a non-polluting manner.

methemoglobinemia - A condition that results from oxygen transport impairment usually associated with high nitrate concentrations in drinking water. Infants and young children are most susceptible.

municipal liquid wastewater - The effluent discharged from a municipal wastewater treatment facility.

nonpoint source (pollution) - Pollution whose sources cannot be pinpointed or easily identified, such as soil erosion or acid mine drainage.

oil brine - Highly saline waters associated with oil production.

on-site treatment - The treatment of wastes at the point of origin. Usually confined to a single home or business establishment.

on-site management zone - A management district, under the sponsorship of a municipality (as provided for under Illinois Revised Statutes), charged with the responsibility for operation and management of on-site disposal systems within the specified area of the zone.

pathogens - Organisms capable of producing disease.

performance zoning - A type of zoning that imposes minimum levels of performance by setting standards which must be met by each land use allowed for in the zone.

pesticides - Any chemical agent used for control of specific organisms; such as insecticides, herbicides, fungicides, etc.

planned unit development - A type of zoning and development technique which can allow for a combination of various land uses to occur within a given area.

plant nutrients - Those chemical elements necessary for good plant growth, usually thought of as nitrogen, phosphorus and potassium.

point source (pollution) - A stationary source of pollution, easily identified, such as a discharge pipe.

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private sewage disposal - A wastewater disposal system used for homes and single business locations.

residual wastes - Material (sludge) which is separated from the point discharge of industrial or domestic waste treatment plants and water treatment plants.

river conservancy district - A governmental unit under which local residents may control water resource management activities, including water pollution control, within the district boundaries.

resource management plan - A plan or system used to manage a farm unit in such a manner that soil losses are within soil loss tolerances.

rill erosion - An erosion process in which numerous small channels only several inches deep are formed; occurs mainly on recently cultivated soils.

rinstate - The fluid resulting in cleaning chemical spray tanks or pesticide containers.

sanitary district - A legally organized body in a defined area having the responsibility to treat wastewater.

sedimentation - The process of action of depositing sediment.

septage - The sludge generated within septic tanks or in other anaerobic pits or tanks.

septic tank - An underground tank used for the decomposition of domestic wastes. Bacteria in the wastes decompose the organic matter, and the sludge settles to the bottom. The effluent flows through drains into the ground. The sludge is pumped out at regular intervals.

sewage - The total organic waste and wastewater generated by residential and commercial establishments.

sewerage - A system of pipes used for the collection of sewage from residential and commercial establishments.

sheet erosion - The removal of a fairly uniform layer of soil from the land surface by runoff water.

sludge - Settled solids combined with varying amounts of water and dissolved materials that is removed from sewage by screening, sedimentation, chemical precipitation, or bacterial digestion.

soil erosion - The detachment and movement of soil by water, wind, ice or gravity.

soil loss tolerance - The maximum average annual soil loss in tons per acre per year that should be permitted on a given soil.

soil percolation - The rate that water moves downward through the soil mass, usually measured in minutes per inch. Used by sanitarians in designing soil absorption fields for on-site sewage systems.

soil productivity - The capacity of a soil in its normal environment for producing a specified plant or sequence of plants under a specified system of management.

stormwater detention/retention - Managing of stormwater runoff through temporary holding and controlled release of flow.

suspended solids - Any solid substance present in water in an undissolved state, usually contributing directly to turbidity.

toxic materials - Chemicals and classes of chemicals which are designated by the U.S. Environmental Protection Agency which cause adverse effects upon human health or the environment. A form of hazardous wastes.

underground injection - The forcing or injection of liquid, usually raw water or salt water brine, into underground geologic strata.

urban runoff - Storm water from city streets and gutters that usually contains a great deal of litter, organic matter and bacterial wastes.

vegetative filter system - A design vegetative channel to filter organic wastes from livestock holding area.

water quality standards - Minimum requirements of purity for various uses.

APPENDIX THREE

April 15, 1982

POINT SOURCE TABULAR ACCOUNTS AND FACILITY PLANNING AREA MAPS

As part of the consolidation of certified and approved State and Areawide Water Quality Management Plans into the Illinois Water Quality Management Plan, the three designated areawide water quality management planning agencies prepared tables and maps related to point source dischargers within their respective regions. These point source tabular accounts and facility planning area maps form the core from which point source consistency reviews for Section 201 Construction Grants awards, NPDES discharge permit issuance or renewal and construction permit, are conducted. This information is referred to in the "Base Data and Consistency Reviews for Grant or Permit Conformance" section of Chapter Two in the Illinois Water Quality Management Plan.

This base data consists of two separate items derived from several sources. First is the facility planning area (FPA) base maps and second is the point source tabular accounts for municipal, private and industrial discharges within the designated water quality management planning areas. These FPA base maps were prepared by each areawide water quality planning agency for their respective designated area. For northern Illinois, the Northeastern Illinois Planning Commission (NIPC), prepared FPA base maps for the following counties: Cook, DuPage, Kane, Lake, McHenry and Will Counties. Base maps were prepared by the Southwestern Illinois Metropolitan and Regional Planning Commission (SIMAPC) for: Madison, Monroe and St. Clair Counties. Base maps were also prepared by Greater Egypt Regional Planning and Development Commission (GERPDC) for: Franklin, Gallatin, Hamilton, Hardin, Jackson, Jefferson, Perry, Pope, Saline and Williamson Counties.

Each areawide water quality management planning agency prepared FPA base maps on county highway maps (scale 1:126620). Exceptions were made in those areas where close proximity of FPA boundaries and/or concentrations of discharge locations made it desirable to conduct more detailed mapping. In those instances mapping was conducted on a USGS 7.5 minute quadrangles (scale 1:24000) or similar scale. The following list identifies the 19 counties included in the three designated water quality management planning areas and the level of mapping undertaken:

NORTHEASTERN ILLINOIS PLANNING COMMISSION

DuPage County - Full coverage of the county with USGS 7.5 minute quadrangles: West Chicago, Lombard, Elmhurst, Naperville, Wheaton, Hinsdale, Normantown, Romeoville and Sag Bridge.

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- Cook County - Partial coverage of the county with USGS
Quadrangles: Streamwood, Palatine and Arlington
Heights. Remaining portions is mapped on county
highway map.
- Kane County - Partial coverage of the county with USGS
quadrangles: Elgin, Geneva, Aurora North and
Aurora South. Remaining portion is mapped on
county highway map.
- Lake County - Full coverage of the county with USGS 7.5 minute
quadrangles: Fox Lake, Antioch, Wadsworth, Zion,
Wauconda, Grayslake, Libertyville, Waukegan,
Barrington, Lake Zurich, Wheeling and Highland
Park.
- Will County - Partial coverage of the county with USGS 7.5
minute quadrangles: Plainfield, Joliet, Mokena,
Tinley Park, Frankfort, Steger and Dyer.
Remaining portion is mapped on county highway map.

SOUTHWESTERN ILLINOIS METROPOLITAN AND
REGIONAL PLANNING COMMISSION

- Madison County - Partial coverage of the county with USGS 7.5
minute quadrangles: Wood River, Edwardsville,
Marine, Monks Mound, Collinsville, St. Jacobs,
Columbia Bottoms, Elsah, Alton and Bethalto.
Remaining portion is mapped on county highway map.
- Monroe County - Full coverage on county highway map.
- St. Clair County - Partial coverage of the county with USGS 7.5
quadrangles: French Village, O'Fallon, Lebanon,
Millstadt, Freeburg, Mascoutah, Webster Groves,
Cahokia, Columbia, and Oakville. Remaining
portion is mapped on county highway map.

GREATER EGYPT REGIONAL PLANNING AND DEVELOPMENT COMMISSION

- Franklin County - Full coverage on county highway map.
- Gallatin County - Full coverage on county highway map.
- Hamilton County - Full coverage on county highway map.
- Hardin County - Full coverage on county highway map.
- Jackson County - Full coverage on county highway map.
- Perry County - Full coverage on county highway map.

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Pope County - Full coverage on county highway map.
Saline County - Full coverage on county highway map.
Williamson County - Full coverage on county highway map.

These FPA boundaries were derived from the approved facility plans for each respective designated management agency (DMA). They are current as of September 1982. They have been verified by Illinois EPA, Division of Water Pollution Control, Grants Section personnel and confirmed by the respective DMA as required. In addition, these maps also show known sewer service areas which extend beyond the approved FPA boundaries and/or those instances where adjoining FPA boundaries overlap. These discrepancies will be resolved during the annual update process for the Illinois Water Quality Management Plan. For the GERPDC area, rural water districts were also mapped as well as those point source discharges related to either fluorspar or coal mining.

Point source tabular accounts for the nineteen counties included in the three designated areas were compiled in a fashion similar to the development of FPA base maps. Facilities listed in these point source tables were prepared from information supplied by Illinois EPA to the respective areawide water quality management planning agency. This in turn was compared to the individual areawide WQM plans and verified by review of NPDES files at the appropriate Illinois EPA field office. These tables for municipal dischargers show at a minimum: the name and location of each FPA within the respective designated area; the WQM agencies responsible for planning, collection, treatment, transport and sludge disposal within each FPA; the name, location, NPDES permit number, current permitted design average flow and receiving stream for the discharge. All discharge locations are keyed to the appropriate FPA maps.

Point source tabular accounts for non-municipal wastewater treatment facilities include at a minimum: name, location, NPDES permit number, permitted design average flow and receiving stream. Dischargers are classified as either private or industrial. SIC codes are provided for all industrial dischargers.

The point source tabular accounts and FPA base maps can be reviewed at and requested from the following locations:

Natural Resources Officer
Northeastern Illinois Planning Commission
400 West Madison Street
Chicago, Illinois 60606*
(312) 454-0400

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Manager, Environmental Programs
Southwestern Illinois Metropolitan and
Regional Planning Commission
203 West Main Street
203 West Main Street
Collinsville, Illinois 62234*
(618) 344-4250

Executive Director
Greater Egypt Regional Planning and
Development Commission
Post Office Box 3160
608 East College Street
Carbondale, Illinois 62901*
(618) 549-3306

Manager, Planning Section
Division of Water Pollution Control
Illinois Environmental Protection Agency
2200 Churchill Road
Springfield, Illinois 62706*
(217) 782-3362

Manager, Field Operations Section
Division of Water Pollution Control
Illinois Environmental Protection Agency
1701 First Avenue
Maywood, Illinois 60153
(312) 345-9780

Manager, Field Operations Section
Division of Water Pollution Control
Illinois Environmental Protection Agency
117 West Main Street
Collinsville, Illinois 62234
(618) 345-6220

Manager, Field Operations Section
Division of Water Pollution Control
Illinois Environmental Protection Agency
2209 West Main Street
Marion, Illinois 62959
(618) 997-4371

*Reproducible copies of FPA maps and point source tabular accounts
available at these locations.

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16. Abstract (Limit: 200 words) This represents a joint effort by the four agencies with Water Quality Management (WQM) planning responsibilities to consolidate and streamline portions of approved state and areawide WQM plans in order to facilitate their usage in the operations of all designated WQM agencies. This plan is comprised of four parts. Part One provides the framework and objectives. Part Two outlines the process for point source decision making consistent with the WQM plan. Part Three includes the following ten chapters addressing nonpoint source pollution: agriculture; construction site erosion, urban runoff; mineral extraction-oil field brine disposal; mineral extraction-mining; hydrographic modification; residual wastes; on-site disposal; groundwater; and stream use/water quality standards. Each chapter contains WQM plan findings summarizing the pollution problem and its impacts on water quality and continuing policies and recommendation derived from the plan findings and specifics problem solving recommendations and applicable results from projects which were undertaken utilizing WQM planning funds. Part Four discusses management, including a general discussion on advisory boards, their activities and their relationships to areawide planning agencies. A description and discussion of designated management agencies for point and nonpoint source responsibilities is also included.			13. Type of Report & Period Covered	
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