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Environmental Decision Making: The Role of Community Leaders

J. C. VAN ES AND A. J. SOFRANKO

Bulletin 756
Agricultural Experiment Station
College of Agriculture
University of Illinois at Urbana-Champaign

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In addition to this bulletin, one other has been published: "Nitrates, Nitrites, and Health," Bulletin 750. Other bulletins in preparation for the series deal with nitrogen in wells and groundwater, management of nitrogen for crop production, and the economic consequences of alternative strategies in the control of nitrogen. A book on nitrogen in relation to food, environment, and energy is also being prepared as part of the series.

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In the early 1970's the quality of the environment became a prominent national issue. The media routinely devoted time and space to environmental problems. Thousands of voluntary organizations emerged to promote a cleaner environment, and new federal and state agencies were created. Changes began to occur. Opinion polls and surveys reflected increased sensitivity to the environment and widespread public support for improvement. Local, state, and federal governments developed regulations, created enforcement agencies, and began to enforce existing regulations. In addition, many traditional governmental functions took on an environmental character. In one way or another environmentalism affected all levels of government and all segments of society.

Communities and Environmental Quality

During this time, attention has focused primarily on federal and state legislation, municipal, industrial, and agricultural pollution, and consumer behavior. Meanwhile, we seem to have overlooked the fact that communities are the units where environmental problems most often arise and where attempts are made to bring about change (McGranaham *et al.*, 1975). Communities, however, play a significant role in this matter, and local governments must be willing and able to improve the environment before many changes can be made. Therefore, no consideration of environmental quality is complete without taking into account the involvement of local governments, on whom responsibility for improving the environment frequently rests.

With this in mind we decided to center our research at the community level. This report contains results of that research in Illinois communities. Most studies relating to environmental matters have dealt with technical issues — causes, alternative abatement strategies, costs vs. benefits. This study focuses on how communities have responded to environmental issues and on the roles of elected and nonelected leaders. First, we took a broad look at environmental quality as a new social concern at the local level. We tried to find out how community leaders see a particular issue in relation to the actual conditions and why communities mobilize. We also asked where these leaders rank environmental issues in relation to other community problems. We then focused on community water supply and distribution systems, a service that has functioned for years within the organizational structure of most local governments. Water supply is not one of the new environmental issues, but it is a core community service closely related to the quality of the environment.

Response to environmental issues has been uneven. In many cities and towns, even while environmental crises occurred, residents and public officials did not seem to care. Local governments have often been unwilling or unable to enforce legislation or comply with state and federal standards. On the other hand, in many cities and towns scores of citizens are now scrutinizing the use of resources, and they are forming groups to promote a better environment. Many communities have passed ordinances that complement state and federal directives, while others have set more exacting standards than those passed at higher levels of government.

Relatively few attempts have been made at the community level to systematically measure or assess mobilization and response to environmental issues. Why, for example, do some communities take part in new programs, enact and enforce new policies, or in general respond more quickly than others to new programs and issues (van Es and Rexroat, 1976)? Community research has shown that these questions cannot be adequately answered by looking at how individuals respond to issues. The importance of the community as a unit of analysis can readily be seen in some of the research findings on public housing, urban renewal, suburban annexation, community conflict, and fluoridation (Sofranko and Bridgeland, 1972). These findings illustrate the importance of communitywide differences for predicting and understanding differential policy formation, decision-making patterns, and degrees of response to issues.

The "logic of inaction" is also an important part of the picture. Communities are asked to protect the environment, but at the same time many are skeptical about their ability to provide even the more basic services. Inaction on questions of environmental quality may be entirely rational from the community's point of view for several major reasons:

— Pollution control may depress economic activity, unduly burden local taxpayers, siphon funds from more pressing community projects, and in the end benefit only a small segment of the population.

— Watchdogging the quality of the environment, which is essentially a problem of social control, is frequently a new responsibility placed on organizational structures intended for other purposes (Caldwell, 1970). The decision-making routines developed by local governments and the community priorities established over the years may not easily accommodate new social issues, including environmental quality.

— Residents may not press for environmental improvements because they rank other community concerns higher than the quality of the envi-

ronment. Citizens may not feel that this is a responsibility appropriate to government, or they may not even perceive the seriousness of environmental conditions.

— Frequently environmental goals are vaguely defined, there is disagreement over the causes of problems, and the benefits of an improved environment may be hard to quantify.

These are some of the contextual dimensions of the problem of environmental quality, which must be investigated within the larger framework of the differing capabilities, resources, and concerns of each community. The problem is further complicated by the fact that communities are changing, some more rapidly and in different ways than others. American communities in general are becoming less autonomous than formerly with regard to basic decisions affecting the community. People are now less likely to identify with the community where they live, and the service area boundaries of local institutions may not coincide with the geographical community (Warren, 1972). Some communities are growing, some are declining. Surrounding communities are changing, and some have become parts of larger urban units. Consequently, an understanding of response to an issue must take into account the dynamics of local communities and the changes taking place in them as well as in their social, political, and economic milieu.

Research Problems

There are formidable obstacles involved in doing research on community response to environmental issues. In addition to conceptual and methodological problems, many factors must be considered: pressures on communities from higher levels of government, rising environmental aspirations of residents, limited legal authority and financial resources, competing priorities, and the attitudes of public officials and community leaders. For a complete understanding of community response it is essential to have a firm grasp of the context in which an issue emerges.

Detailed case studies of particular cities and towns have been done and have considerable merit insofar as they provide a rather complete understanding of the various factors affecting an issue. But while they may offer significant insights into a specific problem, they are of limited value for making generalizations. Comparative community studies overcome this limitation but present other problems. The most critical is the difficulty of developing measures against which to assess a sample of communities. Communities, for example, may mobilize in response to air pollution, but the form of mobilization may vary considerably from

one community to another. Use of any single measure misses this important point. In a large comparative study it is extremely difficult to devise measures applicable to all communities.

It is also difficult to be precise about the meaning of "environmental quality." As our research findings demonstrate, the term is often used in a vague and all-inclusive way. In this study, however, "environmental quality" closely parallels the way the term is used in the Illinois Environmental Protection Act (House Bill 3788), that is, it refers to air, water, and other resource pollution; public water supply; solid waste disposal; and noise.

In 1972 we surveyed all Illinois incorporated municipalities with populations between 10,000 and 50,000 to obtain data on some broad aspects of environmental quality. The findings from the 124 communities studied are presented in the first three sections of this report. In a larger study in 1974 we used a 50-percent sample of all Illinois incorporated municipalities with populations between 1,000 and 50,000 for our analysis of water systems. The section on community water systems is based on data for 228 communities that had municipal water systems.

Gathering information about a community presents many difficulties. Perhaps the most serious is trying to decide who speaks for the community. For this study we selected key informants on the basis of their recognized leadership position — mayors, public works directors, representatives of chambers of commerce or similar organizations, public health personnel, newspaper editors or reporters, environmentalists, and water-system operators. Although community leaders do not necessarily reflect the range of opinions or attitudes found in a community, they usually represent a majority position in terms of public attitudes. By virtue of their position, community leaders were often the only people who had the information we needed.

MAYORS' VIEWS ON ENVIRONMENTAL QUALITY

Local governments are in a good position to improve the quality of the environment, first, because the community political system is a major agency of social control. Elected officials have the power to make and enforce a fairly wide range of regulations, including those related to the environment. Second, local governments are responsible for administering the delivery of certain types of services to residents. Because maintaining or improving the quality of the environment is in many ways a

community service, public officials are responsible, in theory at least, for delivering services of an environmental nature. How, then, do Illinois mayors perceive environmental matters in their communities, and what strategies do they consider most effective for making necessary changes?

Study Design

Between May and July, 1972, we interviewed community leaders in 124 middle-sized Illinois towns in an attempt to determine how concerned these leaders were about environmental improvement. Mayors were asked general questions about their views on the issue of environmental quality at the local level. Their responses were rated with respect to how they defined environmental quality; how serious they perceived environmental conditions to be; where they ranked environmental problems in relation to other problems their communities were facing; what sort of balance they saw between attracting or keeping industry and strict enforcement of environmental standards; and what obstacles they felt their communities faced in environmental improvement.

Findings

DEFINITION OF ENVIRONMENTAL QUALITY

One of the features of the environmental movement is the wide range of situations and activities included under the umbrella of "environmental quality." Although a broad definition certainly allows the flexibility to embrace new issues, it is at times a liability because almost anything from installing new chimes in the old courthouse clock to constructing an expressway can be slipped in under the guise of environmental quality. Mayors, too, seemed to have difficulty sorting out what does and does not fall under this umbrella. Many mayors (37 percent), for example, included school improvement, and still more (65 percent) included provision of recreational facilities along with more frequently identified problems such as control of industrial and sewage discharges (Table 1). On the other hand, about a fourth of the mayors felt that sign regulation was not an environmental matter even though advocates of visual improvement put it in this category. A large percentage of the mayors indicated that the other items listed in Table 1 fell within the scope of environmental quality. Interestingly, many of these have been administered or regulated by communities for years, but only recently are being viewed in environmental terms.

Table 1. — *Items That Mayors Considered Falling Within Scope of "Environmental Quality"*

	Falls within scope of environmental quality	
	Yes	No
	<i>pct.</i>	<i>pct.</i>
Open burning.....	94.4	4.8
Improved schools.....	37.1	58.9
Sewage discharge and treatment.....	99.2	.8
Refuse collection.....	98.4	1.6
Land zoning/rezoning.....	78.2	19.4
Recreation facilities.....	65.3	33.9
Attractive-looking streets and businesses.....	84.7	14.5
Planting of trees and shrubs.....	94.4	5.6
Industrial and commercial discharge into air and water.....	98.4	.8
Run-down property.....	91.9	7.3
Use of pesticides and herbicides.....	87.9	11.3
Maintaining purity of local bodies of water.....	99.2	0
Noise.....	91.1	6.5
Sign regulation.....	73.4	26.6
Adequate water supply.....	91.9	7.3

Note: "Don't know" responses account for the difference between row percentage totals and 100 percent.

The mayors were questioned about the seriousness of several local environmental conditions such as the adequacy and quality of the water supply. They were asked to rate each of five problem areas, which are similar to those specified in the Illinois Environmental Protection Act of 1970, on a 5-point scale, with 1 representing "no problem" and 5 a "very serious problem." The average ratings were as follows:

Air pollution	1.8
Visual pollution	2.0
Noise level	2.1
Sewage disposal	2.2
Pollution and adequacy of water supply.....	1.4

As indicated, most of the mayors interviewed did not see these specific problems as being particularly serious. Sewage disposal, with a rank of 2.2, was considered the most serious, while water pollution and adequacy (1.4) were seen as the least serious.

Only about a third of the mayors felt that the actual quality of the environment explained the degree of concern found in Illinois communities. Most mayors (93 percent) felt that people's expectations for a cleaner environment accounted for heightened concern, at least to some extent. Nearly three-fourths (73 percent) also believed that heightened

concern was generated by a small vocal segment of the population. When asked to indicate the single most important reason for increased public concern, half of the mayors pointed to growing aspirations; a fourth felt that deterioration in the environment was responsible; and the remaining fourth attributed it to highly vocal individuals or groups in the community.

COMMUNITY PRIORITIES

In an attempt to find out where environmental quality fits into the overall order of problems facing Illinois communities, we presented a list of eleven typical community problem areas to the mayors. They were asked to indicate how serious each of the problems had been during the year preceding the study. Table 2 is a summary of their responses. It is striking that only a small percentage of the mayors felt there were "very serious" problems of any sort in their communities. Perhaps there simply were no major problems. On the other hand, perhaps the mayors felt that admitting the community had very serious problems would reflect negatively on their administration. As indicated by their responses, 32.3 percent considered local environmental problems to be serious, and 5.6 percent considered them very serious. Environmental quality was undoubtedly regarded as one of the more serious issues, ranking in importance with economic issues and the need for public improvements, services, and utilities. As noted before, however, the mayors' definitions of environmental quality were so general that it was difficult to get a clear idea of what was or was not a real environmental problem.

Table 2. — *Seriousness of Community Problems as Perceived by Mayors*

Community problem	Seriousness of problem			
	No problem	Minor	Serious	Very serious
	<i>pct.</i>	<i>pct.</i>	<i>pct.</i>	<i>pct.</i>
Industrial and economic development.....	43.5	33.9	20.2	2.4
Education.....	53.2	21.0	19.4	3.2
Environmental quality.....	33.9	28.2	32.3	5.6
Economic and financial issues.....	33.1	32.3	29.8	4.0
Zoning and rezoning.....	36.3	36.3	22.6	3.2
Minority group problems.....	69.4	24.2	4.0	1.6
Recreational and cultural activities.....	41.2	40.3	12.1	4.0
Social improvement and welfare.....	53.2	29.8	16.2	0
Public improvements, services, and utilities	44.4	21.8	29.8	3.2
Law and order.....	48.4	43.5	8.1	0
Housing and building.....	48.4	30.6	17.8	2.4

Note: "Don't know" responses account for the difference between row percentage totals and 100 percent.

A somewhat different picture emerges when we look at other indicators of importance. If salient community issues are defined as those eliciting public participation in government and precipitating debate among public officials, we see that finances and zoning were the central issues. Our research shows that 37 percent of the mayors said zoning or rezoning issues, which of course are related to some extent to environmental quality, brought more residents to city council meetings than any other issue. A fourth also said that zoning caused the most debate among city council members. Financial issues were second in importance. Only 8 percent of the mayors felt that environmental quality — in this case specified as air, noise, and water problems — prompted the greatest number of citizens to attend council meetings. Less than 5 percent felt that environmental matters occasioned the most debate among council members.

ENVIRONMENTAL QUALITY AND INDUSTRIAL DEVELOPMENT

Occasionally, strict enforcement of environmental quality standards or the imposition of new standards leads to plant closings or relocation. But even more often industry may use the threat of closing as a lever to relax or inhibit enforcement of regulations. Such threats are especially effective in single-industry towns and towns where a large portion of the labor force is employed in local industries.

What were the mayors' views of the relationship between environmental quality and industrial development? A great many mayors (81.5 percent) suspected that new industry and businesses preferred to locate in a clean environment. However, slightly more than half (52 percent) felt that industry and businesses would be more attracted to neighboring towns that had less strict enforcement of environmental quality standards than their own communities. Somewhat fewer mayors (30 percent) felt that less strict enforcement in neighboring towns would make it difficult for their communities to keep industry. Differential enforcement, of course, can result when a community is too aggressive about enforcing standards as well as when a nearby community is too lax. The implication seems to be that a clean environment with minimal enforcement of regulations is the ideal.

OBSTACLES TO ENVIRONMENTAL IMPROVEMENT

Obstacles vary from town to town, but many communities face similar hindrances to improving the environment. Although the range of obstacles is large, we developed a list of eleven common types and then asked the mayors which were applicable to their communities. Results of

Table 3. — Obstacles to Local Environmental Improvement as Perceived by Mayors

Obstacle	Response	
	Yes	No
	<i>pct.</i>	<i>pct.</i>
Reluctance of local industry to regulate itself	26.6	71.8
Community's inability to control pollution from nearby communities	61.3	38.7
Unwillingness of individuals to change established habits	54.8	45.2
Limits on community's power to set standards and enforce regulations	41.9	58.1
Indifference of government officials to environmental problems	17.7	81.5
Difficulty in determining just what real environmental problems and solutions are	51.6	45.2
Insufficient state and federal funds for undertaking improvements	76.6	20.2
Insufficient local funds for undertaking improvements	78.2	21.0
Reluctance of local commercial establishments to comply with local and state regulations	27.4	72.6
Unwillingness of residents to pay additional money needed to improve conditions	66.1	29.1
Unwillingness of local industry to pay the additional money needed to improve conditions	48.4	47.6

Note: "Don't know" responses account for the difference between row percentage totals and 100 percent.

their responses are presented in Table 3. As one might expect, the mayors overwhelmingly rejected indifference on the part of public officials. Instead, they cited as major drawbacks the lack of adequate funding, the inability of the community to control pollution from nearby towns, and the unwillingness of individuals to change their habits or make additional financial expenditures. Local industry and commercial establishments were much less frequently cited. Not even half the mayors indicated that industry and businesses were reluctant or unwilling to cooperate with efforts to upgrade the quality of the environment.

ENVIRONMENTAL PROTECTION STRATEGIES

How are obstacles to improvement to be dealt with? Almost three-fourths of the mayors felt that taxing violators and passing laws would be the two most effective means of improvement (Table 4). Although mayors considered the lack of funding a major obstacle, they expressed considerable doubt that increased governmental expenditures would get the job done. Appealing to the consciences of both the business community and residents was seen as the least effective strategy. Voluntary

Table 4. — Mayors' Perceptions of Effectiveness of Strategies for Environmental Protection and Improvement

Strategy	Effectiveness of strategies					Considered most effective of four strategies
	Very	Some-what	Not at all	Don't know	Total	
	<i>pct.</i>	<i>pct.</i>	<i>pct.</i>	<i>pct.</i>	<i>pct.</i>	<i>pct.</i>
Appealing to conscience of business and public.	16.9	58.1	22.6	2.4	100.0	8.7
Increasing governmental expenditures.	42.7	45.2	8.1	4.0	100.0	19.1
Prohibiting certain detrimental practices by law. . .	77.4	18.6	2.4	1.6	100.0	36.9
Taxing violators to make it unprofitable to pollute. . . .	74.2	16.1	7.3	2.4	100.0	35.3
Total.	100.0

compliance was viewed quite dimly as a means for improving the quality of the environment.

Summary

The mayors' definitions of environmental quality were broad enough to encompass many of the services and activities with which their communities had traditionally been concerned. By and large, the Illinois mayors did not consider environmental problems to be very serious, but neither did they admit that their communities had any other very serious problems. Concern about the environment, the mayors felt, was due principally to heightened aspirations and to small vocal segments of the population campaigning for a cleaner environment.

The mayors expressed concern about the relationship between industry and the community. They believed that economic activity is drawn to environmentally attractive communities but also to communities with less strictly enforced standards. The mayors felt that differential enforcement of standards might make it difficult for some communities to attract new businesses and industry.

Inadequate funding, pollution from neighboring towns, and the reluctance of individuals to change their habits and preferences were cited as the major obstacles to environmental improvement in Illinois communities. Legal prohibitions and polluter taxation were viewed as the most effective means for dealing with pollution. Appealing to the conscience of business and residents was seen as the least effective strategy.

COMMUNITY LEADERS' PERCEPTIONS OF ENVIRONMENTAL QUALITY

Starting with the assumption that mobilization takes place from the top down — from community leaders, to other decision makers, and finally to the public — we tried to establish in this phase of our research the extent to which leaders agreed among themselves about the nature and seriousness of certain environmental problems. We then tried to determine how accurately their perceptions mirrored actual conditions. This section summarizes the attitudes and views of those community leaders who, we believe, were in a position to exert influence and make decisions that could improve local environmental conditions.

The way community leaders feel about the quality of the environment is clearly not the sole determinant of the level of quality that might be realized, nor are their actions determined only by their attitudes and perceptions. But one important line of research now recognizes that the feelings and the perceptions expressed by community leaders often provide clues for interpreting their behavior and for understanding decisions and policy changes that influence the direction in which communities move. Previous social science research offers some evidence that community leaders act as a stimulus to other decision makers and, in turn, the public (Rosenthal and Crain, 1966; Sharkansky, 1970; Kuo, 1973). Forces for change frequently reside in community decision-making organizations such as city governments, political organizations, and businessmen's associations (Warren, 1971:169-179). In addition, Herskowitz (1973:783) argues that communities "are often best able to define the ecological dangers and affect the most equitable solutions in terms of a balance between local environmental protection and the realities of municipal economics." Caponera (1972) believes that community leaders, especially those attached to community decision-making organizations, are in positions to shape public opinion, mobilize public support, and enforce local ordinances and policy decisions.

Another dominant research trend has focused on the orientations of professionals and experts working on environmental problems. Some researchers feel that there are often major differences between the solutions preferred by the public and the standards set by professionals or lobbied for by environmentalists. Public compliance, these researchers argue, would not be forthcoming unless technical solutions reflected public awareness, concerns, and needs. Along these lines, Craik (1970) suggests that there is a great need for research on the way professional

environmental decision makers (architects, urban designers, conservationists, transportation planners) perceive the environment, and especially the extent to which their perceptions, interpretations, and evaluations differ from those of clients and the public.

In this study we assumed a modicum of agreement among community leaders and other influentials, and some congruence between their perceptions of environmental conditions and the actual, measurable conditions. To determine the extent of agreement we surveyed community leaders, all of whom were extensively involved in local activities. Using one particular issue, air quality, we then measured the degree of correspondence between how these leaders viewed the quality of the air and the actual quality on measures of air particulates and sulfur dioxide.

Study Design

We interviewed the mayor, a public works and a public health official, a representative of the chamber of commerce or similar association, a newspaper editor or reporter, and an environmentalist in each of 124 Illinois communities with populations between 10,000 and 50,000. An environmentalist is defined in this study as a citizen who is actively concerned with community environmental issues. There is some research precedent for selecting respondents in these key positions (Crain *et al.*, 1969; Crenson, 1971; Abt Associates, 1971). We wanted people familiar with the environmental concerns of the public and with community problems in general. These informants, we felt, should at the very least be in a position to affect, implement, and enforce decisions, or be capable of gauging and mobilizing public awareness of environmental issues. Ideally they would be able to do all of these things. A more detailed rationale for selecting each respondent is presented by Bridgeland (1973).

Names of the informants, with the exception of the environmentalists, were obtained from national and Illinois directories of organizations and officials. Most environmentalists were chosen from lists of "environmentally concerned citizens" compiled by a University of Illinois organization, Students for Environmental Concerns. The remainder were taken from lists of other environmental groups such as the Sierra Club, the Izaak Walton League, and the Audubon Society.

Findings

PERCEIVED SERIOUSNESS OF ENVIRONMENTAL CONDITIONS

Community leaders were asked to rate the seriousness of air, noise, and visual pollution in their town. We gave them examples of each prob-

Table 5. — Seriousness of Environmental Problems as Perceived by Community Leaders

Leader	Pollution problem ^a		
	Air	Visual	Noise
Mayor.....	1.8	2.1	2.1
Public works.....	1.9	2.1	2.2
Chamber of commerce.....	2.0	2.2	2.4
Public health.....	2.1	2.2	2.1
Editor.....	2.4	2.4	2.5
Environmentalist.....	3.3	2.8	2.8

^a 5-point scale; 1 = no problem, 5 = very serious problem.

lem and rated their responses on a 5-point scale, with 1 representing “no problem” and 5 a “very serious problem.”

The findings, which are based on the average item score for each set of community leaders, show that they tended to view all three environmental conditions as relatively minor problems (Table 5). Although there were differences among informants, the ratings for all three issues fell more to the lower, or “no problem,” end of the scale. Moreover, the rank that leaders assigned to one problem correlated highly with the rank they assigned to the other two problems. When the heads of public works departments, for example, indicated that air pollution was not serious, they also said there was not much of a problem with visual and noise pollution. With regard to all three issues, the perceptions of the mayors were counterpoised by those of the environmentalists. This perhaps demonstrates the basis for some of the controversies that have arisen in the past between municipal officials and environmentalists in Illinois communities.

White (1966) suggests that one of the key factors in the formation of attitudes toward the environment is the individual's perception of his role. In certain roles, people develop or inherit customary ways of defining significant parts of the environment. In our study the mayors, in the role of community defenders, obviously played down the seriousness of environmental conditions. On the other hand, the environmentalists, in the role of advocates for a cleaner environment, stressed the seriousness of the problems.

These broad conclusions, though, belie the rather minimal disagreement that, as our findings suggest, actually existed (Table 5). On two of the issues, visual and noise pollution, for example, there was only a .7 difference (5-point scale) between the mayors and the environmentalists.

On the question of air quality the difference was somewhat greater, 1.5 points. These differences are not as great as recent publicity might lead one to expect. When we look at how leaders ranked community priorities and strategies for change (data not shown) and what items they believed to fall under the umbrella of "environmental quality," we again detect only minor disagreement between leaders and environmentalists. Their rankings of community priorities and preferred strategies for change are practically identical. Clearly, environmentalists viewed environmental problems, and in fact all community problems, as more serious than did the mayors. However, given the range of responses possible on the 5-point scale used, neither group can easily be characterized as "extremist." There was not much evidence that they were unreasonably maximizing or minimizing the seriousness of environmental problems. Perhaps they realized that exaggerated claims about the quality of the environment would be counterproductive in the long run.

AGREEMENT AND DISAGREEMENT

By examining the correlations among the six groups of community leaders, we can see in more detail the extent of agreement and disagree-

Table 6. — Inter-Respondent Correlations on Perceived Seriousness of Environmental Conditions

Respondent	Mayor	Public works	Public health	Chamber of com.	Editor	Envir.
Air pollution						
Mayor.....	..					
Public works.....	.41*	..				
Public health.....	.18	.12	..			
Chamber of commerce.....	.36*	.15	.23*	..		
Editor.....	.19	.13	.19	.34*	..	
Environmentalist.....	.21	.18	.18	.19	.04	..
Noise pollution						
Mayor.....	..					
Public works.....	.26*	..				
Public health.....	.25*	.11	..			
Chamber of commerce.....	.23*	.15	.35*	..		
Editor.....	.21	.33*	.25*	.31*	..	
Environmentalist.....	.19	.24*	.18	.16	.14	..
Visual pollution						
Mayor.....	..					
Public works.....	.23*	..				
Public health.....	.20	.24*	..			
Chamber of commerce.....	.25*	.20	.29*	..		
Editor.....	.13	.20	.12	.06	..	
Environmentalist.....	.11	.26*	.23*	.24*	.18	..

* Significant at the .01 level.

ment (Table 6). Although there are some statistically significant levels of agreement, the correlations are generally low. This certainly does not seem to argue that there is a strong base for unified action on a particular environmental issue. The data also indicate which community leaders generally agree most closely with other leaders. Among those responsible for maintaining the image of the community — mayors, public works officials, and chamber of commerce representatives — the correlations are significant on all three environmental issues, indicating a fair amount of agreement.

On no issue are the correlations between the mayors' and the environmentalists' perceptions significant. In fact, on the issues of air quality and noise level the environmentalists' perceptions do not seem to agree with those of most of the other respondents. Editors of newspapers show little agreement with either mayors or environmentalists. At best, there is moderate agreement among some community leaders on some environmental issues.

PERCEPTIONS OF AIR QUALITY AND ACTUAL AIR QUALITY

There is contradictory research evidence on the correspondence between perceived air pollution and actual air quality. Boldt *et al.* (1972) present evidence that most respondents (two-thirds) from Canadian communities felt there was no air pollution problem, even when they were faced with objective, contradictory evidence. Murch (1971:102) reasons that individuals are generally "reluctant to acknowledge serious defects in one's own immediate surroundings." Swan (1970), however, arguing that it is easier to identify air pollution than other types of environmental pollution, demonstrates a correlation between seriousness of the problems and perceived seriousness. Similarly, De Groot (1967:680) suggests that "awareness of air pollution is realistically oriented."

We obtained measures of actual air quality from the Illinois Environmental Protection Agency, which has collected air quality data from individual businesses and emission points throughout the state. For this research, emissions from individual plants and businesses were aggregated to obtain two community-level measures of air quality: a visual index, suspended air particulates, measured in terms of average pounds of particulates per hour per year; and an olfactory index, the level of sulfur dioxide, measured in average pounds of sulfur dioxide per hour per year. There are obvious problems with using most data of this sort, for example, coverage of emissions may be incomplete; prevailing winds may obviate the effect of pollution on residents; and pollution may be restricted to a particular section of the community. However, in view of

Table 7. — Correlations Between Community Leaders' Perceptions of Air Pollution and Two Measures of Actual Air Quality

Community leader	Air quality measure	
	Air particulates	Sulfur dioxide
Mayor.....	.09	.10
Public health.....	.13	.17*
Public works.....	.19*	.15
Chamber of commerce.....	-.03	.02
Editor.....	-.01	-.06
Environmentalist.....	.06	.19*

* Significant at the .05 level.

the scarcity of reliable air quality data, we decided to use these measures and note the possible shortcomings.

The data show very minimal correspondence between community leaders' perceptions of air quality and either of the two measures of actual air quality (Table 7). On the air particulate measure, which we would expect to be the most discernible type of air pollution, the only significant correlation was that of the public works official. On the sulfur dioxide measure there were significant correlations for only the environmentalists and public health officials. In all cases the correlation between perceptions and actual air quality were quite low. These findings suggest that either there is little relationship between actual conditions and perceptions, or that aggregating air pollution measures at the community level obscures the correspondence one may find between perceptions and actual conditions in those areas of communities where pollution is acute. At this point these alternative explanations can only be suggested because the data are not available in a form that permits this assessment.

Summary and Discussion

Effective community action on environmental quality issues presupposes, first, the existence of some feeling that environmental conditions constitute a problem for the community, and, second, at least minimal agreement among potential influential actors about the seriousness of the problem. A correspondence between perceptions and actual conditions appears to be a less important prerequisite for community action. Air quality may objectively be at a level detrimental to the health or well-being of individuals, but a failure to perceive it as such may result in inaction. On the other hand, even though objective evidence of air pollu-

tion is lacking, perceived seriousness may have a high potential for mobilizing the community.

Our results show that community leaders tended to view air, noise, and visual pollution as relatively minor problems. In addition, if leaders felt that one type of condition was a minor problem, they were likely to feel that other problems were also minor. At best, there was only moderate agreement among community leaders on some environmental issues. Those whose roles consisted, in part at least, of presenting a favorable image of the community and local government were more likely to have similar perceptions and to minimize environmental problems. With regard to actual conditions, we found little support for the argument that air quality is readily perceived or that awareness of air pollution is realistically oriented. The findings generally do not bode well for unified efforts to improve environmental conditions at the local governmental level.

WHY SOME COMMUNITIES MOBILIZE

Environmentalism has evoked a wide variety of responses during the past several years. Some communities have shown little or no interest in particular environmental issues; other communities have mobilized swiftly. In some towns ad hoc groups were formed to lobby locally for change, and cultural activities with an environmental motif have been promoted. Clean-up campaigns and recycling drives were initiated and ordinance violations reported. While mobilization to improve the quality of the environment can take many forms, we have concentrated in the overall study on the extent to which community leaders and the public were aware of environmental issues, how involved they were in efforts to remedy undesirable conditions, and how willing leaders were to commit resources to environmental protection and improvement.

In this particular phase of our study we investigated possible explanations for the differences in public response to environmental quality in Illinois communities. Two dominant explanations have emerged to account for the rate at which towns mobilize around both environmental and nonenvironmental issues. The first explanation emphasizes the structure of the community: the sociodemographic, organizational, and cultural features of the resident population. The second focuses on issue-specific factors such as the centrality of an issue for the community, the seriousness of a particular problem, and the occurrence of a precipitating event or incident that sensitizes the public.

Research on community structure — sometimes referred to as community composition, attributes, or characteristics — makes use of the fact that communities are different from one another internally in some respects. According to advocates of this approach to the study of mobilization, these differences are important for predicting and understanding community action. There is considerable research support for the validity of this approach, but we will cite only two examples. Crain *et al.* (1969) looked extensively at community characteristics to understand why fluoridation referenda passed without controversy in some communities but not in others. Aiken (1970) studied community structure in an attempt to explain why some towns and cities responded more quickly than others to the issues of poverty, public housing, and urban renewal.

Less attention has been given to the role of issue-specific factors in explaining community response. Rossi (1969), however, argues that one can hardly understand community mobilization without focusing on specific aspects of the issue itself. Researchers also need to look at how central a particular issue or event is in the daily lives of community residents. For example, Crenson (1971) made an attempt to show that mobilization over air quality is a function more of the issue than of community characteristics: cities mobilize when the air is not clean and, conversely, neglect the air pollution issue when the air is clean.

During the past few years Illinois communities have experienced environmental incidents or minor crises that have had the effect of mobilizing local populations. These incidents or crises ranged from proposed changes in zoning or water use, to major alterations of the landscape, to discharge of pollutants into the air or water. The incidents have been numerous and widespread. The Illinois Air Sampling Network Report (Illinois Environmental Protection Agency, 1974) indicates that in 1973 alone there were numerous pollution incidents in Illinois. A quick breakdown shows that about 17 incidents were related to air quality, 260 to water quality, 168 to the adequacy of public water supplies, and 15 to land pollution. Throughout the state these incidents produced property damage, livestock and fish kills, evacuation of households, interruptions in water supply, and in some cases hospitalization.

Study Design

Although the community structure approach and the issue-specific approach overlap somewhat, they have usually been examined independently. In our research in 124 middle-sized Illinois communities we have tried to shed some light on the relative importance of both perspectives.

We focused on community mobilization around the environmental quality issue, and attempted to determine if mobilization can be understood better against the backdrop of community characteristics or issue-specific factors. We used two sets of independent variables: (1) community characteristics measured by secondary data, and (2) issue-specific variables based on data collected from the Illinois Environmental Protection Agency and from key informants in each of the communities studied.

Our selection of community characteristics was guided largely by characteristics used in previous research that attempted to explain community response to new programs and issues. We chose the following variables and indicators:

Socioeconomic status, a composite index constructed from standardized scores on three measures:

Income level: percent of families in community with annual incomes over \$9,000

Occupational level: percent of community labor force comprised of "professional, technical, and kindred," "managers and administrators," "sales, clerical, and kindred"

Educational level: percent of population in the community with a college education

Ethnic composition: percent of population of foreign stock

Organizational density: number of community organizations and associations per 10,000

Community integration:

Level of poverty: percent of families below poverty line, i.e., less than \$3,000 annual income (1970)

Level of unemployment: percent of labor force unemployed (1970)

Population change: percent of change in population (1950 to 1970)

Age composition: percent of population under 17 years of age

At one time or another all of these variables have been incorporated into theories explaining community response. We also included two issue-specific variables and indicators related to environmental conditions in the communities studied:

Air quality:

Suspended air particulates: average pounds per hour per year

Levels of sulfur dioxide: average pounds per hour per year

Environmental incident: the presence or absence of an incident related to environmental quality

Data for the two measures of actual air quality were obtained from the Illinois Environmental Protection Agency for the 124 sample communities. The first measure, suspended particulates, is generally referred

to as soot or dust that enters the atmosphere from coal-burning and industrial processes, quarrying operations, road construction, farming operations, and so forth. The second, sulfur dioxide, is an olfactory measure of air quality.

It is often quite difficult to determine accurately whether an environmental incident has occurred in or near a community. To establish the occurrence of an incident we relied heavily on questionnaire data obtained from the key community informants — mayors, public works and public health officials, representatives of chambers of commerce or similar organizations, newspaper editors or reporters, and environmentalists. Details about the questionnaire and interview are contained in Bridgeland and Sofranko (1975). Two criteria had to be met: there had to be some consensus among the informants regarding a particular incident, and the incident had to have received some publicity in the community.

Community mobilization is an elusive concept for which there are no adequate objective indicators that apply across all communities. Despite the general feeling that some communities have been more progressive, modern, or forward-looking than others, finding a way to measure community mobilization has proved to be most difficult. Although mobilization in an issue-area such as environmental quality may take many forms, we focused on the extent to which residents engaged in public displays of concern or participated in ad hoc protests and citizens' groups formed specifically to effect change in the community.

Community mobilization, then, will refer to the extent to which communities in the study were characterized by public awareness of the environmental quality issue, public involvement in efforts to improve the environment either through various expressions of concern or through attempts to change particular aspects of the environment, and public commitment of resources to improve the level of environmental quality in the community. In this study, to determine the level of community mobilization, we asked key informants questions that tapped some of the dimensions of community involvement in environmental issues. These questions were as follows:

1. *Mayor, environmental activist* — Have community residents attended city council meetings to urge local government to take account of environmental quality criteria?

2. *Public works official* — Have you or your office received any complaints from community residents concerning violations of ordinances pertaining to environmental quality?

3. *Newspaper editor* — Have you received any letters to the editor, comments, or opinions expressing concern for the quality of the environment in the community?

4. *Environmental activist, chamber of commerce representative* — Has there been any pressure on local businesses or industry to modify their buying, processing, or disposal practices in order to contribute to a cleaner environment?

5. *Chamber of commerce representative* — Have you or your office received any complaints about local merchants who were felt to be polluting or violating pollution standards?

6. *Newspaper editor* — Have you received requests from environmentally concerned groups or individuals to provide coverage of (for) environmental activities or issues?

7. *Public health official, public works official* — Have you or your office received any complaints from community residents claiming that environmental conditions in the community have been contributing to health problems?

8. *Environmental activist, newspaper editor* — Do residents in this community participate in environmentally-related organizations and activities more than they participate in other community organizations and activities?

9. *Mayor* — Are residents of your community more concerned with environmental quality than they are with other community issues?

A "yes" response to each question was assigned a 1; a "no" response was assigned a 0. The sum across the nine questions represents the level of mobilization in each community. On the basis of this measure, community mobilization ranged from almost no environmental activity (1.5) to a great deal of activity (8.0).

Findings

The community characteristics variables do not seem to be any more closely related to the level of mobilization than do the issue-specific variables, as the zero-order correlations in Table 8 indicate. Although the correlations are generally low, they are in the direction we anticipated.

In addition, we tried to identify which particular factors among the two sets of independent variables best explained the degree of community mobilization. For this purpose we used a stepwise multiple regression technique that permits choosing independent variables to provide the best prediction with the smallest number of variables. The technique

Table 8. — Expected and Actual Relationship of Community Structure and Issue-Specific Variables to Level of Mobilization

Variable	Relationship to level of mobilization ^a	
	Expected direction	Zero-order correlation
Community structure		
Socioeconomic status.....	+	.14
Ethnic composition.....	-	.00
Organizational density.....	+	.12
Community integration		
Poverty level.....	-	-.08
Unemployment.....	-	-.07
Population change.....	-	-.12
Age composition.....	+	.00
Issue-specific		
Air quality		
Suspended particulates.....	+	.12
Sulfur dioxide.....	+	.08
Presence/absence of environmental incident.....	+	.25

^a With $N = 124$, an r value of .17 is required for significance at the .05 level.

constructs a prediction equation by adding one variable at a time, selecting first the best predictor variable. Then in each successive step, the variable that provides the best prediction in conjunction with variables already in the equation is added.

The results presented in Table 9 indicate that all of the independent variables together explain relatively little (14 percent) of the variation in the levels of mobilization found among the 124 communities studied. Moreover, a single issue-specific variable, the presence of an environmental incident, accounts for a large portion (6 percent) of that variation. This seems to support our assumption that dramatic episodes (sudden pollution of water supplies, sewage problems, zoning abuses, and the like) trigger citizen concern and activity. The occurrence of an incident was the most important variable explaining mobilization. Lack of association between mobilization and the two measures of air quality in our study replicates other researchers' failure to find a significant correlation between mobilization and actual air quality (Crenson, 1971).

Others have argued that organizational density and the socioeconomic character of the community are important structural variables that explain community behaviors. Morrison *et al.* (1972), for example, contend that support for the environmental movement comes largely from voluntary organizations, which are often the first groups within the

Table 9. — Stepwise Multiple Regression Analysis of Determinants of Community Mobilization

Dependent variable and steps (independent variables)	Change		
	R	in R ^{2a}	Beta
Community mobilization			
Add steps:			
1. Incident.....	.25*	.06	.23
2. Socioeconomic status.....	.28*	.02	.16
3. Organizational density.....	.31*	.02	.21
4. Population change.....	.34	.02	-.12
5. Sulfur dioxide.....	.35	.01	.08
6. Age composition.....	.36	.01	.10
7. Poverty.....	.36	.00	-.11
8. Unemployment.....	.37	.00	.07
9. Air particulates.....	.37	.00	.03
10. Ethnic composition.....	.37	.00	.03
(R ² = .14)			

* Significant at the .05 level.

^a R² for each set of variables alone and community mobilization = .07.

community to respond to environmental issues. In addition, towns with higher socioeconomic status populations are more likely to react to environmental problems because they have the resources, experience, and knowledge to grasp the dimensions of an issue and make change. There is some minimal support in our findings for these contentions.

We cannot conclude from our data, however, that either the community characteristics variables or the issue-specific variables assume primacy in explaining mobilization. In a separate analysis of the two sets of variables (not reported here), each set independently explained 7 percent of the variance in the level of mobilization. Nor can we conclude that both sets of variables together adequately explain why a community mobilizes. The findings seem to suggest, instead, that there may be different routes to community mobilization. In other words, mobilization can occur under different sets of conditions, one of which relates to structural characteristics of the community (organizational density, socioeconomic status) and another which relates to an issue-specific condition (whether or not an environmental incident has occurred).

The findings raise an additional question about whether communities with certain structural features tend to have more environmental incidents than communities with somewhat different structural characteristics. As far as we can determine, none of the variables used in this study sheds any light on the cause of incidents. None of the community

structure variables correlates higher than .11 with the incident variable. Correlations between the air quality variables and the incident variable were also low.

On the basis of our data we must reject the explanation that environmental conditions are worse in higher socioeconomic status communities or in those with a relatively high density of organizations. On the contrary, our findings indicate that the higher the income, occupational, and educational levels of the residents, the better the air is, yet mobilization is also higher. This relationship is not surprising because, as we have shown, it does not necessarily follow that people will see conditions as they actually are and act accordingly.

Summary and Discussion

The findings provide little support for arguing for the primacy of either community structure or issue-specific variables in explaining community mobilization. Still, the importance of the incident variable suggests that more research is needed in this area. From the study data it is not clear whether incidents produce mobilization or a mobilized citizenry generates incidents. Without a longitudinal study it is difficult to conclude that an incident preceded mobilization in every community.

If environmental incidents are important to mobilization, we ought to examine the conditions related to the emergence of such incidents, for example, why incidents occur in some communities but not in others; the role of the media in calling attention to a problem; the militancy, strength, and credibility of environmental groups in the community and their influence on the emergence of incidents; the salience of competing community issues; the types of incidents that are most apt to precipitate response, lead to higher levels of mobilization, get media coverage, generate ad hoc groups, and make the agenda of city council meetings. These questions raised by our study need additional research.

AN OVERLOOKED ENVIRONMENTAL ISSUE: COMMUNITY WATER SYSTEMS

The preceding sections have examined newly-defined problem areas of environmental quality, such as air, visual, and noise pollution. In this section we will look at an environmental matter with which local governments have had long-standing experience, namely, providing water services. Too frequently the research on environmental quality has focused

on new governmental functions, innovative responses, and mobilization over emerging concerns. The environmental implications of routine governmental services and functions have usually been neglected. But even before environmental quality became a national concern, many aspects of the environment have historically fallen under the jurisdiction of local governments. To make some assessment of the future of environmental quality, we examined not only how communities mobilize in response to new public concerns, but also how they perform in environmental areas within their purview. In our judgment, the ability of a community to provide high-quality water service is just as important to the quality of the environment at the local level as the community's assumption of new responsibilities in this area.

Most Illinois residents expect to have high-quality water for home or industrial use whenever they so desire. Providing water is probably one of the least controversial of the public services, a remarkable state of affairs in a time of continuing crises in the provision of other local services. This can be explained, in general, by the fact that in recent decades Illinois has usually had ample quantities of high-quality water. Also, the technology of water production and distribution is relatively simple and well known, although not necessarily inexpensive.

There are, however, indications that all is not well with drinking water supplies, contrary to the views expressed by Illinois mayors in our 1972 study (page 6). The large number of water-related incidents reported in the 1973 sample (page 18) and the need to restrict water use in some Illinois communities during the 1976 drought suggest that the provision of water may become an increasingly important issue. The Illinois Environmental Protection Agency reports that nearly 19 percent of the municipal water systems in Illinois had failed to meet a state deadline for chlorinating their water. About 20 percent of the systems did not have properly certified operating officers, as required by a 1974 Illinois law (Illinois Environmental Protection Agency, 1976). Elsewhere in the United States, Frey *et al.* (1975) note that in medium-sized cities of the Northeastern States many system failures could have been avoided by monitoring the impact of population growth on delivery systems.

While Illinois water systems rarely experience profound crises, we had good reason to believe that there are significant variations in the efficiency and quality of the fiscal management of water services (Afifi and Bassie, 1969). In this phase of our research we had two objectives. First, we wanted to determine how communities have incorporated and routinized water services. Second, we wanted to analyze the different ways in which communities provide this service. More specifically, our

intention was to investigate whether the differences in decision making and planning can be traced systematically to characteristics of the community or to those of the water system.

Study Design

To obtain a stratified sample, Illinois towns and cities with 1970 populations of 1,000 to 50,000 were ranked according to size and every second municipality selected. Interview schedules were constructed after conferring with several water-system experts. The research staff then traveled to a number of communities for extensive interviews with various local officials such as water-system operators, mayors, planners, and waterworks engineers to refine the questionnaire.

During the summer of 1974 questionnaires were mailed to all of the mayors in the original sample and 284 were interviewed. Eight of the communities were excluded from the study because they were part of large metropolitan water systems. Water-system operators were interviewed in the remaining 276 communities; 21 refused to cooperate, 4 could not be contacted, and 23 indicated that their systems were not municipally owned. The final sample for this study consisted of 228 communities having municipally owned and operated water systems.

CLASSIFICATION OF MUNICIPALITIES

During the last few decades there have been notable changes in the functioning and structure of American communities. The contrast between urban and rural communities is becoming less pronounced as smaller communities expand services and activities. In addition, the population growth of communities surrounding center cities has been phenomenal. Warner and Dajani (1975) note that while more than half of all nonmetropolitan communities grew to some extent during the last decade, the most rapid growth occurred in communities close to metropolitan areas, especially those forming a part of a larger entity. Between 1950 and 1970 in Illinois, those incorporated communities with populations of 1,000 to 50,000 that lie outside the Standard Metropolitan Statistical Areas (SMSA) gained slightly more than 200,000 residents. Within SMSA's, however, cities and towns of this size gained more than 1.5 million residents during the same period.

The influence exerted by the center city of a metropolitan system over other population centers is important in the analysis of communities. These metropolitan centers affect the economic activities as well as the social organization and community activities of the surrounding com-

munities (Berry and Horton, 1970; Fuguitt, 1971). Metropolitan dominance, however, declines with distance, and the outlying municipalities become more autonomous (Rice and Beegle, 1972).

In order to take this relationship into account in our study, we classified the location of each municipality in relation to center cities of different sizes. Calling our variable "Metro," we divided the municipalities into three categories:

Metro 1 — rural communities located outside the immediate sphere of a metropolitan center.

Metro 2 — communities within 25 miles of the medium-sized SMSA's of Bloomington, Champaign, Decatur, Peoria, Rockford, Rock Island, and Springfield, Illinois; Evansville and Terre Haute, Indiana; and Dubuque, Iowa.

Metro 3 — communities located within a 50-mile radius of the large Illinois SMSA's of Chicago and East St. Louis.

Roseman (1975) supplies empirical support for this division, noting that growing small towns around Chicago are situated as far as 50 miles from the center city. Similar growth has occurred around medium-sized SMSA's, except that in this case the towns are between 20 and 30 miles from these centers. The use of the Metro variable has enabled us to determine whether a community's location within the field of urban dominance has had any impact on its decision making.

WATER-SYSTEM AND COMMUNITY CHARACTERISTICS

To determine the relationships among the characteristics of water systems, the quality of water services, and the characteristics of municipalities, we chose five variables related to water-system decision making and planning: size of the water system; type of water use; and plant personnel characteristics, which included the ratio of full- to part-time employees, the proportion of college-educated employees, and the level of employee certification.

Size of water system. On the basis of 1973 figures, the number of gallons produced by systems in the bottom 25 percent varied from less than 1 million to 43 million gallons. Systems in the top 25 percent produced more than 900 million gallons per year. Two measures were computed to provide additional information. The first was obtained from the average amount of water produced in a 24-hour period divided by the utility's daily rated capacity. In about 25 percent of the systems, the average amount of water used per day was nearly the same as the daily rated capacity. In almost 6 percent, the average daily production

equaled or exceeded the daily rated capacity. The second measure was obtained by dividing the maximum amount of water produced in a 24-hour period by the system's daily rated capacity. The majority of the 228 systems had been able to meet maximum demands. However, in 25 percent of the systems, maximum use almost equaled the utility's rated capacity, while in close to 20 percent of the systems, use exceeded the rated capacity, in some instances by as much as three or four times.

Type of water use. Industry and residents are the two major types of users. Compared with residential use, industrial consumption almost always involves relatively few users and large quantities of water. Residential use predominated in 80 percent of the systems. In certain municipalities, however, as much as 70 to 75 percent of the water was used by industry and commercial enterprises. These users are frequently in a position to insist that the water system deal with them in an economically rational and efficient way.

Plant personnel characteristics. Personnel characteristics that might affect the ability of a system to meet more technologically complex demands are: the ratio of full- to part-time employees, the percentage of college-educated employees, and the level of Illinois certification. We wanted to see if full-time employees would have a more professional orientation and perhaps be more involved with their work than part-time employees. We assumed that employees certified at the higher levels (A the highest, D the lowest) would have a greater sense of professionalism than those at the lowest level. With this information we hoped to test whether the presence of more highly qualified workers is reflected in the operation of the system.

The levels of certification and education of water-system employees were as follows:

Certification

No certified personnel.....	4 percent
Level of those certified	
D (lowest).....	4 percent
C.....	26 percent
B.....	21 percent
A (highest).....	45 percent

Education

High school graduate or less.....	30 percent
Some college.....	53 percent
College graduate.....	17 percent

With regard to the full- or part-time status of personnel, we found that in close to 12 percent of the systems fewer than half of the employees, and in some cases none, worked full-time with the water system. In nearly 35 percent of the systems more than half, but not all, of the employees were full-time. Finally, in 53 percent of the systems all of the employees worked full-time.

Community characteristics. In the section "Why Some Communities Mobilize," we discussed community characteristics variables related to mobilization. In this phase of our research we chose five similar variables that could affect the decision-making and planning process: population size; rate of population growth (1960 to 1970); per capita municipal expenditures (1970); median house value, used as an indicator of the level of community economic well-being; and the form of government, particularly whether or not there is a city manager. It has been argued that city governments with managers are more strongly oriented than those with mayors toward businesslike efficiency and professionalism in municipal affairs.

Findings

DECISION MAKING

Frequently the relationship between the mayor, as head of the community government, and the water system is ambiguous. On the one hand, the local government is responsible for decisions about the water system, which means that the mayor must be well informed about the day-to-day operations of the system. On the other hand, the municipal government must coordinate a variety of other services and reconcile the numerous demands for available resources.

One important aspect of water-system decision making is how much the mayor knows about the water system. He has many competing demands upon his time, but in order to effectively oversee the operation of the water system, he must be well informed. We designed a simple scale to determine how knowledgeable mayors were about basic aspects of the water system. It should be pointed out that the accuracy of their knowledge was not measured, but only their admitted lack of information. The mayors were asked six questions:

1. Does the water system have a written plan?
2. Is the water tested for nitrogen?
3. Is the water tested for iron?
4. Is the water tested for coliform bacilli?

5. Is there a set of procedures to follow for severe low water pressure?
6. What procedure is followed in the event of low pressure?

Two-thirds of the mayors were knowledgeable in all six areas. Another 14 percent were uninformed in only one area. Slightly under 20 percent did not know the answers to two or more of the questions.

Groups influencing decision making. To find out what forces have a bearing on the decision-making process, mayors were asked which of four groups was the most important in influencing the water-rate schedule and major capital expenditures. The four groups were: the municipal government; the public, made up of residential users and citizens' groups; special interest groups such as large-volume users, community development corporations and chambers of commerce, or large real estate developers; and outside forces such as bond holders or financial underwriters for bonds, water boards, commissions, and the like.

Over half of the mayors rated municipal governments as the most influential group in determining water rates and capital expenditures. Outside groups and the public were each considered the most important by close to one-fifth of the mayors, while the influence of special interest groups was considered very minor. These findings confirm the impression that although municipal governments are primarily responsible for managerial decisions affecting water systems, frequently they have to contend with other interests when making such decisions.

Control of decision making. Who has administrative control over the water system and hence who makes decisions about it? To answer this question we constructed a set of indices to find out which people are responsible for making certain types of decisions. For example, in a decentralized system a plant operator may have full responsibility for purchasing chemicals and authorizing repairs. In a highly centralized system, however, authorization may have to come from the city council. The designated decision makers were divided into four categories: local government officials such as the mayor, manager, city council, alderman, and city clerk; water-system management, including the superintendent, water commission, water chairman, treasurer of the water board, and trustees; local government employees such as the purchasing agent and director of management services; and the water-system employees, namely, the plant operator, department comptroller, manager, engineer, foreman, bookkeeper, and so forth.

Mayors were asked the following question: "What is the title of the person or group who has the authority for the following items: purchasing materials; contracting for system services; capital expenditures; and collecting revenue, billing, or suggesting rate changes?" There was considerable uniformity among the municipalities. Local government officials usually made decisions about capital expenditures (87 percent) and revenue collection (66 percent), but water management personnel more often made decisions about contracting for system services (65 percent) and purchasing materials (71 percent). In addition, we asked the title of the person or group who determined the water-rate schedule and approved trunk lines. In more than 80 percent of the municipalities, government officials were in charge of these decisions. In the remaining 20 percent the decisions were made by persons directly associated with the water system.

The six items related to decision making provide an index of political control. In about 20 percent of the communities, decision making was almost completely centralized in the municipal government. Another 20 percent had little or no centralization, decisions being made by water management. The remaining 60 percent of the communities fell in the middle range, with the municipal government making three or four of the six decisions.

Community characteristics and control. We suspected that the degree of political control over the water system would be related to certain characteristics of the community. We expected to find that larger water systems, especially those in large communities, would have more autonomy than smaller systems in making their own decisions. This seemed likely because of increased administrative differentiation and the availability of expertise within a larger community.

Only in Metro 1 (rural) communities were several of the community characteristics variables related to the level of political control over the water system (Table 10, section A). As expected, in those towns with relatively small populations, less expensive housing, and so forth, the degree of political control was significantly greater statistically than in larger communities. The degree of political control over decision making decreased as the community grew in population size, was wealthier, and had a more "rational" style of government, as indicated by the presence of a city manager. In both Metro 2 and Metro 3 (suburban) communities, however, these relationships did not appear to pertain, with the exception of the population size variable in Metro 3 communities (suburbs of Chicago and East St. Louis). The relationship between

Table 10. — Relationships Between Selected Characteristics and Factors Influencing Water Systems, 228 Illinois Communities

	Rural town (Metro 1)	Med.-sized-city suburb (Metro 2)	Large-city suburb (Metro 3)
<i>coefficient of correlation</i>			
A. Political control over decisions			
Water-system characteristics			
Number of gallons used, 1973.....	.30*	.01	.07
Percent of water for industrial use, 1973....	-.08	.09	.15*
Ratio of full-time to total employees.....	.00	.07	.13
Ratio of college-trained to total employees	-.13	.14	-.02
Certification of water-system employees...	-.07	-.18	-.17*
Community characteristics			
Population size.....	-.30*	.05	-.16*
Population change, 1960-1970.....	-.13	-.12	.03
Municipal expenditures, 1970.....	-.19*	.01	.07
Median housing value, 1970.....	-.23*	-.05	-.01
Presence of city manager.....	-.15	-.02	-.06
B. Water-system planning			
Water-system characteristics			
Number of gallons used, 1973.....	.02	-.11	.03
Percent of water for industrial use, 1973....	.06	.25*	-.01
Ratio of full-time to total employees.....	.15*	.02	.04
Ratio of college-trained to total employees	-.13	.07	-.01
Certification of water-system employees...	.08	.16	.09
Community characteristics			
Population size.....	.17*	.29*	.38*
Population change, 1960-1970.....	.08	-.21	.13
Municipal expenditures, 1970.....	.02	.24*	.09
Median housing value, 1970.....	-.10	-.04	.25
Presence of city manager.....	.27*	.15	.21*
C. Low-pressure procedures			
Water-system characteristics			
Number of gallons used, 1973.....	.07	.20*	.05
Percent of water for industrial use, 1973....	.03	.20*	-.17*
Ratio of full-time to total employees.....	-.07	-.07	.14*
Ratio of college-trained to total employees	.20*	.09	.05
Certification of water-system employees...	-.02	-.16	.05
Community characteristics			
Population size.....	.11	.21*	.20*
Population change, 1960-1970.....	-.06	.21*	.10
Municipal expenditures, 1970.....	-.03	.22	.00
Median housing value, 1970.....	-.14*	.26*	.15*
Presence of city manager.....	.08	.10	.11
D. Mayors' financial information			
Water-system characteristics			
Number of gallons used, 1973.....	.04	.05	-.15*
Percent of water for industrial use, 1973....	.25*	.12	-.14*
Ratio of full-time to total employees.....	-.07	.01	.20*
Ratio of college-trained to total employees	.21*	-.20*	.18
Certification of water-system employees...	-.11	.02	.13
Community characteristics			
Population size.....	.20*	.04	.02
Population change, 1960-1970.....	.17*	-.23*	-.15*
Municipal expenditures, 1970.....	.09	-.10	.11
Median housing value, 1970.....	.29*	-.30*	.13
Presence of city manager.....	.22*	.09	.15*

* Significant at the .10 level.

control over decision making and community characteristics apparently operated for the relatively autonomous rural municipalities but not for the suburban communities. It is probably a reflection of the dependent position of the suburban community within the metropolitan system that community characteristics had practically no relationship to the level of political control.

Water-system characteristics and control. We expected that as the size of water systems and the expertise of its employees increased, the level of the government's decision-making control over the system would decrease. This relationship did not exist (Table 10, section A). Few of the relationships are statistically significant, and two of those are in a direction opposite to what was expected.

PLANNING

There is a growing belief that planning is necessary to maintain and improve the quality of community water systems. But what does "planning" mean? In relation to water systems, planning refers to the attempt to anticipate future needs in an organized and ongoing manner, in contrast to decision making that is a response to change only in day-to-day and crisis situations. Underlying our research is the assumption that citizens will be served best by an efficiently and rationally operated water system. To be able to deal rationally with long-term needs and crisis situations implies that officials have had the foresight to develop a formal plan. Rational operation also means that the mayor must be familiar with financial matters such as cost information, the allocation of funds, and the share of the budget devoted to capital expansion of the water system. We therefore ranked each community on the basis of the degree of formal planning, preparedness to deal with low-pressure emergencies, and the mayor's knowledge of financial arrangements involving the water system.

Formal planning. The adequacy of long-term planning can vary considerably among communities. To obtain a measure of the degree of planning, we asked the mayors several questions related to the following indicators: the existence of a formal plan, the scope of the plan, when it was drawn up, and when the plan was updated. The results were compiled into an index with values from zero (a complete lack of planning) to 4 (a high degree of planning). Of the 228 communities, 45 percent had no formal plan, about 20 percent were at various stages of developing plans, and only 35 percent had up-to-date, written plans of a broad scope.

We also examined the relationship of planning to water-system and

community characteristics. The data in Table 10, section B indicate that the existence of a plan is systematically related to the size of the community and to the presence of a city manager. Planning was not significantly related to the rate of population growth, which gives reason for concern. Rapid population growth apparently has not provided an impetus to planning for future needs. The amount of planning was unrelated to any of the water-system characteristics variables.

Low water pressure. The Illinois Environmental Protection Agency reports that the most frequent water-supply emergency is a drop in pressure, often caused by a break in the distribution system, mechanical failure, or unusually high use at some point in the system. Pressure drops can result in contaminated matter being drawn into the system. To measure the system's degree of planning for such emergencies, we asked the mayors and water-system operators the following questions: (1) Has a set of procedures been devised for use if a low-pressure problem develops? (2) If the water operator is out of town, is someone designated to carry out these procedures? (3) Are the procedures written down? A scale was formed by assigning one point for each affirmative response.

Over 27 percent of the communities had no procedures for dealing with low-pressure emergencies. About 2 percent had procedures, but they were not written down and no one was designated to carry them out in case the operator was absent. Over 36 percent had procedures, and either had them formally specified or had an alternate delegated to carry them out. Almost 35 percent of the communities indicated that they had complete procedures to deal with low-pressure emergencies.

We then compared the existence of procedures to water-system and community characteristics. With a few exceptions, preparedness for this emergency was unrelated to water-system characteristics (Table 10, section C). Varying relationships were found in the different types of municipalities. Preparedness for low-pressure emergencies was, however, related to community characteristics, especially in the suburbs of medium-sized metropolitan centers (Metro 2). In these communities the existence of plans to handle a low-pressure situation was also associated with the size of the water system and the percentage of the water used for industrial purposes. In the suburbs of the large cities (Metro 3), contrary to our expectations, the more water used for industrial purposes, the less prepared the water system was for emergencies.

Financial information. To deal rationally with estimated future needs of the water system, decision makers need to be informed about

the system's finances. Questions were directed to the mayors, who were asked if the following were available: detailed cost information on the water system; data on how much of the water-system revenue was allocated to interest paid on bonds or long-term loans, to payments into the general municipal fund, and to operating, maintenance, and administrative expenses, including wages; and how much the waterworks had spent on capital additions for the water facility during the previous four years. A financial index was constructed by assigning one point for each affirmative response.

About half of the 228 mayors had information on four or five of the items. Nearly 14 percent could respond to three of the items. Close to 20 percent had information on only two of the items. Some 11 percent of the mayors were sure of only one aspect of the system's finances, and over 2 percent did not have any of this information.

The index of financial information for the rural towns (Metro 1) was related positively to most of the community characteristics; municipal expenditures was the exception (Table 10, section D). Among Metro 1 communities, the index related significantly to just two water-system characteristics, namely, industrial use and college-trained employees. Among the suburbs of the large metropolitan centers (Metro 3), financial knowledge of the mayors was related to system characteristics in the following way: positively to full-time employees and negatively to both the number of gallons used and the percentage of water in industrial use. The mayors' financial knowledge of the Metro 3 water systems was related significantly to only two community characteristics, namely population change and the presence of a city manager. Financial information in suburban communities of medium-sized centers (Metro 2) was related negatively to median housing values, population change, and the ratio of employees with some college education, but was unrelated to any of the other variables in a statistically significant way.

Summary and Discussion

Our analytic model was based on the premise that communities differ from one another in a way that is systematic and predictable. Although there were considerable differences among communities, the findings indicate that for the most part there was no consistent pattern of relationships between our dependent and independent variables, that is, between decision making and planning on the one hand and water-system and community characteristics on the other. In addition, we found no systematic differences among the Metro 1, 2, and 3 subsamples, which

were classified according to the degree of metropolitan dominance. Apparently the differences in decision making and planning among the water systems cannot be predicted from the particular set of independent variables used in the model.

Perhaps different and better measures of the dependent and independent variables would have resulted in better predictions. There is, however, another explanation why the water systems were not appropriately analyzed by the model used. Most water systems have been in operation for a long time. Frequently the technology is well known and simple enough that low-skilled personnel can operate the system in a routine fashion. In general, Illinois water systems seem to suffer from "benign neglect." Only occasionally, that is, when a crisis occurs, is attention given to financial and technical details. We initially assumed that local governments actively pursue improved water-system performance, but the apparently casual rather than active concern of many systems, contrary to our assumption, would certainly explain why our analytic model had little utility. For a more complete discussion of this point, see pages 40 and 41.

Illinois water systems have been able to operate with reasonable efficiency because few obvious problems have arisen so far. Water has generally been of good quality and in adequate supply. However, the water systems do not appear to be in a position to respond well to changing circumstances. Many water operators have too little education to be prepared for the increasingly more complex demands that may be made of them and their systems by both their immediate superiors and outside regulatory agencies. Communication between the mayor and the water operator are inadequate for sharing information about the water system. Almost 45 percent of the communities have no formal planning, while another 20 percent are only now in the process of developing a plan. Many systems apparently do not see the need for long-range planning. On the contrary, they appear to be run on the assumption that they need little attention and that changes will occur gradually.

Changes in water quality, supply, or demand have, for the most part, been gradual in the past. However, the current concern with improved water quality standards will probably lead to demands for rapid changes in community water systems. Our research leads us to believe that many municipal water systems are not organized to respond effectively to such demands.

FINDINGS AND CONCLUSIONS

This study has focused on how Illinois communities as communities have responded to environmental issues rather than on what has been done at the individual, state, or federal level. How, for example, has environmentalism taken hold among elected and nonelected community leaders? Why have some communities been more concerned and active than others? How has environmental quality meshed with other community concerns? How responsive are long-established municipal services such as water supply systems apt to be to future environmental problems and needs?

In the past much of the social science research has centered on the historical and social context of the environmental movement, the perceptions and attitudes of individuals, and the impact of changes undertaken by large cities and industry to curb pollution. Small governmental units and their role in environmental change have been almost totally neglected. Although many researchers have indicated that action by communities is important and suggested that change would ultimately take place at the local level, few have systematically evaluated how the environmental issue has been viewed by community leaders or how communities have responded to the issue.

In contrast, we took the position that if protection and improvement of the environment are primarily community concerns, then the attitudes and perceptions of those who have the opportunity to exert influence and make decisions within communities must be studied. We also decided to examine the operation of municipal governments in order to assess their role in environmental improvement or degradation. Although not the only determinants of the level of quality, the attitudes of community leaders often provide clues to their behavior, to understanding decisions and changes in policy, and to the direction in which communities move and the rationale underlying choices they routinely make.

The first part of our study on leaders' perceptions of environmental problems and why communities mobilize was based on information gathered in 1972 from 124 sample communities in Illinois. Data for the second part on Illinois municipal water systems was collected in 1974 from 228 sample communities. We interviewed mayors, public works directors, representatives of chambers of commerce or similar organizations, public health personnel, newspaper editors or reporters, environmental activists, and water-system operators.

Summary of Findings

COMMUNITY LEADERS AND ENVIRONMENTAL QUALITY

1. Mayors used fairly broad definitions of "environmental quality," frequently including activities that have traditionally been functions of community government.

2. Mayors viewed environmental problems in their communities as minor. In the context of other community problems the environment receded even further in importance.

3. Mayors believed that public concern about the environment at the local level was a consequence of heightened environmental aspirations rather than of actual environmental conditions.

4. In general, mayors felt that strict local enforcement of environmental regulations would hurt their communities economically without improving the environment appreciably. At the same time, they felt that legal prohibitions and economic disincentives, universally applied and enforced, would be the most effective ways to improve the environment in the long run.

5. Community leaders as a whole viewed environmental conditions in their communities as relatively minor problems. The widest differences in perception were between the environmentalists and the mayors.

6. Individual community leaders' perceptions across different dimensions of the environmental quality issue were highly consistent. If a particular type of leader viewed one aspect of environmental quality as good, he or she tended to view other aspects as good also.

7. There was little evidence to suggest that community leaders realistically perceived the actual quality of the air; the correlation between perceived air quality and actual air quality was quite low.

COMMUNITY CHARACTERISTICS AND MOBILIZATION

Broad community attributes such as composition of the population, location, size, and political organization have generally been felt to explain, first, the level of performance and, second, the rapidity with which communities respond to issues and concerns. Using these attributes in portions of this study did not provide an adequate explanation for why communities mobilize around environmental concerns. When we combined these variables with issue-specific variables, however, we found the following:

1. The single most important explanation for why citizens mobilize seemed to be whether or not an environmental incident had occurred in or near the community.

2. There was no evidence that particular types of communities experience either higher levels of mobilization or more environmental incidents than others.

3. There was some evidence that citizens in communities with relatively clean environments were more environmentally active than people living where pollution was greater.

COMMUNITY AND WATER-SYSTEM CHARACTERISTICS

In the case of water systems we looked at various aspects of the system in relation to community attributes, variables directly measuring characteristics of the water system, and the location of the community with respect to the metropolitan system. We found the following:

1. Frequently, water systems in Illinois communities were poorly managed. All of the measures dealing with the managerial, technical, and financial aspects of the water system indicate that in many communities only minimal attention was given to the operation of the water system. Many water systems appeared unprepared to deal with increased demands that might be placed upon them when higher water quality standards are imposed or when unexpected events affect their supply or distribution system.

2. The degree of water system planning was more often related to community characteristics than to water system characteristics. These relationships, however, were usually weak and often not consistent between communities that had different relationships to metropolitan centers. Thus, for example, our findings for rural communities were at times the opposite of those for the suburbs of medium-sized metropolitan centers.

3. Financial management practices were related to both water-system characteristics and community attributes in the suburbs of large metropolitan centers, and also to a considerable extent in the rural communities. In the suburbs of medium-sized central cities the relationships were few, and frequently were the reverse of those found among the other two types of communities.

4. The quality of the technical administration of the water system appeared positively related to the size and to the economic resources of the community.

Conclusions

To determine some of the general causes of environmental mobilization and performance we did a comparative study of communities. While

case studies may give more specific explanations for any one community, generalizing about similar communities from case study findings is usually risky. Our research has demonstrated the shortcomings of a community structure model for understanding response to local environmental quality issues. The failure of this approach appears to be due at least in part to problems of measurement and conceptualization. It is extremely difficult to adequately measure elusive concepts such as community mobilization because of the problems encountered in defining environmental concepts precisely, devising sensitive indicators, and obtaining data. For some issue-areas such as urban renewal or poverty, the receipt of funds, enforcement of regulations, and the like may be valid single indicators of mobilization. For environmental quality, however, there appear to be no adequate single or even multiple, objective indicators that apply to all communities and issues. Although not irrelevant, the more obvious kinds of indicators such as budget expenditures, ordinance enactment and enforcement, and local governmental efforts to modify environmentally unsound practices do not suffice as single measures or permit easy comparisons among communities.

Other structural measures that explain mobilization might be useful for improving or expanding our analysis, or we might use different methods to obtain community data. Using the key-informant approach showed promise for allowing us to do this. How well this approach compares with alternative approaches remains to be seen. New and better measures of the dependent and independent variables might, of course, result in better predictions.

At this time we are willing to suggest that local environmental quality performance is not appropriately analyzed by the model used *because this model was based on the assumption that municipal governments actively pursue environmental improvement*. Most of the activities of local government are, however, routine in nature, and innovative activities are relatively rare. When action seems called for, local government policy usually consists of making minor shifts in emphasis from one program to another. The evidence from our research indicates that community leaders have no widespread perception of truly serious environmental problems at the local level and therefore see no need for taking on new responsibilities. Even the environmentalists, who were more concerned than most informants, did not seem particularly alarmed. The water systems are probably a good illustration of this low-keyed stance. Even though the water systems were apparently not very well managed at the time of the research, few Illinois communities had experienced

serious problems with either the quality or quantity of their water over the last several decades. Although many communities may not be well prepared for possibly rapid changes in the future, their systems have performed well enough in the past.

Given this state of events, it can be argued that local communities have not seen much reason to aggressively pursue environmental improvement. Competition from more pressing problems or from more lucrative pursuits involving funding have probably taken precedence over environmental quality issues. The fact that a dramatic environmental incident is usually needed to mobilize a community gives credence to this interpretation.

Thus the findings lead us to question a basic premise of our analytic model, and consequently we have reason to seriously doubt the usefulness of the community structure model. Unfortunately the data we used are not adequate to let us decide with finality whether the model is inappropriate or whether we did not obtain adequate measurements of the variables in the model. Future research should continue to emphasize the quality of measurement, but at the same time it should undertake the arduous task of developing competing analytic models for explaining local community action or inaction on environmental quality.

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