Urban Issues: Construction Nonpoint Source Pollution

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Urban Issues:  
Construction Nonpoint Source Pollution

HAMPTON ROADS WATER QUALITY AGENCY NONPOINT SOURCE PROGRAM

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INTRODUCTION
The Hampton Roads Water Quality Agency has been the "Section 208" areawide water quality management planning agency for the Greater Hampton Roads, Virginia, area since 1974. The area includes 10 cities and 4 counties with a population of over 1.2 million. Land use ranges from dense urban to extensive agricultural and silvicultural activities.

Since 1979 the Hampton Roads Water Quality Agency (HRWQA) has focused its efforts on urban and rural nonpoint source control planning. We have remained one of few successful and active "208" agencies long after the Federal program emphasis was shifted to the States.

THE PROGRAM
The Nonpoint Source (NPS) Control Program for the Hampton Roads Area includes the following seven components:

Water Quality Problem Definition. As part of our planning process, an extensive water quality sampling and modeling program was carried out. That program identified nonpoint source-related water quality problems in the major drainage basins of the Hampton Roads area. Related studies have expanded upon and updated the problem definition. In addition, population and employment forecasts for the region have been analyzed to determine the categories of development most likely to contribute to water quality problems in each drainage basin. The problem definition serves as the basis for the specific control recommendations.

Construction/O&M/Technical Assistance (including financing)
- Urban: All area cities, counties, and towns.
- Agriculture: All area Soil and Water Conservation Districts
- Planning: Peninsula Planning District Commission; Southeastern Virginia Planning District Commission
- Regional Coordination: Hampton Roads Water Quality Agency
- Regulation: Virginia State Water Control Board; Virginia Soil and Water Conservation Commission; U.S. Environmental Protection Agency.

Urban NPS Control Program. The Urban NPS Control Program incorporates the implementation of erosion and sediment control Ordinance requirements, and local urban government housekeeping-type activities and the urban program also includes an ongoing public education and information program. This component of our nonpoint source program also includes local government use of the HRWQA-developed methodology, A Simplified Technique for Developing Site Specific Non-point Source Control Plans, in determining which practices to use on specific sites.
Agricultural NPS Control Program. This component has four principal elements: (1) implementation agreements with the area's four Soil and Water Conservation Districts, (2) initiation and continuing involvement in the $1.8 million Nansemond/Chuckatuck Rural Clean Water Project, (3) cooperation and participation in other agricultural nonpoint control programs, and (4) public education and information programs.

Special NPS Control Program. The HRWQMP identified a significant number of potentially intensive sources of urban and rural nonpoint pollution which require special attention in the application of control techniques. Although site-specific studies of all of these special nonpoint sources have not been completed, programs to address most of them are in place. They include:

- Animal wastes—a no discharge certificate program
- Agricultural recycling of wastewater treatment plant residual solids—a no discharge certificate program
- Landfills—State Health Department solid waste disposal regulations
- Construction activities—erosion and sediment control program
- Septic tanks—State Health Department sewage handling and disposal regulations
- Outside materials storage—best management practice handbooks
- Drydocks—studies underway
- Marinas—State and Federal regulations and studies.

Monitoring Program. To be effective, any planning and implementation effort requires an ongoing monitoring program. The HRWQA continues its leadership role in monitoring nonpoint source pollution and the effectiveness of best management practices. A number of special and routine water quality studies control implementation, and socioeconomic trend monitoring efforts have been undertaken. Comprehensive water quality management plans have been developed for several urban watersheds.

Basin-specific NPS Control Program. The Basin-specific NPS Control Program describes recommended control activities which are generally applicable throughout entire basins. It also includes assignments of implementation responsibility for each program activity. The HRWQA has concluded that individual control measures are best determined on a site-specific basis. Thus, the Basin-specific Program does not include site-specific recommendations for controls, such as BMP implementation or housekeeping activities. This program does, however, guide site-specific controls implementation. The manual, Simplified Technique for Developing Site Specific Nonpoint Source Control Plans, assists in the transition from basin level guidance to site-specific implementation.

As a result of these programs, nonpoint source controls are considered in the local-government-required erosion and sediment control programs for construction activities. The program is receiving the support of the Tidewater Builders Association, and local site planning engineering consulting firms are also incorporating nonpoint source control consideration in their plans.
CONTROLLING URBAN-RELATED SOIL EROSION AND SEDIMENTATION PROBLEMS IN THE FOX RIVER-CHAIN OF LAKES BASIN: A BICOUNTY PERSPECTIVE

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ABSTRACT

Controlling urban-related soil erosion and sedimentation problems in the Fox River-Chain of Lakes basin requires attention from all resource user groups and environmental agencies in the region. The Fox River-Chain of Lakes region in Lake and McHenry Counties, Illinois, suffers from serious sedimentation problems caused partly by construction site soil erosion within the watershed. Despite having the authority to control such nonpoint pollution problems, many municipalities lack truly comprehensive ordinances or the means to effectively enforce such regulations. Anticipated new development in the watershed may worsen already existing sedimentation problems. Both counties recognize their common interest in the assets and problems provided by the Fox River-Chain of Lakes. Lake County has worked extensively in nonpoint pollution since the 1970's. McHenry County, on the other hand, has not yet experienced the development pressures associated with close proximity to the Chicago metropolitan area. Currently, McHenry County Defenders, a private citizens' advocate group, is spearheading a public education effort to prevent further damage to the Fox River-Chain of Lakes by soil erosion and sedimentation from construction sites. Cooperative work between Lake County and the Defenders intends to address this nonpoint pollution concern across the bicounty jurisdiction.

THE FOX RIVER

The Fox River, a major tributary of the Illinois River, has its headwaters just northwest of Milwaukee, Wisconsin. From its source, the river flows in a southwesterly direction into Illinois towards its eventual confluence with the Illinois River in Ottawa, Illinois. Approximately 2,257 km² (868 mi²) (33 percent) of the drainage area exists in Wisconsin, 2,301 km² (885 mi²) (34 percent) in northeastern Illinois, and 2,202 km² (847 mi²) (34 percent) south of Kane County, also in Illinois (Northeast. Ill. Plann. Comm. 1981). The region reported on involves the bicounty area of Lake and McHenry Counties in northeast Illinois. The river enters Illinois at the northwest corner of Lake County where it passes through the Chain O' Lakes watershed. This watershed is a series of natural lakes and wetlands located approximately 80 km (50 mi) north of the Chicago metropolitan area. Upon exiting the Chain O' Lakes, the river flows southwest into McHenry County and traverses a distance of about 21 km (13 mi) before meandering back eastward into the southwest corner of Lake County. At this point, the river again swings westward into McHenry County to exit the bicounty area at the Village of Algonquin. Figure 1 displays the location of the Fox River basin within the bicounty study area (Northeast. Ill. Plann. Comm. 1979).

Two dams exist on the Fox River within the study area, hereafter named the Fox River-Chain O' Lakes watershed. The water level in the Chain O' Lakes is controlled by a dam on the Fox River at the city of McHenry. A second dam lying downstream at Algonquin forms a pool that extends to the base of the McHenry dam. These dams have transformed the river into a series of artificial impoundments used extensively for recreation in the region.

Major tributaries to the Fox River-Chain O' Lakes watershed (and their respective drainage areas), include Boon Creek (60.3 km² (23.2 mi²)), Sequoit Creek (35.9 km² (13.8 mi²)), Spring Creek (67.6 km² (26.0 mi²)), Squaw Creek (123.8 km² (47.8 mi²)), and Nippersink Creek (531 km² (205 mi²)). These tributaries flow on the east side of McHenry and west side of Lake County (Fernald, 1983). Most of the watershed is still predominantly rural, with a series of small towns and unincorporated villages along the waterways. All or parts of 14 communities with 1980 populations of 3,000 or more are located within the Fox River-Chain O' Lakes watershed (Table 1). A large number of people also live in smaller villages or unincorporated areas.

TOPOGRAPHY AND SOILS

Topographical characteristics of the watershed are a result of both the past Wisconsin glacial period and the Fox River fluvial characteristics. Till soils and morainal deposits make up the major characteristics of the area. The terrain is highly variable north of the Chain O' Lakes, yet displays fairly flat and rolling characteristics south to Algonquin. The river channel is poorly defined and is confined by low banks and wide floodplains (U.S. Army Corps Eng. 1976). The river falls only about 2.7 m (9 ft) in this 53-km (33-mi) reach (U.S. Army Corps Eng. 1976).

The soils along the Fox River-Chain O' Lakes watershed are developed primarily from glacial till and outwash, loess, and alluvium. The soil associations are Marsh-Fox, Boyer, Zurich-Grays-Wauconda, Morley-Markham-Houghton, and Nappone-Montgomery (Paschke and Alexander, 1970). The Fox-Boyer and Wauconda soils associated with steep slopes are very easily eroded. A large portion of the soils on the uplands around the Chain O' Lakes and along the Fox River falls into this highly erodible category (Metcalf and Eddy, 1980).

WATER QUALITY AND RECREATION

Water quality in the Fox River varies from fair to good with quality in the Chain O' Lakes being generally poor (Ill. Environ. Prot. Agency, 1976). Problems of poor water quality from nutrient loading, attributed in part to municipal and industrial wastes, agricultural and urban runoff, and seepage from uncontrolled septic fields, threaten the quality of recreation afforded by the basin's resources. Primary problems are high turbidity, nuisance algal blooms, and low dissolved oxygen levels (CH2M HILL, 1982; Kothandaraman et al. 1977).
Phosphorus and total suspended solids constitute two of the greatest pollution problems (Fiemal, 1983). Soil and sediments eroded from cultivated croplands and construction sites and runoff from urban areas are the primary nonpoint source pollutants (CH2M HILL, 1982; Flemal, 1983).

Despite poor water quality, the Fox River–Chain O’ Lakes is a major recreational area for thousands of people living in northeastern Illinois. The river also is a major source of drinking water for people who live along the Fox River Valley. Approximately 8 million people use the area for boating, fishing, sightseeing, swimming, and waterfowl hunting. As many as 15,000 boats and 60,000 people can be found in the Chain O’ Lakes area on any given Sunday during the summer (Metcalf and Eddy, 1980). Chain O’ Lakes State Park, one of the few publicly owned recreational sites in the area, attracted 1,200,000 visitors in 1984 (Illinois Dept. of Conservation, 1985).

The city of Elgin (population 63,798), located downstream of the Algonquin dam, withdraws water from the Fox River for public consumption. Other communities are considering tapping the river for domestic use (Fiemal, 1983).

SEDIMENTATION

Sedimentation is a serious problem in the Chain O’ Lakes and behind the dams at McHenry and Algonquin. A recent U.S. Geological Survey study concluded that 30,690 metric tons (34,100 tons) of sediment are transported annually to the Chain O’ Lakes from Wisconsin and Illinois sources (CH2M HILL, 1982). Sediments severely limit boating activity, destroy wildlife habitat, and degrade water quality in the river and lakes (Kothandaraman et al. 1977; Metcalf and Eddy, 1980; Flemal, 1983; CH2M HILL, 1982). Three primary sources of the sediments have been identified: sediment transported by surface waters, that eroded from shorelines, and organic materials generated within the lakes and surrounding marshes.

Soil particles carried into streams from construction sites and croplands are considered a major source of the sediments (Kothandaraman et al. 1977; CH2M HILL, 1982; Stall and Bhowmik, 1974; Brabets, 1977; Metcalf and Eddy, 1980). Though the exact proportion of sediments contributed by construction sites versus croplands is not known, the relative differences in erosion rates coupled with the area development suggest great contribution by construction activities.

SOIL EROSION AND FUTURE DEVELOPMENT

Studies have shown that the amount of soil erosion on land being converted to urban purposes can be about 10 times greater than on land in cultivated row crops, 200 times greater than on pasture land and 2000 times greater than on forested land (Northeast Ill. Soil Erosion and Sedimentation Control Steer. Comm. 1981). Also, though erosion from construction sites and urban areas constitutes a much smaller percentage of the total annual sediment yield than agriculture, its immediate impact upon urban areas and streams in the watershed can be as damaging because of the much higher sediment delivery and the combined effects of other urban-related pollution on the waters (Ill. Environ. Prot. Agency, 1982a).

Development in the Fox River–Chain O’ Lakes watershed has historically been a result of the recreational benefits provided in the area. In the earlier half of this century

Table 1.—Status of municipal soil erosion and sedimentation control ordinances for incorporated areas with populations greater than 300 (1980 Census) in Fox River basin, Lake and McHenry Counties, Illinois.

<table>
<thead>
<tr>
<th>Municipality</th>
<th>Population</th>
<th>Separate, comprehensive</th>
<th>Under building code</th>
<th>Under subdivision code</th>
<th>Combination</th>
<th>No ordinance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Algonquin</td>
<td>5,834</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Antioch</td>
<td>4,032</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Barrington¹</td>
<td>9,029</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Barrington Hills¹</td>
<td>3,631</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cary</td>
<td>6,640</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Crystal Lake</td>
<td>18,590</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fox Lake</td>
<td>6,891</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lake in the Hills</td>
<td>5,621</td>
<td></td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lake Zurich</td>
<td>8,225</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>McHenry</td>
<td>10,908</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Round Lake Beach</td>
<td>12,291</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Round Lake Park</td>
<td>4,032</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Wauconda</td>
<td>5,668</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Woodstock¹</td>
<td>11,725</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
</tbody>
</table>

¹On basin divide
(Sources: Lake County Plann. Dep., 1984; Walters, 1984).
the region consisted mainly of summer cottages and homes used by individuals living in the Chicago metropolitan area. However, during the last two decades, permanent residences and businesses have come to the area as a result of an expanding Chicago urban center and an improved transportation network. The degradation of water quality in the Fox River—Chain O’ Lakes area has followed this new development, partly from construction-related sedimentation problems.

In the future, the Fox River basin is expected to become the next major growth area of the Chicago metropolitan region, as white collar jobs continue to move out of the city. Much of this new development will concentrate along the Fox River, on soils with high erosion potential. Studies done by the Soil Conservation Service show that approximately 1,330 and 590 ha (3,331 and 1,489 acres) of land are annually under development in Lake County and McHenry County, respectively. This equals $68,000 in sediment-related costs (Ill. Environ. Prot. Agency, 1982b). Though these figures represent county totals, most of McHenry’s development is in the Fox River Valley (McHenry County Planning Dep. 1979).

EFFORTS TO CONTROL CONSTRUCTION SITE EROSION AND SEDIMENTATION

Efforts to control construction site erosion and sedimentation in northeastern Illinois span the last decade. In 1973, the publication Standards and Specifications for Soil Erosion and Sedimentation Control in Northeastern Illinois, referred to as the “Blue Book,” was compiled by the Northeastern Illinois Natural Resource Service Center for the Soil and Water Conservation Districts of Northeastern Illinois. These districts included the Lake and McHenry County Soil and Water Conservation Districts. The purpose of the Blue Book was to help developers, planners, engineers, and local governments effectively control soil erosion and sedimentation from development sites (Northeast Plann. Comm. 1973). Though the publication was comprehensive at the time, it was technical in nature and designed more specifically for the developer and engineer.

In March 1977 the Northeastern Illinois Soil Erosion and Sedimentation Control Steering Committee was organized to revise the Blue Book. Needs in resource planning called for updating and including a uniform vocabulary and a model soil erosion and sedimentation control plan. This new publication, Procedures and Standards for Urban Soil Erosion and Sedimentation Control in Illinois, is referred to as the “Green Book” (Northeast Soil Erosion and Sed. Steering Committee, 1981). This book was widely accepted at the time and is still being extensively promoted in northeastern Illinois today.

In addition to these resource guides, local soil erosion and sedimentation control ordinances have been recommended in the Areawide Water Quality Management Plan for northeastern Illinois. Chapter 19 of the plan, for the Fox River Basin, called for the six counties and all municipalities in the basin to enact soil erosion and sedimentation control ordinances to control runoff and sedimentation from land disturbance activities (Northeast Ill. Plann. Comm. 1979). Development of model ordinances by the Northeast Illinois Planning Commission by July 1, 1979, was designed to aid the local ordinance adoption process (Northeast Ill. Plann. Comm. 1980).

Of the 14 larger municipalities in the Fox River—Chain O’ Lakes drainage basin, 10 have some type of ordinance that addresses soil erosion and sedimentation from construction sites (Table 1). All of the ordinances fall into one of four categories: (1) a separate, comprehensive ordinance, (2) part of a subdivision ordinance, (3) part of a building code, or (4) a combination of the first three. Most of the erosion controls are incorporated into subdivision ordinances and many consist only of a descriptive paragraph that allows the city engineer or building inspector to require soil erosion controls in development plans. Unfortunately, these types of ordinances often leave the requirement and need for a plan up to the discretion and knowledge of the village engineer or inspector. A lack of knowledge and understanding concerning the processes involved and methods for control often determine the ordinance’s true strength (Zeiler, 1985).

A few communities, including Lake County, have adopted separate comprehensive soil erosion and sedimentation control ordinances. These regulatory approaches seem to be the most effective because of their systematic analysis and mitigation of the problem (Koziel, 1985). Both McHenry and Lake County require erosion controls in development plans, although McHenry County’s ordinance is more permissive than comprehensive (Layer, 1985).

TWO COUNTIES, ONE PROBLEM

In Lake County, construction site soil erosion and sedimentation control has been aggressively promoted since the early 1970’s. With the publication of the Blue Book in 1973, the Lake County Soil and Water Conservation District and Soil Conservation Service have provided technical assistance to county and municipal governments interested in controlling erosion from construction sites (Koziel, 1985). Working closely with the County Building and Zoning Department in 1976, a comprehensive soil erosion and sedimentation control ordinance was passed by the county which today represents a model example of effective enforcement (Zeiler, 1985).

Recently, the Soil and Water Conservation District (SWCD/SCS) and the Lake County Planning Department have cooperated to strongly promote ordinance adoption and enforcement through the District’s Memo of Understanding and the Planning Department’s Comprehensive Stormwater Management Program. As an intergovernmental agreement, the memo provides the municipality with necessary technical expertise and the Soil and Water Conservation District with an effective approach toward construction site soil erosion and sedimentation control. Table 2 identifies the responsibilities set down for both the District and municipality in the Memo of Understanding.

McHenry County has paid little attention to urban-related soil erosion and sedimentation control. Since the only portion of the county experiencing major development is the Fox River—Chain O’ Lakes, most efforts have concentrated on agricultural soil erosion and sedimentation problems. As stated earlier, the county does require erosion controls in development plans; however, the ordinance is simply a more permissive paragraph incorporated in the subdivision ordinance, rather than a comprehensive identification and regulation of the problem.

Despite all the official recognition given to the problem of soil erosion and sedimentation from land undergoing development, most local governments appear ill-equipped to cope with the new wave of construction activity. Although most of the towns and villages along the river can require erosion control in development plans, little awareness of the problem or commitment to implement the ordinances seems to exist.

The McHenry County Defenders, a local citizen-based organization, has identified erosion and sedimentation from construction sites as a major threat to the future of the Fox River and Chain O’ Lakes. The Defenders are
attempting to fill an important role that governmental agencies cannot. To help deal with the problems of soil erosion and sedimentation in the Fox River basin, the Defenders have undertaken a special project called "Operation Topsoil."

**OPÉRATION TOPSOIL PROJECT**

Operation Topsoil is designed to encourage discussion and action by those sectors of the public affected by Federal, State, and local policies and programs that deal with water quality, agriculture, development, and soil erosion. The goals of the project are to focus issues and seek solutions to soil erosion in the Fox River–Chain O’ Lakes watershed.

The first goal of Operation Topsoil is to bring private citizens into the decisionmaking process. This may not be easy since soil erosion does not incite citizens to action the way toxic waste landfill or threatened natural areas do. An understanding of nonpoint source pollution is difficult to get across; it does not help that the term nonpoint source is as diffuse as the problem itself.

However, the Fox River–Chain O’ Lakes area has several assets Operation Topsoil hopes to build upon. First, the large number of individuals who use the river and lakes for recreational purposes can be made aware of how erosion from construction sites affects their use and enjoyment of the waterways. Second, a high level of awareness of the river and its problems already exists. Third, the Fox River–Chain O’ Lakes Management Agency, which has the legal powers to maintain the recreational assets of the area through pollution and flood control projects, has recently been created. This agency may help bridge the two counties’ jurisdictional gap and cooperative efforts.

**Table 2.—Lake County Soil and Water Conservation District Memo of Understanding.**

<table>
<thead>
<tr>
<th>City/village responsibilities</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Adopt ordinances or amendments to existing ordinances which will require control of surface water runoff, soil erosion, and sedimentation on land development and construction sites.</td>
</tr>
<tr>
<td>2. Notify the District of the intent of a land developer or builder to prepare a subdivision plat or construction project proposal, and request the District to perform a site inspection and submit an evaluation report.</td>
</tr>
<tr>
<td>3. Require developers (and builders, as appropriate) to submit a runoff, erosion, and sedimentation control plan along with their preliminary subdivision plats.</td>
</tr>
<tr>
<td>4. Request the District to review such plans and provide written evaluations of their adequacy for runoff, erosion, and sedimentation control.</td>
</tr>
<tr>
<td>5. Request the District to conduct on-site investigations.</td>
</tr>
<tr>
<td>6. Refer developers, builders, and contractors to the District for advice and information as needed concerning the design and installation of recommended control practices.</td>
</tr>
<tr>
<td>7. Cooperate with the District in conducting training meetings for developers, builders, contractors, and others, as needed.</td>
</tr>
<tr>
<td>8. Seek the advice and assistance of the District’s technical staff with regard to runoff, erosion, and sediment control on development and construction projects conducted by the city/village.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>District responsibilities</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Assist in developing ordinances and related administrative procedures for controlling runoff, erosion, and sedimentation.</td>
</tr>
<tr>
<td>2. Provide standards and specifications for engineering works, vegetative measures, and other practices for controlling runoff, erosion, and sedimentation.</td>
</tr>
<tr>
<td>3. Conduct on-site investigations of proposed development sites, assess surface water management and erosion and sediment control hazards, and provide a written report of same, with recommendations, to the city/village.</td>
</tr>
<tr>
<td>4. Review runoff, erosion, and sediment control plan elements of proposed subdivision plats, and provide an assessment of the adequacy of such plans.</td>
</tr>
<tr>
<td>5. Conduct on-site investigations during the active construction phase of land development projects as needed, to determine whether the site is being developed in compliance with the approved plan and ordinance requirements, and after construction is completed to determine whether control practices are being maintained.</td>
</tr>
<tr>
<td>6. Consult with land developers, builders, and contractors (upon request and by appointment), concerning the design criteria and installation practices for practices recommended to control runoff, erosion, and sedimentation.</td>
</tr>
<tr>
<td>7. Provide training meetings as needed for developers, consulting engineers, builders, contractors, and others, as needed, concerning methods for controlling runoff, erosion, and sedimentation.</td>
</tr>
<tr>
<td>8. Provide technical advice and assistance as requested to officers of the city/village regarding control or runoff, erosion, and sedimentation on public land development and construction projects.</td>
</tr>
</tbody>
</table>

Operation Topsoil’s experience to date shows that the public is willing to get involved, if they can be given real solutions to problems that affect them directly. The question remains, “will public initiative and involvement be recognized at the governmental decisionmaking level?” Without public concern and involvement, little may be done to control erosion from construction sites. Traditional agency approaches to implement soil erosion and sedimentation controls have failed to meaningfully link local governments with citizens. Public interest groups like the League of Women Voters and McHenry County Defenders can play an important role in providing that link.

**CONCLUSIONS**

The Fox River–Chain O’ Lakes watershed provides unlimited recreational benefits to Lake and McHenry Counties as well as the general Midwest. However, these benefits indirectly bring about increasing water quality impacts throughout the area. Projected development in the watershed for the year 2000 suggests worsening problems with construction-related soil erosion and sedimentation. Currently, most municipalities in the watershed do have ordinances to control urban erosion; however, the lack of awareness of the problem reflects the degree to which these ordinances are enforced.

Lake County has set an example in promoting urban soil erosion and sedimentation control through the efforts of the Soil and Water Conservation District, Soil Conservation Service, and, recently, the Planning Department. These efforts, along with the goals of the McHenry County Defenders Operation Topsoil project, aim to involve public citizens as well as local officials in controlling construction-related soil erosion. Encouraging planned develop-
ment in the watershed will most assuredly provide a multi-
faceted asset for the region; yet, identifying and
controlling soil erosion and sedimentation problems asso-
ciated with development must also be addressed by all the
water resource user groups.

REFERENCES

Brabetts, T.P. 1977. Sediment Transport to the Fox Chain O’

CH2M HILL. 1982. Investigating sedimentation in the Fox River
Chain O’Lakes and associated channels. Prepared for Chi-
cago Dist., U.S. Army Corps Eng.

Fiemae, R.C. 1983. Analysis of water quality: Fox River basin,


Illinois Environmental Protection Agency. 1976. Assessment and
classification of Illinois lakes.


--- 1982b. Development of a state-wide construction site
erosion control program. Unpubl. rep. Div. Water Pollut. Con-
trol Plann. Sec., Springfield.

Kothandaraman, V. et al. 1977. Fox Chain of Lakes Investigation
IL State Water Surv. IL State Geolog. Surv., Urbana.

Koziel, J. 1985. Personal comm. Lake County Soil Water Con-
serv. Dist., Grayslake, IL.

Lake County Planning Department. 1984. Municipal soil erosion
and sedimentation control inventory. Waukegan, IL.