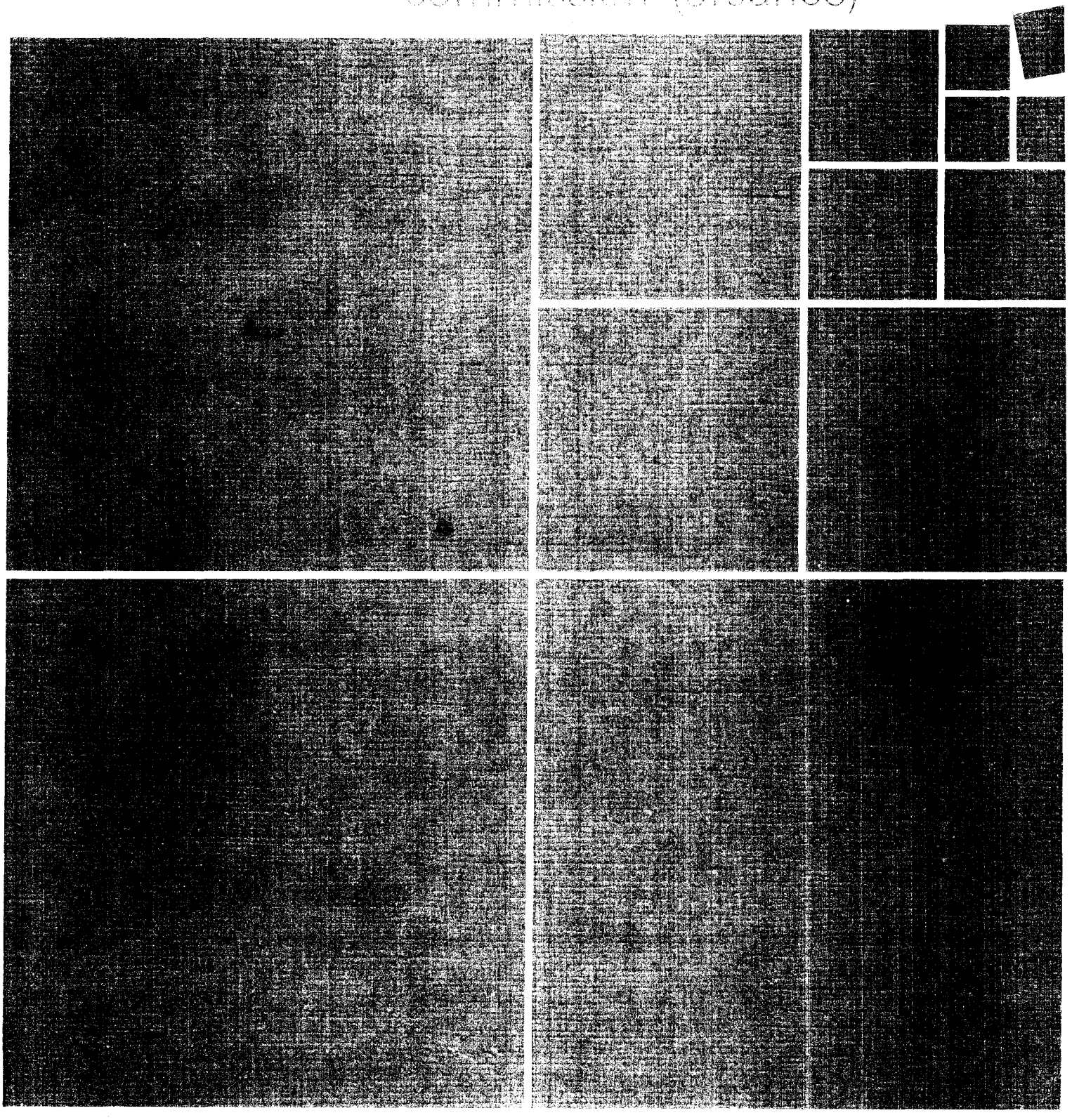
epa-905/9-75-003

a study of prospective water pollution control activities for the ohio river valley water sanitation commission (orsanco)



U.S. Environmental Protection Agency Chicago, Ill. 60604

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Copies of the report may be obtained from:

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-OR-

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U.S. Environmental Protection Agency, Chicago, Illinois 60604

March 1975

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ENVIRONMENTAL PROTECTION AGENCY

UNITED STATES
ENVIRONMENTAL PROTECTION AGENCY
REGION V
230 SOUTH DEARBORN ST.
CHICAGO, ILLINOIS 60604

Mr. Wesley E. Gilbertson, Chairman
Ohio River Valley Water Sanitation
Commission
414 Walnut Street
Cincinnati, Ohio 45202

Dear Mr. Gilbertson:

It is our pleasure to transmit to you a report of the completed "Study of Prospective Water Pollution Control Activities for the Ohio River Valley Water Sanitation Commission (ORSANCO)", performed by Wendell Associates.

In May 1974 I agreed on behalf of the United States Environmental Protection Agency that a very definite need existed for an in depth study of the roles which ORSANCO could perform in complementing the member State's and the federal government's activities, in carrying out the responsibilities contained in the Federal Water Pollution Control Act Amendments of 1972. To meet the challenging objective of attaining Clean Water goals for the Ohio River Basin, the Commission as a body agreed to the sponsorship and conduct of this study, as a means of better defining the areas of opportunity for effectively discharging these responsibilities in a cooperative spirit and an efficient mode.

I believe that the contractor has essentially fulfilled the objectives of the study. The task at hand is for a thoughtful appraisal of the study recommendations by the Commission and its respective Committees, and thence recommending a plan for implementation of the activities, which ORSANCO can best accommodate. Some of these activities will be complementary to the State - federal efforts, while others may be in lieu of our joint efforts, as practicable. It is my sincere hope that once a consensus is developed for a strategy and plan of implementation, all parties to this Commission will make appropriate commitments.

Sincerely yours,

Francis T. Mayo

Francis T. Mayo
Regional Administrator

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PREFACE

This study was performed between May and December 1974. Several additional months were then consumed in the process of comment, review and revision.

The period was a particularly challenging and difficult one in which to appraise and report on the condition of ORSANCO. It was not only that the role of an interstate agency is unusual within our governmental structure. Even more unsettling was the fact that these months were attended by more than the normal number of changes as well as by the further development and initial steps toward implementation of major plans to alter the size and perhaps the shape of the agency.

This study was conceived as part of the developmental work. Consequently, ORSANCO was being examined while it was already undergoing more changes than during many years past. Since the study was purposely commissioned as an independent appraisal, intended to provide an outside view of the organization and its role, it is natural to expect that some and perhaps many of the findings and recommendations in this report will encounter agreement in some quarters and disagreement in others. Nevertheless, the Commission and its Executive Director have already undertaken to implement a number of the suggestions made in both the first draft of this report and in this final version. This is gratifying to the contractor, but it may be a source of some confusion to the reader. It may lead to some concern as to whether the tense and perspective are always correct. Accordingly, the contractor asks that readers remember from the vantage point of late 1974, and that even then there had already been a certain amount of interaction among the Commission members, Commission staff and the contractor.

Despite these considerations, the contractor hopes and believes that the report will be useful for at least several years to come. The role and programs recommended will take at least that long to implement in substantial measure.

During the study period, the contractor enjoyed the cooperation of many persons and agencies. In the absence of this help, the report would have been much different and very likely could not have been produced at all. There is always a danger that in acknowledging assistance injustice will be done through inadvertent omission. Consequently, we wish to begin by a general expression of thanks to the many individuals who gave generously of their time in answering our questions and sharing their views with us. In particular, all members of the ORSANCO staff and many in Region 5 of U.S. EPA made significant contribution.

The following should be acknowledged:

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Leonard Weakley, Counsel

Ohio River Basin Commission

Fred E. Morr, Chairman
C. A. Hays, Executive Director

Even though these persons and many others were of assistance to the contractor, none of them have any responsibility for the final product. As already indicated, the contract under which this report has been prepared called for the contractor to work independently and to supply his own analyses and recommendations, whether or not they found agreement in the Commission, U.S. EPA, the state agencies or elsewhere. Accordingly, Wendell Associates alone bears responsibility for what appears in these pages. We have tried to set forth in some detail the facts and rationales on the basis of which we have come to our conclusions and which lead us to make each of our recommendations. In this way, we believe that those who have responsibility for ORSANCO's future will be enabled to draw from this report whatever they find useful and judge its proposals in the light of their own views and objectives.

Summary and Recommendations

The purposes of this study have been to:

1. Examine the role of ORSANCO;

2. Analyze present programs of the interstate agency; and

3. Recommend possible programs for ORSANCO.

Items 2 and 3 have been accomplished together (largely in Chapter 3) because most of the possible program opportunities for ORSANCO are best understood by discussing them in conjunction with present or past activities.

Background.

ORSANCO came into operation in 1948. Its justification was, and is, the interjurisdictional character of the Ohio River system which drains parts of eight states. The drainages of the Tennessee and Cumberland rivers are not included within the Compact, nor is a small amount of drainage in the state of Maryland.

The Ohio River's main stem is a boundary stream throughout almost its entire length. The Allegheny and Monongahela which unite at Pittsburgh to form the main river are both interstate rivers, as are many of the other important tributaries. Tributaries as well as the main stem receive heavy loadings of municipal and industrial waste effluents.

Accordingly, effective and equitable water quality management in the Basin can be accomplished only by close cooperation among the states. This is true both laterally within the segments of the main stem and for the Basin as a whole in terms of its upstream-downstream relationships. Some important pollutants have effects for hundreds of miles downstream from their points of discharge.

Management of stream flow, which is practiced in the Ohio Basin principally for purposes of navigation and flood control, also has interstate effects on water quality which spread throughout large interstate stretches of the river system and eventually affect the entire Basin. The programs of water storage and releases are also of intergovernmental concern because they are carried on by the Federal Government and must be taken into account by the states in the conduct of their water quality programs.

A further interjurisdictional aspect is presented by the regional structure of the federal agencies, especially EPA which follows the general pattern and is organized into ten regions. The Ohio Basin lies in four of them. Since each of these regions has a degree of autonomy

in making decisions of great importance to water quality management activities, the Ohio has a need for interstate-federal coordination and not merely for cooperation among the states.

The Compact and ORSANCO Programs.

A reading of the ORSANCO Compact does not give a properly focused impression of the role which the interstate agency has played, of its current programs, or of the needs and opportunities which lie ahead. The document emphasizes Commission powers to make and enforce effluent standards against individual municipal and industrial waste dischargers. ORSANCO has engaged in such activities relatively little. This has been true partly because of the desires of the member states. But even more, it has resulted from the increased abilities of the states to undertake enforcement actions and to the rise of the regulatory role of the Federal EPA.

Using Article VIII of the Compact as a legal basis, ORSANCO has engaged in a number of nonregulatory activities which are of great value such as stream monitoring, some analyses, some degree of interstate coordination, exchange of views and information, occasional research, and production of materials useful in public information programs. But ORSANCO has directed most of its efforts to data collection and management. It has provided a forum in which state water pollution control officials, and to some extent personnel of the United States Government can consider common problems relating to water quality. Through an elaborate structure of advisory committees, ORSANCO also has involved elements of the private sector in its pollution control activities.

On the whole, such nonregulatory activities provide the greatest opportunities for ORSANCO to serve the member states and the Federal Government. The Compact as now written provides ample authority.

The circumstances which caused ORSANCO to spend less than its income for some time in the recent past had to do with internal problems being experienced by the agency. The situation was most emphatically not a result of any lack of responsibilities needing to be carried out or meriting a higher level of performance.

Coordination-the Key to Future Programs.

Each of the eight ORSANCO states and the Federal Government have water pollution control agencies. There is no need for another pollution control agency with programs to accomplish the same tasks which EPA and the member states are now performing effectively. ORSANCO functions should emphasize the coordination of activities basinwide to achieve greater effectiveness in water quality management for the Basin as a whole. ORSANCO can make essential contributions to its member states and the Federal Government by engaging in those activities on a cooperative basis which it is impracticable, inconvenient, or inefficient for the individual jurisdictions and their separate agencies to perform for the Basin as a whole or for its major interstate segments. The interstate

agency can assist the state and federal agencies to conduct such of their programs as impinge on the Ohio Basin in compatible fashion. ORSANCO can make an extremely valuable contribution by working with the states to achieve equity among them in the costly pollution control measures that must be undertaken.

ORSANCO has no power to compel the states, the federal EPA, the Corps of Engineers, and other federal agencies to coordinate their activities or to undertake cooperative programs on the Ohio. Its success must come from its possession of comprehensive, useful data on the river system and the basin, from its analytical abilities, from the common services which it renders, from its possession of sufficient expertise so that its recommendations will carry great weight, and, most importantly, from the exercise of leadership in recognizing and helping with problems that can only be solved effectively and equitably on a cooperative basis.

ORSANCO should take the lead in formulating cooperative water quality management plans and programs for the Ohio Basin. It should be an operational participant in them to the extent necessary to insure that interstate problems are effectively and equitably solved, and it should encourage, facilitate and coordinate participation by agencies of the Federal Government, the member states, local governments, and private interests.

The data management program should be strengthened along the lines suggested below; a comprehensive data base is essential to an effective water quality management program.

Each of the program items discussed in Chapter 3 is appropriate for performance by ORSANCO and would provide significant benefits for the states, EPA, other federal agencies, and the people of the Ohio Basin. However, some are more essential than others. This must be taken into account because there is a need to devote available resources to the best uses.

The few pages of this summary and the necessarily brief amplifications of the recommendations made below cannot substitute, either in detail or in exposition of rationale, for the fuller treatment given in the body of the report. Accordingly, readers should consult Chapter 3 for explanations of the several program recommendations, Chapter 5 for discussions of financial and other resources involved, and the other chapters in accordance with their titles.

Recommendations

1. No effort should be made to amend the compact at this time.

   No increase in the regulatory powers of the Commission seems appropriate or necessary at this time. Nor are

any programs recommended that would make ORSANCO a builder and operator of treatment plants or other major public works. Accordingly, the compact as it stands is sufficient to support activities of the kinds which ORSANCO needs to be engaged in and which will need its full attention for some time to come. It is a further consideration that the development of compact amendments and securing their enactment by the member states would involve a significant investment of time and resources which might have to be diverted from other necessary Commission activities. If it should be determined later that ORSANCO should become concerned in a major way with matters not directly connected with water quality or which involve additional regulatory activities or public works, it would be appropriate to then consider compact amendment or revision, or other legislation sufficient for the intended purpose.

Intergovernmental Relationships.

2. The states and the Federal Environmental Protection Agency should actively promote and use ORSANCO for the conduct of interstate and federal-state relations in water quality management.

While ORSANCO has a responsibility and there is a need to strengthen its capabilities to perform effectively as an intergovernmental coordinator, its effectiveness will depend in large measure on the willingness and consciously implemented desire of its member states and EPA to use the interstate agency in this way. Of course, the individual states and EPA should continue to deal directly with each other on matters of peculiar concern to each state, especially where the focus is entirely intrastate rather than on the Ohio Basin. However, the states (particularly their water pollution control agencies) and EPA have it in their power to encourage and strengthen ORSANCO by making it clear that they rely on the interstate agency in tangible and specific ways as their intergovernmental arm for the Ohio Basin. Conversely, their failure to do so will seriously weaken ORSANCO.

3. ORSANCO should serve and function for the entire Basin and not merely for the main stem.

In the past, ORSANCO has concentrated its activities on the main stem of the Ohio River. Some have contended that this was a desirable limitation; others have regarded it as expedient in view of the interstate agency's limited resources. While it is understandable that ORSANCO must be involved on the main stem, the rationale for the interstate agency is the interrelated character of the entire Basin. Eight states are compact members, including two which are not on the main stem. Accordingly, ORSANCO should certainly be active on interstate tributaries and headwaters streams as well as on the main river. It also should become active for the entire river system and should function truly basinwide as soon as its resources permit.

Support Functions.

4. ORSANCO and the cooperating Federal and state agencies should design and implement a comprehensive stream data collection and management system covering the significant tributaries as well as the main stem, which encompasses and integrates data from the robot monitors, manual sampling, and periodic intensive stream surveys. ORSANCO should take the lead in designing the stream data collection and management system and participate in its execution. The system must be carefully designed to provide the data needed (1) to meet the monitoring requirements imposed by statutes and regulations, (2) for identification and evaluation of sources and causes of pollution, (3) for planning including the formulation, calibration, verification and periodic re-verification of comprehensive stream models, (4) as the basis for the formulation of NPDES permit conditions, (5) for continuing checks on stream conditions related to water quality standards, and (6) for the obtaining and presentation of certain types of evidence not including effluent analysis from individual point sources, which will be useful in enforcement. The system should be periodically reviewed and revised as necessary, perhaps at two year intervals.

The approved Water Quality Monitoring Strategy is a good start. It should be implemented and expanded as rapidly as available resources will permit. The manual sampling part of the total program must provide for frequent checks on the accuracy and maintenance of the robot monitors as well as evaluation of the representativeness of the data gathered by them. Manual sampling is necessary for measurement of the significant chemical and biological parameters not measured by the robot monitors such as heavy metals, other

toxicants and organic pollutants, and data at critical points between the robot monitor locations.

The ORSANCO stream data program should be carried on through a mix of direct staff performance on the part of the interstate agency and performance by the state water pollution control agencies, other appropriate state agencies, the Federal EPA, and other appropriate federal agencies. A significant measure of direct performance by ORSANCO staff is desirable because ORSANCO has data gathering and analysis capability. Moreover, there are many tasks which can be done more efficiently by a central basin agency than by the necessarily segmented activities of the individual states. Nevertheless, properly coordinated cooperative performance by the several state and federal agencies and ORSANCO is the most practicable way to proceed. ORSANCO should take the lead in devising the basinwide program and should coordinate it. To function as an effective coordinator, ORSANCO must be heavily enough involved in actual performance to have a current, expert understanding and knowledge of all aspects of the program.

5. The stream data should be evaluated promptly. A reporting system should be instituted by which quality conditions and trends indicating need for corrective action are immediately called to the attention of the relevant state and federal agencies having regulatory or operational responsibilities. The report should be accompanied by a request from ORSANCO that the situation be investigated and any needed corrective actions taken, with a report back to ORSANCO.

The data processing system for the data received from the robot monitors could be programmed to report automatically significant variations from the stream quality standards.

6. ORSANCO should maintain a comprehensive data bank of water quality and related data for the Ohio River Basin but the interstate agency and EPA should work toward a distribution of responsibilities in this field. When Storet is fully implemented and operational, ORSANCO should keep complete stream data for a minimum of one year, and perhaps for two years, while Storet should be the permanent file. Nevertheless, ORSANCO should consider keeping data on parameters which Storet does not accept.

A comprehensive, properly organized data bank from which information can be readily retrieved in usable forms for the various purposes to be

served is necessary to almost all water quality management and related activities. However, the storage of data is expensive and becomes an increasing burden as time goes on and records multiply. Accordingly, ORSANCO should maintain the current information that it and others require for operational and other immediate purposes. Since EPA has undertaken Storet, its function should not be duplicated. For permanent storage, the data should be condensed as much as possible, using available techniques, without significantly reducing its long-range utility.

Planning Program.

7. ORSANCO should develop a planning capability to engage actively in water quality planning for the Ohio Basin. The interstate agency may undertake some planning projects of its own but, at least for the immediate future, it should concentrate on participating in cooperative planning activities with the state agencies, EPA, the Ohio River Basin Commission, the Corps of Engineers, other federal agencies as appropriate, and to some extent with areawide waste treatment management planning agencies, and other local agencies. ORSANCO should assume the lead agency role in water quality planning for the main stem of the Ohio and for major interstate tributaries.

Planning is or should be carried on for a variety of purposes and by a variety of federal, state, local and intergovernmental agencies. ORSANCO needs to develop a planning context within which to formulate and execute its own programs and to undertake self analysis of them. It is also in a unique position to assist the states with several of the planning responsibilities which they perform by reason of provisions of the Federal Water Pollution Control Act. These include execution of continuous planning process activities contemplated by Section 303 (e), contributions to areawide waste treatment management planning under Section 208 and river basin planning under Section 209. It is essential that ORSANCO participate actively with the Corps of Engineers and the Ohio River Basin Commission in providing the necessary water quality input in planning for the further development, regulation, control and utilization of the waters of the Basin. Low flow augmentation may be necessary to maintain proper stream quality in some segments even after a high degree of waste treatment is provided. In some instances, it may be more cost effective than achieving high levels of source control, particularly as regards nonpoint sources of pollutants.

8. Comprehensive stream modeling and analyses using the models for the main stem, major interstate tributaries, and ultimately the Basin as a whole should be carried on by ORSANCO. The interstate agency should expand and refine the work which it has already begun in this area.

> If constructed and validated on an adequate and accurate data base, stream models can be an effective and convenient tool for planning and management. ORSANCO is in the best position to undertake modeling because it has and should continue to have the best data base of any agency operating in the Ohio Basin and because it has the interjurisdictional scope and outlook required to construct and utilize models of the interjurisdictional river system, with necessary regard for the interrelationships among the several segments of the Basin.

9. ORSANCO should work with the states and EPA in investigating and evaluating nonpoint or diffuse sources of pollutants, and in devising means for control of such sources. The technical, legal, financial, and institutional aspects should be included.

> In highly urbanized-industrialized areas such as have developed in the Ohio River Basin, nonpoint sources of pollutants, urban runoff (for example), may have major impacts on stream quality, particularly during critical flow periods. Very few data concerning such sources and the pollutants derived therefrom are available for the Basin. Further, drainage from agricultural lands supplies a variety of pollutants which have so far gone almost entirely without control or compensatory measures.

Stream Standards.

10. ORSANCO should work with the states in developing consistent stream standards for the main stem and tributaries having significant impacts on the main stem; and in periodic review of the standards. Its interest should be primarily in achieving interstate compatibility and equity.

> Each state formulates stream standards for its own purposes and also for submission to EPA. However, the emphasis of each state is necessarily on its particular waters both in and out of the Ohio Basin. Since the Ohio is a boundary river, and because there are many other

relationships as among the several state segments of the river system, the interstate agency should provide the overall view and the comparative analyses needed for coordination, consistency and equity. ORSANCO's stream models will be found useful.

11. ORSANCO should work with the states to achieve equitable allocations of allowable waste loadings on water quality limited stream segments of interstate significance.

In the absence of such interstate coordination and cooperation it may be impossible to prevent dischargers in one state from using up all or a disproportionate share of the waste loading capacity of an interstate stream. This subject also has a federal-state aspect. In issuing individual permits under the Federal Water Pollution Control Act, both U.S. EPA and the state agencies must have a means of relating permit issuance to overall stream conditions and capabilities.

Reports.

12. ORSANCO should prepare the annual information on water quality in the Ohio River Basin required by Section 305 (b) (1) (A), (B) and (C) of Public Law 92-500, for incorporation in the state annual reports.

The evaluations called for by Section 305 (b) (1) (B) and (C) should be done by the interstate agency for the interstate waters, not by the individual states.

Enforcement Program.

13. ORSANCO should be the mechanism for interstate accountability.

In the past, ORSANCO has sought to provide this accountability in part through "status reports" submitted by each state on construction of treatment facilities and abatement of pollution from specific sources. Such reports can be useful, if made and reviewed regularly with the individual states and with the other states concerned. However, accountability should be viewed more broadly. In the course of its coordinating activities in each of the several program areas, the comparison of the programs and achievements

of each state as they relate to the quality of the waters of the Ohio Basin should be an integral element,

14. ORSANCO should adopt effluent limitations and requirements which are consistent with those of the member states.

These should be considered standby in character. In order to engage in direct abatement proceedings of its own, it is necessary for ORSANCO to have such limitations and requirements. Legally the Commission can enforce only its own regulations. Consequently, to preserve the possibility of direct ORSANCO enforcement action in those cases where it may become appropriate, the Commission needs to have effluent limitations and requirements. However, they should not differ from those of the member states because it is not envisaged that ORSANCO should play a primary enforcement role.

15. The enforcement activities of ORSANCO should be of a backup and assistance character.

The changes which have taken place over the past quarter century have resulted in direct enforcement activities against individual pollutors by ORSANCO becoming less likely as a primary means of securing abatement. The states and EPA should carry the main enforcement burdens. However, ORSANCO can materially assist by making its data available for enforcement purposes and, upon request, providing expert testimony in abatement proceedings brought by the states and EPA. ORSANCO might also establish a regular forum for enforcement personnel through which cases of interest to more than one jurisdiction could be discussed and enforcement techniques examined. The possibility of ORSANCO participating in abatement litigation should not be ruled out, but it should be considered only in unusual cases where one or more states find that suit by the interstate agency offers special advantages.

Technical Assistance.

16. ORSANCO should provide technical assistance to governmental agencies as its staff resources allow.

> It would not be feasible for ORSANCO to assemble a staff of technical experts whose primary duty is to be on call. Even if the demand for such services could be specifically identified and predicted as to quantity in advance--a highly unlikely prospect--a technical assistance program constructed on such a basis would be unjustifiably costly. On the other hand, the furnishing of technical assistance as an adjunct or spinoff from its major programs is feasible. It would appear that ORSANCO is likely to continue to have and to improve staff capabilities in the specialties associated with stream data programs. The nature of its expertise in these and other fields will depend on the emphases that ORSANCO gives to its substantive programs.

Public Information.

17. ORSANCO should carry on a variety of continuing information activities in order to disseminate its data in use-effective ways; to make its services and accomplishments known to the states, the Federal Government, and the general public; and to improve understanding of the water quality and related problems of the Ohio Basin.

> For the present and near future, these tasks must be pursued on a modest scale, largely with existing personnel and resources. They are important, but there is an even greater need to develop and strengthen the substantive programs so that the techniques of public information will have a significant basis for communicating with ORSANCO's several publics.
>
> ORSANCO publications and communications should be action oriented. They should be designed specifically for the audiences intended to use them. It is less important to make them general reference works.
>
> There is a need for ORSANCO to be in continuous communication with the state governments and with relevant federal agencies. This

must be done mainly by the Executive Director and to some extent by other senior staff members. In addition, the use of ORSANCO commissioners should be developed. ORSANCO members, including the citizen commissioners, could become active representatives in two-way communication with a wide variety of groups, and in some instances with the state governments, and perhaps in limited instances, even with the Federal Government.

Staffing.

18. ORSANCO should rely principally on its own staff for the conduct of its core program activities. Committees and contractors are important supplements but should not be employed in instances where the Commission has enough regular need to justify staff positions, except in those unusual circumstances where expertise which it is impossible or uneconomic to afford in-house is desired. The staff should be expanded as rapidly as possible, with the necessary breadth of disciplines and expertise, adequately to handle all of the activities recommended above.

The ORSANCO staff has been extremely small in the past. While it is not necessarily advantageous to develop a very large staff for the interstate agency, and while personnel and resources of the state water pollution control agencies, EPA, the Corps of Engineers and others often can and should be used in cooperative undertakings, an effective organization requires a staff large enough to assume responsibility for the major program elements and to produce or closely supervise production of the Commission's key outputs. Only a staff which is itself enough engaged in substantive performance can develop and maintain the expertise which will make the interstate agency of a high order of usefulness to the states and the federal agencies.

Conclusion.

The program recommendations presented here are the ones which should have priority. Undoubtedly, some of the other suggestions made in Chapter 3 could be implemented in part without substantial additional expense or staffing; some are already being accomplished in a limited way. However, ORSANCO should concentrate most of its resources on these priority program items before undertaking any major efforts in other areas.

There can be a considerable temptation to spread an agency's programs too thin. If this is done, the result can be to perform below a level sufficient to make an activity useful. The data and planning programs are of first importance because they provide the substantive basis for any other activities which it the interstate agency might undertake.

CHAPTER 1

This Study: Why and How

The Ohio River Valley Water Sanitation Commission (ORSANCO) has been in operation for a full quarter century. When the compact creating it was negotiated, most of the party states did not yet have or had only recently enacted comprehensive water pollution control laws. Needless to say, there have been many and profound changes in these statutes and in the agencies which administer them in the intervening decades.

In the 1940s, the Federal Government was only a marginal participant in water pollution control. The advent of the Public Health Service -- later the Federal Water Quality Control Administration in the Department of the Interior -- and now the Environmental Protection Agency, as a significant regulator of water quality was subsequent to the establishment of ORSANCO.

Throughout this period, the ORSANCO Compact has not changed. Of course, the Commission itself is not as it was in the late 1940s and 1950s, but there is reason to ask whether and how far ORSANCO has rethought its mission as the law, administration and concepts of water quality management have grown and the balance of responsibilities has altered over the years.

Both the Commission and the Federal Environmental Protection Agency have felt a need to examine ORSANCO in order to assess its place in the present structure of water quality management and in the governmental pattern of the foreseeable future. They determined that this should be done with the help of an independent appraisal. Consequently, Wendell Associates was engaged under contract to the Federal Environmental Protection Agency. The cost has been borne partly by U.S. EPA and partly by ORSANCO. A Project Review Committee consisting of James Marth for the Environmental Protection Agency, William Klein for ORSANCO, Walter Lyon of the Pennsylvania Department of Environmental Resources and Ira Whitman, Director of the Ohio Environmental Protection Agency*, has monitored the work. However, the conduct of the study, together with its conclusions and recommendations, are entirely the responsibility of the contractor.

Premises.

The staff members engaged in this project have had long experience with intergovernmental relations, water resources planning, development and management, environmental administration, federal and state government, and with a wide variety of interstate agencies. We are therefore disposed to believe in the utility of interstate agencies. Nevertheless,

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* Dr. Whitman left office before the completion of this work.

we are keenly aware of their interstitial character. The principal actors in any of the fields where interstate agencies exist are the state governments and the Federal Government. Consequently, the justification for any interstate mechanism or organization in a particular location or milieu depends on the services, if any, that it can perform for the governments which are called upon to support it. The viability of ORSANCO should be measured by determining whether it can provide needed services to the eight member states and the Federal Government and on the utility of those services.

It is possible for the state water pollution control agencies and the Federal Environmental Protection Agency to share their subject matter tasks with an interstate agency. Each could have similar or even identical functions. The justification for all of them being in the field together might be that none of them alone has the resources to do the entire job. But this would not be an appealing rationale. Unnecessary duplication is almost certainly the consequence of such an approach. Accordingly, an underlying premise of this study is that ORSANCO is not justified in existing if it is to function as a water pollution control agency substantially like U.S. EPA or a water quality agency of one of the member states. Its role should be based on its peculiar status as an interjurisdictional mechanism.

In attempting to identify and develop objective and functions for ORSANCO, emphasis should be placed on those activities which cannot be performed properly or at all by the individual states acting separately or by the Federal Government. With respect to particular functions, it should also be asked whether, even though literally possible of performance by separate action of the participating governments, there are any significant conveniences or efficiencies to be gained from performance by an interstate agency.

One should also keep in mind that we are not considering interstate agencies in general. Undoubtedly, many of the programs which ORSANCO could undertake are those which any interstate water quality agency could reasonably perform in the geographic area where it operates. But it is necessary to ask what should ORSANCO do in the Ohio River Basin.

To some degree, the part which any agency can play is affected by its own ingenuity and the internal drive which it musters. In ORSANCO's case, the surrounding environment is also of basic importance. The responsibilities of the member states and how they choose to carry them out will either create or limit opportunities. Further, the nature of the overall quality control machinery is increasingly determined by the actions of Congress and the performance of U.S. EPA in administering the federal law. In ORSANCO's early years, the entire water quality management structure was comparatively simple and modest. Consequently, the interstate agency had a potentially wider ambit within which to decide where its contribution would be made. This does not imply that the opportunities were greater than now, but they were more diverse.

In considering the programs ORSANCO might pursue and their relationship to the interests and endeavors of the state and federal governments, we have assumed that the major directions enunciated in the Federal Water Pollution Control Act Amendments of 1972 will remain as there outlined for some time to come. Changes in that statute are possible -- perhaps even likely -- but it would be speculative to proceed on the assumption that we can now identify radically new approaches to water quality management with sufficient certainty to base serious recommendations for ORSANCO program development and substantial investment of resources on them.

Accordingly, we assume that the trend toward lodging the power to make an increasing number of the basic policy decisions in the Federal Government will not be dramatically reversed. On the other hand, it seems likely that the role of the states as implementors will continue. In a field that is as complex organizationally and substantively as water quality management, even the implementation of a basic set of policies cannot be described as a series of robot functions in which such choices as remain are drained of policymaking significance.

Methodology.

Work on this study began in May 1974. A draft of this final report was completed in December 1974. After review and comment the report has been put into final form. It is now up to ORSANCO, the member states and EPA to pursue whatever lines of action they think best. This report sets forth the judgments of the contractor and the analyses on which they are based.

At the outset of this study, such raw data as could be helpful was already in existence. It had to be assembled, arranged in usable form and marshaled in ways that would yield sound program advice for ORSANCO.

Part of the task has been to analyze the relevant legal and administrative framework within which ORSANCO must function. An interstate compact is this agency's legal basis. The Federal Water Pollution Control Act and certain other federal statutes had to be analyzed, with particular reference to their effect on interstate agency opportunities and constraints. Relevant state laws also had to be examined. However, since none of these, aside from the compact, empower ORSANCO to do anything or prohibit the agency from undertaking any actions which it might reasonably consider, an examination of the state programs, with particular reference to their bearing on the Ohio, was actually the form that this inquiry took.

It has also been necessary to remember that ORSANCO does not have the Ohio to itself. Relationships with the state water pollution control agencies -- now lodged in larger departments of environmental or natural resources -- had to be considered. Likewise, the actual and possible interplay with the Federal Environmental Protection Agency and the Corps of Engineers needed to be taken into account. Finally, it was recognized

that the Ohio River Basin Commission established pursuant to Title 2 of the Water Resources Planning Act, the U.S. Geological Survey, and the Appalachian Regional Commission have water resource responsibilities in the Basin.

Ascertainment of an agency's role and the development of program recommendations partake in some measure of legal, administrative and technical analysis. By using such tools it has been possible to identify the problems of the Ohio Basin and to map out in a fashion appearing to have logical consistency what the assignments of each participant should or might be. But ORSANCO is neither the fountainhead of jurisdictional power on the river nor the ultimate director of the regional water management program. It is the creature of eight states. Its financial support comes from these jurisdictions and from the Federal EPA. Its governing board is composed of 27 commissioners. Many of these were chosen because of their responsibilities in water agencies of the participating governments. Others are citizen commissioners appointed by Governors for a variety of reasons and with a variety of expectations as to the interests they will represent or reflect.

From these facts it was concluded that realistic advice concerning the role which ORSANCO should play and the programs which it could hope to mount must take the views of its members and constituents into account. Accordingly, some of the ORSANCO commissioners and other concerned or knowledgeable persons from each of the eight states and the Federal Government have been interviewed. The purpose was to ascertain their disposition toward the problems of the Ohio Basin and their receptivity to ORSANCO as it now is or as it might become. It has not been feasible to interview or otherwise consult all of the individuals who might have contributed to our understanding of the milieu within which ORSANCO must operate. We hope that our selection has been sufficient to provide a fair basis for input to our study. Because the contractor bears full responsibility for this report, and offers an independent analysis of ORSANCO's actual and potential position, it has not been appropriate for us to identify by name those whose views have been sought or to attribute any particular observations to specific persons.

The character of our product is also determined by its scope. ORSANCO was originally conceived as a regional water pollution control agency. It has functioned entirely within this role during all the years of its existence. During the negotiation of the compact, questions were raised as to whether ORSANCO should have other water management responsibilities as well. This notion was rapidly abandoned on the ground that it would be enough of a task to create an effective interstate agency to deal with pollution alone.

More recently, the trend nationally has been to consider water quality as but one component of a necessarily interrelated pattern of water management (quantity and quality), water and related land resources management, or even more broadly conceived environmental management. Accordingly, it might have been appropriate to study the place of ORSANCO in any one of

these universes. Indeed, some might question whether the formulation of an ORSANCO role can be effectively pursued within the confines of water quality considerations alone. As some of our observations later in this report will demonstrate, we have considerable sympathy with this broader approach. However, the scope of the effort as set forth in the contract governing this study has been confined primarily to water quality management. In terms of first priorities for strengthening ORSANCO, this narrower scope may be quite functional and realistic. Nevertheless, it has meant that we have not had the opportunity to consider in any depth whether ORSANCO could perform useful services in the broader field of water resources management or environmental management as a whole. Comments on such matters will be necessary at some places in this report. However, it must be understood that they will be more general in character than our observations concerning water quality management.

CHAPTER 2

The Ohio Basin

The main stem of the Ohio River commences at Pittsburgh where the Allegheny and Monogahela meet. The river flows in a westerly direction and empties into the Mississippi at Cairo, Illinois. Six states share or border this main river, but eight are in the compact (New York, Virginia, Pennsylvania, West Virginia, Ohio, Kentucky, Indiana and Illinois). Consequently, there is warrant to consider the ORSANCO mission as basin-wide, rather than limited to the main stem. But, as this report will explain, there is some contrariety of possible concept in formulating the geographic emphasis of ORSANCO activities.

The Basin could have been thought of in even larger terms. The Tennessee is a tributary of the Ohio. When the compact was being initially developed, some efforts were made to secure participation by the Tennessee Basin States, but the five states which are in the Tennessee and not otherwise in the Ohio Basin did not look with favor on participation in an ORSANCO Compact district. During the 1950s an effort was made to develop a Tennessee River Compact for pollution control. Such a document was drafted and enacted by Tennessee, Kentucky, and Mississippi. But the interstate agency created by the Tennessee Compact was never activated.

The Ohio Basin, then, as defined for ORSANCO purposes, stretches from the headwaters of the Allegheny and Monogahela Rivers to Cairo. It includes nineteen major tributaries, among them some important interstate streams like the New-Kanawha, the Big Sandy, the Mahoning, and the Wabash.

The overall length of the Basin is approximately 900 miles and it has a width that may be generally put at from 200 to 300 miles. Statistics could be multiplied to show the Basin's importance, size and diversity. But it is common knowledge that the Ohio is one of America's great rivers; that vital industrial and agricultural activities take place in the Basin; and that its people depend on the river and tributaries for water supply, recreational opportunities, navigation, and reception of wastes. Accordingly, it requires little demonstration that the condition of the streams in the Ohio Valley is of major importance to the basin states, the region and the nation as a whole.

A dominant fact is that the Ohio and many of its major tributaries have been dammed for navigation, flood control and other purposes. The main stem and some other portions of the river system, have lost their character as free flowing streams. Their flow regimen is regulated, although not generally for a full range of multipurpose uses. The entire main river, and to a lesser extent the streams in the basin as a whole, may be regarded as a gigantic series of slack water pools. The travel time for water in the headwaters to reach the lower Ohio is as long as several months, especially during periods of low flow.

These circumstances have tremendous significance for the water quality problems of the Basin. If the Ohio were a free flowing river system, the rationale for interstate or federal-interstate cooperation in quality management would be the one that is principally advanced -- the stream flows from one state to another and borders several; its geography and quality characteristics are interjurisdictional. In the Ohio's particular circumstances, however, it must be added that, whether in the interests of water quality or for other purposes, the river system is controlled and affected by a number of governmental agencies and private interests. These too are interjurisdictional in location and character.

The uses now and in future to be made of the Ohio Basin's waters run the entire gamut. Only irrigation may be regarded more lightly than in some parts of the country, but even so, reliance on supplemental water for farming should not be overlooked and could become more widespread in years to come.

The region includes a substantial portion of the country's coal reserves. Consequently, mining, coal gasification, the operation of fossil fuel plants, and nuclear energy all are or can rapidly become important to the Ohio and the populations served by its resources. All of these forms of energy generation make heavy demands on water, require that its quality be managed, and have marked effects on the pollution load which the Ohio and its tributaries must carry.

The myriad effects of a busy, diversified and unevenly but heavily populated region on its water resources and on their ability to serve the people's needs are among the most basic facts to be considered in planning for and realizing the region's near term and long range ability to support a prosperous and healthful way of life.

The Ohio is considered an abundant river. Its basin lies in a part of the nation which is well endowed with rainfall. But the demands on the region's water resources are heavy and the regimen of the river system has already been committed to drastic regulation by the public works of governmental agencies. The Federal Government controls flow, the federal and state governments regulate discharges of wastes, municipalities and private interests are primarily responsible for treatment of wastes and for a complex variety of practices in land use, manufacturing and agriculture which affect pollution from non-point sources. Perhaps most major rivers are intergovernmental streams, but the condition of the Ohio is more affected than most by the course of intergovernmental activities, inaction, and relationships.

CHAPTER 3

Role and Program

In recent years, ORSANCO has not capitalized fully on its opportunities for service, nor has it come up to its potential in performing the water quality management tasks which lie within its unique province as an interstate agency. The present need is for strengthening of existing programs and for assumption of additional responsibilities as the resources placed at the disposal of ORSANCO by the member states and the Federal Government allow.

This chapter identifies, describes and presents the rationale for a considerable number of program activities. Many of them have been recognized by ORSANCO, EPA and the member states as needful. Some are currently performed by ORSANCO in more or less degree.

It should not be expected that ORSANCO could mount significant programs in all of the fields discussed here in the immediate future, even if the Commission wished. However, the presentation of a comprehensive set of programs should prove useful in outlining what can be done.

The ORSANCO Role

The Intergovernmental and Interagency Network.

Each of the eight member states has assumed major responsibilities for environmental management and has a department devoted to that field of activity. The United States Government also has one of its more important and visible agencies assigned to environmental affairs.

This trend to see the physical universe whole and to emphasize the interrelationships among land, water and air is fairly new. It was little thought of and even less embodied in the administrative organization of public agencies when ORSANCO was created. Accordingly, it is not strange that ORSANCO, whose compact has remained unamended from the beginning should be cast as a water pollution control agency and not as a comprehensive water management or environmental organization.

Nevertheless, water quality control cannot nowadays be considered in its narrowest context. Stream flow regulation, for whatever purpose undertaken, has a profound effect on water quality. Various waste disposal methods such as incineration, land disposal and discharge to streams present choices which materially affect the ability to control water quality and influence the methods to be used. Consequently, even an agency which is charged only with water pollution control jurisdiction must be equipped and able to concern itself with much more than wastewater treatment and the quality of effluents and receiving waters if it is to have a really effective impact.

The question of whether ORSANCO could be of greater service to the states if it were a more broadly conceived agency is not considered here. For practical reasons it probably would be unwise at this time to attempt a major overhaul of the compact. Such an effort would consume substantial time, funds, and attention of the Commission and its staff. Even if not so intended, it might act as a deterrent to the prosecution of substantive programs by ORSANCO on the plea that major decisions should be delayed pending resolution of the conceptual debate. As the following pages will show, there are so many vital things that will continue to go undone unless ORSANCO performs them that serious consideration of entirely new fields of responsibility would be debilitating rather than helpful at the present time. Accordingly, ORSANCO should actively consider what its role ought to be within the range of opportunities and constraints afforded by its present compact.

The only direct public contact that ORSANCO is likely to have is in its information program and in one or two other services to be proposed later in this chapter. Almost entirely, however, its role is that of coordinator and provider of services to other governmental agencies. Accordingly, in the most direct sense, ORSANCO's constituents are the eight member states and the United States Government. Within these governmental structures, those most immediately involved are the environmental departments, especially the water pollution control agencies. But the reorganizations that have occurred at both the state and federal levels during the past decade or so have not quite succeeded in gathering all water quality related functions in single places. At the federal and federal-interstate levels in addition to EPA, the Department of Defense through its Corps of Engineers has a direct and large presence on the Ohio; the Water Resources Council and its Ohio River Basin Commission must be considered, both in general and because of the Section 209 river basin planning provision of the Federal Water Pollution Control Act Amendments of 1972; the Appalachian Regional Commission has an effect by reason of its water and waste management programs, consideration of mine land problems and other public works programs in the eastern parts of the Basin; and the Departments of the Interior, Agriculture, and Commerce are also relevant because of their interests in fisheries, weather, geology and other natural resources or environmental factors.

At the state level, the constituents and colleague agencies can also be multiplied, depending on how active ORSANCO itself becomes and on how widely one proposes to consider the subject of river system management. Many of the states separate the water pollution control and fisheries agencies. In addition, other agencies such as the highway departments may also be significant because of the effects of some of their activities on runoff and on water quality.

However, this array should not be taken as equally important in all its parts. The core of the ORSANCO relationships is in the ambit of the state water pollution control agencies and the Federal EPA. The Corps of Engineers and the several fisheries agencies are also more intimately concerned than others within the larger circle of agencies just referred to.

The ORSANCO Compact.

The powers of a programmatic character most prominently set forth in the Compact are those directly relevant for an enforcement activity. Effluent standards are written into the Compact itself. However, all that is required is the removal of settleable solids and forty-five percent of suspended solids. These conditions can be satisfied by primary treatment. Because present treatment requirements at both the federal and state levels are greater than this, the express provisions of the Compact must be regarded as largely outmoded. However, the Compact also confers on the Commission power to make additional requirements to govern effluent discharges, as may be suitable in particular circumstances. Just how extensive such a process might be and what its place could be in the overall federal-state system of water quality management will be considered later in this chapter. However, it should be noted here that ORSANCO does have the legal authority to make and enforce standards, effluent limitations and requirements beyond those expressly written in the Compact text, and that from time to time it has done so. It is also specifically set forth that the Commission may employ abatement hearings, administrative orders and court proceedings to enforce its requirements against municipalities and industrial waste dischargers.

From a mere reading of the Compact, one could come to the conclusion that all there is to an enforcement program--at least so far as the Commission is concerned--is the making of effluent standards and their application to particular waste dischargers through administrative and judicial proceedings. Other types of enforcement activities, and certainly the nonprosecutorial kinds of water quality management programs are not specifically mentioned. Accordingly, their conduct by ORSANCO depends on the authorities that are necessarily implied in the Compact and its general purposes or on amendment or supplementation of the Compact as it now stands.

Since ORSANCO's direct action in issuing orders against and suing alleged pollutors is represented by no more than a handful of cases, it is clear that almost all of the agency's actual program activities during the quarter century of its existence have rested on implied authority. This conclusion is reached because, aside from some powers of a study and recommendatory character contained in Article VIII of the Compact, the only grants of authority relate to enforcement.

To the extent that ORSANCO activities have been based on specific words of the Compact, they have found their authorization almost entirely in the following language:

ARTICLE VIII

> The Commission shall conduct a survey of the territory included within the District, shall study the pollution problems of the District, and shall make a comprehensive report for the

prevention or reduction of stream pollution therein. In preparing such report, the Commission shall confer with any national or regional planning body which may be established, and any department of the Federal Government authorized to deal with matters relating to the pollution problems of the District. The Commission shall draft and recommend to the governors of the various signatory States uniform legislation dealing with the pollution of rivers, streams and waters and other pollution problems within the District. The Commission shall consult with and advise the various States, communities, municipalities, corporations, persons, or other entities with regard to particular problems connected with the pollution of waters, particularly with regard to the construction of plants for the disposal of sewage, industrial and other waste. The Commission shall, more than one month prior to any regular meeting of the legislature of any State which is a party thereto, present to the governor of the State its recommendations relating to enactments to be made by any legislature in furthering the intents and purposes of this Compact.

These words seem clearly to look toward a planning function and to the making of recommendations. Some indication of how this might be done is contained in the reference to uniform legislation and recommendations of changes in law. The idea that planning should be done in cooperation with a national or regional planning body is indicative but not necessarily confining. Indeed, in its historic context, it would seem that what was specifically in mind was the National Resources Planning Board structure of the 1930s which was abolished before ORSANCO commenced operations. Nevertheless, the thought of cooperative planning could be applied equally well to undertakings with the Ohio River Basin Commission, the Appalachian Regional Commission, river basin planning entities under Section 209 of the Federal Water Pollution Control Act or areawide planning bodies under Section 208 of the same statute.

It also seems clear that the Compact envisages ORSANCO as a consultative arm of the member states which can give advice on control and abatement measures such as the construction of treatment plants. However, the language of Article VIII is not restrictive and so can provide a basis for whatever kinds of nonregulatory forum, assistance and informational or analytical activities might be desired.

Activities that consist of the gathering of data, where compulsory access to private property is not necessary, do not generally require a specific statutory or compactual basis. It can be assumed that any agency has an inherent right to inform itself in fields relevant to its subject matter responsibilities. Similarly, the conduct of research by virtually any method is a defensible activity. Consequently, it may be concluded that if the party states, the Federal Government, and such other funding sources as may be found are willing to finance ORSANCO, it may engage in such activities.

Although it is sometimes made explicit in statutory authorizations or other types of charters, the forum function can also be performed without a specific charge in the Compact, and none appears. Indeed, the composition of the Commission makes it easy and perhaps inevitable that ORSANCO be used to facilitate an interchange of views among water pollution control agencies in the party states and the Federal Government. Since citizen commissioners serve on the agency, there is also opportunity for the forum function to include elements of the private sector in the Ohio Basin.

Operating programs such as the construction of treatment systems or stream flow regulating works are not mentioned. Since the conduct of such undertakings usually involves large sums of money, the management of extensive and valuable properties, the borrowing, management and repayment of capital funds, and frequently exercise of the power of eminent domain, it is impractical to proceed very far on the basis of inferred powers only. As already indicated, the Compact does not contain express powers of the kind that would be necessary to permit ORSANCO to engage in the conduct of large programs of public works.

The Federal Water Pollution Control Act.

The Federal Water Pollution Control Act, unlike the Compact, cannot empower ORSANCO to engage in activities because it is not an enactment of the member states. However, the Federal Act is important to ORSANCO because EPA is and must be a principal participant in intergovernmental water quality management and because of the role which ORSANCO can play in assisting the states and EPA to implement a number of key provisions of the federal law.

Section 103 of the Federal Act (a reenacted provision from previous versions of the statute) directs EPA to encourage several kinds of interstate and intergovernmental cooperation. In particular, the consent of the Congress is given to the negotiation of interstate compacts which, however, are not to be binding and effective until Congress consents to the specific text of the compact in question. Accordingly, this provision has only limited significance, but it does evidence a policy on the part of Congress to encourage interstate compacts for water quality management.

The ORSANCO Compact antedated this provision of federal law, even in its earliest appearance in the original 1948 Federal Water Pollution Control Act. Nevertheless, the ORSANCO Compact does have the specific consent of Congress and so meets any condition on this score which might be held to apply.

The Federal Act Amendments of 1972 makes specific mention of interstate agencies forty-three (43) times. The table on pages 14-17 lists these provisions and gives a brief indication of their substance. Since there are not interstate agencies on each of the major navigable river systems of the United States, the Federal Act does not and could not

Table No. 1 References to Interstate Agencies

Section number	Substance of provision
101(b)(1)	It is the policy of Congress to provide Federal technical services and financial aid to interstate agencies in order to aid research in the prevention, reduction and elimination of pollution.
102(a)	The Administrator of EPA shall develop comprehensive water pollution control programs in cooperation with interstate agencies. The Administrator is authorized to make joint investigations with any interstate agencies of water conditions in any state and of sewage discharges which affect such waters
103(b)(2)	Congressional consent is given to states to negotiate compacts for the prevention and control of pollution and to establish interstate agencies.
104(b)(2)	In establishing national programs for the prevention, reduction and elimination of pollution, the Administrator shall cooperate with interstate agencies with respect to research, investigation and related activities.
104(b)(3)	The Administrator is authorized to make grants to interstate agencies for research relating to prevention, reduction and elimination of pollution.
104(n)(1)	The Administrator shall, in cooperation with interstate agencies, conduct comprehensive studies of the effects of pollution on fish and wildlife, on recreation, on water supply and water power, and on other beneficial purposes.
105(a)	The Administrator may make grants to an interstate agency assisting the EPA in developing a new and improved method of preventing, reducing and eliminating the discharge into any waters of pollutants from storm water sewers and in demonstrating advanced waste treatment and water purification methods or new methods of joint treatment of municipal and industrial wastes.
105(b)	The Administrator may make grants to an interstate agency to demonstrate advanced pollution control techniques within river basins.
106(a)	The sums of $60,000,000 and $75,000,000 were authorized respectively for the fiscal years ending June 30, 1973 and June 30, 1974 for grants, including those to interstate agencies for administration of water pollution control programs.
106(b)	Program grant allotments will be made to interstate agencies.

Section number	Substance of provision
106(c)	The Administrator is authorized to pay each interstate agency each fiscal year the allotment made under subsection (b), or reasonable costs as determined by the Administrator of conducting a pollution program by such agency.
106(d)	No grant will be made under sec. 106 to any interstate agency when the expenditure of non-Federal funds for such agency's recurrent expenses for its pollution program are less than its expenditure of non-Federal funds for such recurrent program expenses during fiscal year ending June 30, 1971.
106(f) (1) (2) (3)	Grants shall be made under this section on condition that: an interstate agency must file with the Administrator within 120 days after the date of enactment of this section a summary report of the current status of the state pollution program and additional information as required by the Administrator; no federal enforcement as defined in sec. 309(a)(2) is in effect with respect to such interstate agency; such interstate agency submits within 120 days after the date of enactment of this section and before July 1 of each year thereafter for the Administrator's approval its program of pollution control.
108(a)	The Administrator, in cooperation with other Federal agencies or departments, is authorized to enter into agreements with any interstate agency to carry out programs of improved pollution control within the watersheds of the Great Lakes.
108(b)	Federal participation in such projects shall be subject to the agency's paying not less than 25 per centum of the actual project costs.
201(g)(1)	The Administrator is authorized to make grants to any interstate agency for the construction of publicly owned treatment works.
201(g)(2)	The Administrator shall not make grants authorized for any fiscal year beginning after June 30, 1974 to any interstate agency for construction or improvement of treatment works unless the applicant has satisfactorily demonstrated that: (A) alternative waste management techniques have been studied and the works proposed will utilize the best waste treatment technology, (B) the works proposed will take into account and allow application of technology at a later date that will provide for the reclaiming or recycling of water.
204(a) (4)	Before approving grants for any treatment works project under sec. 201(g)(1) the Administrator shall determine: that the applicant agrees to pay the non-Federal costs of such works and has adequately provided for trained personnel and has obtained approval of its plan of operation from an interstate agency where appropriate.

Section number	Substance of provision
204(b)(2)	The Administrator shall, within 180 days after the date of enactment of the Federal Water Pollution Control Act Amendments of 1972 and after consultation with appropriate interstate agency, issue guidelines applicable to payment of waste treatment costs by industrial and nonindustrial users of waste treatment services.
204(b)(4)	Approval by the Administrator of a grant for any treatment works to an interstate agency established by interstate compact shall constitute authorization by Congress.
310(a)	Whenever the Administrator has received reports from an international agency regarding pollution which is endangering the health of persons in a foreign country, and the Secretary of State requests that such pollution be eliminated, he shall notify the State water pollution control agency in the State or States where the discharge is originating and the appropriate interstate agency, if any.
401(a)(1)	Any applicant for a Federal license or permit to conduct any activity which may result in a discharge into navigable waters must provide the licensing agency a certification from the interstate agency having jurisdiction over the navigable waters where the discharge will originate. Such interstate agency shall establish procedures for public notice in the case of all applications for certification and where it deems appropriate, procedures for public hearings regarding specific applications. Where the interstate agency has no authority to issue a certification, such certification shall be from the Administrator. Certification requirements of this section with respect to Federal application shall be waived, if within a reasonable period of time after request for certification, the State, interstate agency, or Administrator fails to act. No license or permit shall be granted until certification as required by this section has been obtained or has been waived. No license or permit shall be granted if certification has been denied by the State, interstate agency, or Administrator.
401(a)(3)	Certification obtained pursuant to paragraph (1) of this subsection with respect to construction of any facility, shall fulfill certification requirements in connection with any other Federal license or permit required unless after notice to the interstate agency by the Federal agency to whom application is made, the interstate agency notifies such Federal agency within 60 days after receipt of notice that there is reason to believe the requirements of sections 301, 302, 306, and 307 of this Act may not be met because of changes in various areas since construction license or permit certification was issued. Provisions of this paragraph shall not be applicable in any case where applicant has failed to notify where appropriate, the interstate agency of any proposed changes in the construction or operation of facility with respect to which a license

Section number	Substance of provision
401(a)(3) (cont.)	or permit has been granted, which changes may violate requirements of sections 301, 302, 306, or 307 of this Act.
401(2)(4)	Prior to initial operation of any federally licensed or permitted facility or activity, and where appropriate, the interstate agency shall be permitted to review the manner in which the facility or activity shall be operated to assure that applicable effluent limitations will not be violated.
401(b)	The Administrator shall, upon request of any interstate agency provide relevant information, for the purpose of this section, on applicable effluent limitations and shall, when requested, comment on any methods to comply with such limitations.
402(b)	After promulgation of the guidelines under section 304(h)(2) of this Act, the governor of each State wishing to administer its own permit program for discharges may submit a description of the program to be established and administered either under State law or under an interstate compact. In addition, a statement shall be required from the chief legal officer in the case of an interstate agency to the effect that the laws of the compact provide adequate authority for administering the program.
502(2)	"Interstate agency" means an agency of two or more states pursuant to an agreement or compact approved by Congress, or any other agency of two or more States having substantial powers or duties relating to pollution control as determined and approved by the Administrator.
502(5)	"Person" can mean an interstate body.
503(a)(1)	Appointed members of the Water Pollution Control Advisory Board shall be selected from among representatives of various agencies, including interstate agencies.
510	An interstate agency may adopt any standard or limitation respecting discharges of pollutants or requirement respecting control of pollution; except that if such standard, limitation or requirement is in effect under this Act, such interstate agency may not adopt a standard, limitation or requirement less stringent than that of the Federal Government.

assign unique functions contemplated for performance only by such agencies. For this reason it is more instructive to discuss the special contributions which an interstate agency such as ORSANCO must make to the functioning of the Federal Act in programmatic terms. The presentations of ORSANCO program possibilities in this chapter make appropriate references to provisions of the Federal Act. Nevertheless, it may be helpful to list the program implications for ORSANCO briefly before beginning the more detailed exposition. This is done in the table on pages 14-17.

Current and Possible Programs

If one were to attempt to gain an impression of the extent and range of ORSANCO activities during the past year by drawing up a list of all items which received at least some attention, the picture would be of a varied program. Included would be the gathering and analysis of data on stream quality, dissemination of information, the preparation of a documentary film, the carrying forward of enforcement action, recommendations on control of deep well injection, stream modeling, power plant siting, consideration of the problem of user charges, and a number of other matters.

It is clear that current ORSANCO activities are dominated by the monitoring program and attendant data processing and evaluation. For FY 1975, 17.5% of the total staff effort is directly allocated to monitoring and 45% to data processing and evaluation. For FY 1976, the proposed allocations are 19.5% and 40.2%, respectively.

Monitoring.

The monitoring program is composed of several elements. Twenty electronic monitors have been placed along the main stem of the river and are operated by the Commission. In addition, water users and the U.S. Geological Survey who collect data for their own purposes are organized to provide such information to ORSANCO on a regular basis. All in all, a network of sixty-six stations report regularly to the Commission office in Cincinnati on a number of parameters. The robot stations transmit the data hourly. This is the backbone of the system and virtually the sole reliance for obtaining a continuous picture of water quality conditions in the Ohio.

When all of the circumstances under which it has been initiated and prosecuted are recognized, it is clear that the ORSANCO monitoring program is a remarkable one. It provides more data on a more frequent basis than is regularly collected for the entire length of a major river anywhere in the world. The effort has been a truly pioneering one and has provided ideas and experience which other agencies have used in devising their own automatic monitoring undertakings.

Moreover, it has been done on a shoestring. Even though the costs bulk very large as an expenditure from the limited resources available to

ORSANCO, they are small for a program of its size. In putting the system together, ORSANCO has made use of volunteer help in that it has relied heavily on securing data from those who collect it for their own purposes and who have been willing to furnish information, either as a public service or in exchange for reports containing the data that ORSANCO collects and analyzes.

The Commission has recently developed and adopted a monitoring strategy which calls for the substantial expansion of the system. The subject engendered considerable discussion before its unanimous approval by the Commission. It is not that anyone seriously doubts the desirability of having information on water quality in the Ohio. However, there are a number of questions as to the purposes of the system and whether the monitoring program as it now is and as it is proposed to be will serve them. Further, it must be considered whether the concentration of ORSANCO resources in this program and the allied data processing and evaluation activities prevents the Commission from undertaking other activities of equal or greater importance. In order to address these questions, it is necessary to ask why the interstate agency should collect and provide information on water quality.

There are a number of purposes which could be served. These include the obtaining of accurate knowledge of the actual condition of the river, the taking of enforcement action against waste dischargers, the planning of water uses and the allocation of waste loadings, determination of what water quality problems exist and how they might be remedied, and the detection of spills and other temporarily hazardous conditions so that people, governments and industries along the waterway can take timely protective measures, and to aid in the operation of the river regulating installations which so substantially control the quantity of water in the Ohio River system at any given time. Information about stream conditions is important to the making of sound regulatory policy for a particular stretch of waterway.

Under the present Federal Water Pollution Control Act such information has an important bearing on whether waste dischargers will be required only to employ "best practicable treatment", and at a subsequent time, "best available technology", or whether in addition, a wasteloading allocation will be necessary so as to further limit the total amount of pollutant discharge which a municipality or industrial establishment will be allowed. It must be recognized, however, that stream monitoring by itself does not suffice for the abatement of pollution through the taking of enforcement action.

In an abatement proceeding, it is necessary to establish that the discharge of the alleged pollutor is of a kind or amount that violates applicable requirements of law. If one attempts to do this by offering evidence as to the quality of the receiving stream, it is necessary to recognize that the defendant is almost certainly not the only contributor

to the pollutant load. Stream quality at any given location is determined by all of the influences, natural and manmade, which have played on the waterway from its headwaters to the point in question, with allowances for such changes as may have occurred within the stream itself. Furthermore, there is a much more direct and reliable way of proving what a discharger is putting into the stream. The effluent can be sampled and analyzed.

Whether ORSANCO should engage in compliance monitoring in addition to stream monitoring will be considered when we examine the suitability of an enforcement role for the interstate agency. For the present, it is enough to indicate that the conduct of abatement proceedings cannot properly be offered as a major purpose of the ORSANCO stream monitoring program.

Each of the other possible purposes mentioned above is one that must be served by knowledge of stream conditions. All of them, except for the detection of spills, can be subsumed under one or the other of two headings: for planning purposes and for determination of waste load allocations in a regulatory process. It then becomes essential to decide what kind and how much data is required to serve these purposes and to shape a data gathering, interpretation and dissemination system that will produce the desired information in convenient and usable form.

The beginnings of an answer can be found in the observation that the states and EPA need to know as fully and accurately as possible what the river is like. As the public agencies charged with seeing that the waters of the Ohio Basin are available and suitable for all legitimate uses or that the choices of use are equitably determined, these entities must have all of the information necessary for any purpose. Municipalities, industrial and agricultural users, and other private interests have varying needs which depend on the particular uses which they make or propose to make of the river system.

Given the American governmental structure, there are only two kinds of entity that could provide a comprehensive picture of the Ohio: an agency of the Federal Government or an intergovernmental basinwide agency. No individual state gathering and interpreting data within its own territorial limits has the necessary geographic coverage. Even if the states were separately to monitor as ORSANCO does, some coordinating body would be required to put the pieces together and to make the undertaking internally compatible in its several parts. Accordingly, it may be concluded that the stream monitoring function is a necessary one and that it is ideally suited for performance by ORSANCO.

The robot monitoring system as now operated gives the appearance of comprehensiveness and thoroughness. Plotting it on a map shows reporting stations dotted along the whole main stem of the river. The impression of thoroughness is also conveyed by the hourly reporting from the robot

monitors every day of the year. But it should be recognized that the monitoring system is only partial. It is limited to those parameters which have been programmed into the system and which are susceptible of collection by electronic means. It is also limited by the methods used to operate the system and by the uses which ORSANCO and its client agencies are organized to make of the information produced.

The need for the ORSANCO monitoring program is that it provides the best hope of generating the information and analyses essential for planning and regulatory activities of the states and the Federal Government. Even if it may be assumed that the Ohio is now in reasonably good condition and can accept substantial new burdens, it is idle to hope that the river will be able to withstand the region's development of forty or more additional power plants, intensified exploitation of its natural resources (principally coal), and expansion of manufacturing and agricultural activity in an effort to maintain and improve national standards of living, unless there is very careful management.

Although it is better than anything yet devised for a river of the Ohio's size, the ORSANCO monitoring program suffers from a number of limitations which should be overcome in order to provide the very necessary tool for river management.

On the average, the stations relied upon to construct the picture of stream quality are twenty or more miles apart and located where a utility or other water user could be found willing to host the installation without charge. The aim was to tap into an intake through which a large volume of river water was being withdrawn and thus obtain what could be regarded as a fairly representative sample. (One power plant, for example, withdraws as much as one-quarter of the total flow of the river at certain periods of the year.) This mitigates the limitations which would otherwise accompany a system in which there is not normally sampling at points across from each other on both banks. However, it cannot be assumed that water quality in the intervening distances between upstream and downstream monitoring points is the same as at the stations. Very substantial supplementation of the existing data gathering system is therefore desirable.

Prior to establishing a monitoring station, ORSANCO has usually, on a contract basis with the U.S. Geological Survey, done a lateral cross-section check of the river at the proposed site. However, once the installation is made, ORSANCO has not been in the habit of doing any further checks on a regular basis. Cost has been considered a deterrent.

Depictions of stream quality throughout the Ohio's length are made by projecting conditions reported at the robot stations into the intervening stretches of the river. It is also assumed that conditions ascertained for one bank of the river at any given time are essentially similar on the opposite shore, except in cases where the initial cross-sectional check made when the station was installed has revealed otherwise.

It is beyond the scope of this study to determine whether ORSANCO has succeeded in placing its monitors in positions which, taken as a whole, sample most of the different kinds of quality condition likely to prevail somewhere on the Ohio. The data made available does enable generalized conclusions as to whether the river as a whole is getting better, deteriorating, or remaining in a stable condition with respect to the parameters sampled. Other significant pollutants may not be detected and could be increasing in concentration. If the data furnished by water users whose stations make up so substantial a part of the monitoring network can be taken as accurate, there is specific information as to the quality of water with which some of the users along the river have to deal. However, this is not enough to support detailed planning efforts or management activities of a specific character, nor will it really suffice to provide a reasoned basis for basic policy decisions in the future when the river may carry a much greater pollutant loading.

What the states and EPA need are the data required for decisions as to whether more than "the best practicable treatment" is now needed at a specific location; whether wastes of a particular description can be safely discharged to the river at a precisely given point where a specific plant already stands or will be built; whether the stretch of river between mile 310 and 320 can take an increase in temperature without adverse effects on aquatic life. These are the kinds of facts and judgments, based on monitoring, which underlie sound standards making and realistic permit conditions. Such data are also valuable to dischargers, public and private in planning and designing treatment and disposal works.

Changes in water quality in the course of many mile reaches of the river and laterally across the river are too probable and too numerous to be left out of the reckoning in composing the picture of stream conditions. They occur because of natural processes; they also result from local discharges which may have a marked effect for several miles but which may thereafter be diffused or diluted to the degree that they impact much differently on the next monitoring station than on much of the waterway above it.

The absence of certain kinds of data is also serious. Useful as robot monitoring may be, it cannot detect many substances which have in recent years been recognized as crucial elements of water quality. For example, heavy metals and most other toxic substances, pesticides, nutrients, oil and grease, total organic carbon, and the condition of bottom mud cannot be monitored by electronic means. This is significant in understanding the desirable directions for expansion of the ORSANCO stream data system. In some degree, this has been recognized in the recently adopted monitoring strategy. We believe it deserves still further emphasis.

It is not suggested that robot monitoring should be expanded to a point where it would produce the kind of coverage necessary to overcome

the limitations. Such a course could require a tremendous multiplication of robots and of the data operations attendant thereto as to be in excess of all reasonable cost. Even if this could be done, it would solve only part of the problem. On the other hand, it should not be concluded that robot monitoring as presently done by ORSANCO is lacking in usefulness because it fails to accomplish all that is required. As will be indicated in a subsequent section of this chapter, what is needed is supplementation of the robot monitoring by other methods to the point where a well rounded system of data collection and analysis is in operation.

The monitoring strategy recently devised by ORSANCO seeks to rectify the situation to some extent by including manual sampling to supplement data from the electronic stations. It has been recognized that this will create a need for laboratory services not hitherto experienced in the ORSANCO program.

To obtain what is required it is intended to rely on the U.S. Geological Survey Laboratory in Atlanta for much of the work. It is also expected that local arrangements will be made to secure analysis of samples which would deterioriate if sent long distances or not processed immediately.

Such an approach may be the best that can be managed under present cost and other constraints. However, it would be better to work toward the strengthening and use of laboratory resources entirely within the Ohio Basin. The monitoring requirements of the Federal Water Pollution Control Act seem likely to place great additional demands on all facilities available for water quality analysis. This will be true in every part of the country. Accordingly, the utilization, and where necessary the augmentation, of state and federal laboratory capabilities within the Basin which will be sufficient to handle both ORSANCO needs and those of the other agencies themselves is the desirable objective.

Aside from the need for more satisfactory resolution of the laboratory problem, the ORSANCO data collection system has a number of other aspects requiring attention. The first of them is the absence of field and maintenance personnel and the shortage of technical personnel. This has at least two undesirable consequences. One is the inability of ORSANCO to check on the accuracy of information provided by the monitors and such other sources as may supply data. The other is dependence on outside sources for the functioning of crucial parts of the system.

In relying to a major extent on stations operated by water users, the Commission bases its assumption of the reliability of data received on the fact that the information is collected in the normal course of the water user's own operations. The reasoning is that it is in the best interests of the operators as well as ORSANCO that the data be professionally gathered and reliable. The only check employed is the furnishing by ORSANCO of occasional standard samples to be run by the operators, with results of analyses furnished to the Commission. This tests the capability of the station but does not test its actual performance.

It would be better if the Commission's own personnel made frequent sampling visits to all of its stations, by whomsoever owned and operated, to provide visual and manual checks. It may be argued that this would be expensive. However, the validity of the entire undertaking and of all investments in it depend on certain knowledge that the product is reliable. Consequently, such costs must be afforded.

A limitation on the development of the monitoring system along imaginative lines is the manner in which it is maintained. ORSANCO personnel pay field visits to the robot monitors only infrequently--primarily when a new monitor is being installed. This results in something less than full staff capability with respect to the system. Commission staff believes that the maintenance service provided by its private contractor is satisfactory, and we have no evidence to the contrary. However, even if this is true, the contracting out of this work prevents the development in Commission staff of the intimate familiarity with the system necessary to maximize its usefulness and efficiency.

It is a question whether the annual cost presently incurred for servicing of the system would be exceeded or reduced by in-house performance of the servicing function. The field personnel needed for maintenance could be shared with other programs. In this connection, however, it may be appropriate to observe that the substantial expansion of the monitoring operations and network makes reconsideration of the contracting out policy imperative. It would seem to be a general principle that the larger the system, the more economic in-house performance would be.

Be this as it may, it seems certain that contracting out of maintenance of the monitor stations reduces the number of staff members who understand the system--both in its mechanical aspects and in its actual and potential uses. Should the Commission become dissatisfied with its contractor or wish to develop the system along lines not convenient for the contractor, the lack of such in-house capability and resources would be serious.

One other point needs to be made. The entire monitoring program should be reviewed at frequent intervals--perhaps every two years--and revised as necessary to secure the introduction of relevant new parameters, and perhaps the dropping of some found insufficiently useful. Manufacturing, agricultural, and treatment processes, as well as legal requirements, change, thus affecting the nature of discharges and runoff that contribute to stream content. Also, the state of knowledge and awareness changes, with the result that the need to consider the measurement of new parameters arises.

Spills and Temporary Hazardous Conditions.

It is sometimes supposed that a stream monitoring system should be used to detect spills or other occasional discharges of pollutants. It

would be adequate for such a purpose only if it possessed much greater coverage than the ORSANCO system now has or can reasonably be expected to have and if staff members were on duty twenty-four hours a day, seven days a week to read the data received at the Commission office. It is not likely that such an expansion of the program will occur, nor would it be merited.

Most, if not all, spills and accidental discharges of any significance are reported to the Coast Guard and EPA by those who cause them. However, ORSANCO is in a unique position to run an effective warning system to advise persons and agencies promptly of conditions needing attention. This is true because of its knowledge of the river, including flow velocities and location of intakes.

To run such a program would not require much in the way of resources. Primarily it would involve publicizing the fact that the Cincinnati office of ORSANCO is the appropriate recipient and transmitter of the information. If all involved public agencies agreed, arrangements could easily be made or reinstituted for the Commission to relay the news to state, local and federal authorities in positions to do something about each occurrence. An additional necessary element is the furnishing of a continuous day and night, every day of the year reception and dispatching service for reports and complaints relating to the spills and other conditions. The Interstate Sanitation Commission has such a program in operation in the tri-state New York Metropolitan Area. Its basic ingredients are a twenty-four hour answering service and a plan pursuant to which staff members can be reached when the agency's office is not open for regular business. Following the receipt of the first draft of this report, ORSANCO procured a twenty-four hour answering service.

For an interstate area, the performance of such a function by an interstate agency is particularly useful. While there are other ways of arranging for communications across jurisdictional lines, they require the establishment and maintenance of operational relationships and informational flow along channels not normally employed by the unijurisdictional agencies involved. In an agency whose entire character is interjurisdictional, the basinwide transmission and coordination of information could be administered as a normal function rather than as an extraordinary one.

Stream Surveys.

In view of the masses of data that are presumably available to show what the condition of the Ohio is, it may be difficult to accept the idea that for many stretches of the river quality conditions are unknown. But as already explained, far from everything has been measured and the validity of some information that has been reported or deduced is subject to question. The accounts of ever greater quantities of wastes being treated, and plants being upgraded from primary to secondary

treatment give the impression of statistical progress. But in querying both federal and state water quality control personnel, we have been impressed by how infrequently anyone actually gets out on most reaches of the river to make informed inspections and samplings of it.

Neither the states nor EPA do this on a regular basis. Some years ago, ORSANCO attempted to institute a program of surveillance by "river wardens", but aside from an essentially one-man effort during a single summer on the West Virginia portion of the river system, this type of effort received no support from the states. This record is no worse than on most other streams, but it should not instill confidence in categorical conclusions as to the quality of the water.

The closest present approach to the gathering of comprehensive information, including much needed biological data and other data not capable of being supplied by robots, is the periodic (once a month or less frequent) taking of grab samples at a relatively few fixed stations or check points. Failure to do more is generally ascribed to cost and shortage of personnel. But with a truly coordinated approach, periodic intensive samplings of the Ohio throughout its entire length could be undertaken. A successful program of this kind has been in effect in the Interstate Sanitation District (New York, New Jersey and Connecticut) for some years. In that instance, the interstate agency itself charters the boats used in the collection of samples and does the on-board and laboratory analyses with its own personnel--some of whom are college students hired at relatively modest cost as temporary help during vacation periods. Because of the much larger area involved and ORSANCO's lack of field staff, the conduct of intensive stream surveys on the Ohio probably should follow a different organizational pattern.

If the project were given a sufficient priority for the relatively brief periods required for a survey, the states probably could detail enough personnel to take the samples and analyze them. Boats already owned by state and federal agencies could be used and when necessary, supplemented by private craft hired for a day or two. ORSANCO could develop the program, coordinate its operation and compile and evaluate the data.

With automatic monitoring and surveys to complement each other, a complete and accurate view of quality conditions on the waterway could be obtained and kept current enough to provide a solid basis for the sophisticated planning, operational and policy processes that should go into good river management. In making this suggestion we wish to emphasize that the purpose of the ORSANCO data gathering and analysis program should not be surveillance in the direct enforcement sense. Rather, it should be to establish a reliable basis of factual information for a variety of planning and policy decisions which must be made by the Federal Government, the states, and in some instances, the local governments and private entities. For these purposes several days of actual

thorough and accurate knowledge of the river gained from intensive surveys using boats and analyses of samples could be more valuable than continuous data of a more limited character.

Data Processing, Evaluation and Dissemination.

We have underscored the purposes for which ORSANCO should collect, analyze and disseminate data. Such emphasis is ours. In recent years, ORSANCO has seemed to gather, process and make available data in accordance with a program that has become established and that continues in its present pattern largely because previously accepted.

ORSANCO has elected to make its information available principally in the form of its monthly publication called "Monitor". Much briefer and more generalized versions find their way into the Commission's annual reports, and so perhaps to a limited circle of the public. The assumption appears to be that the recipient will make whatever use of the data suits his purpose. The unspoken proposition is that if presented with as much information as is available about the quality of the Ohio, whoever may have responsibilities or concerns will pick what he needs to know and then act on it. It may be that this occurs in many instances. However, our inquiries during the course of this study have made it difficult for us to be confident of the extent to which this thesis is demonstrable.

Some of the state water quality control personnel with whom we have talked say that they pass ORSANCO data along to the members of their staffs, but they have been unable to offer any specific account of what happens to it thereafter. Others have emphasized the availability of ORSANCO data but have been vague in identifying the manner of its use. In still other instances, possible users other than the ones directly in the ORSANCO family have merely received information from their colleagues in the state agencies or from EPA but have not known its source and so could not say whether or how much of what they received came from ORSANCO.

The monitoring system and its associated data processing and evaluation activities would serve better if they were conceived as more than the assembly and analysis of data for whatever uses others might intend and devise. From the picture of the river that the programs here suggested could provide, and from the water quality objectives for the several water uses that a proper planning process would identify, ORSANCO staff could examine its continuously collected data to determine immediately whether stream quality requirements are being met. With proper programming, this can be done automatically. Any untoward circumstances could be called to the attention of the appropriate state, federal or local operating and regulatory authorities immediately and accompanied by requests that the situation be investigated and remedial action initiated. If choices must be made, it is more important to perform such specific services for a limited number of purposes known to be useful than to

offer up a wider range of analyses for general information. Perhaps consideration should be given to the use of teletype to furnish a limited amount of data to the State Water Pollution Control Agencies on a daily basis.

The storage of ORSANCO data can present a growing problem. As the years go by, the tapes and analyses produced by the monitoring system accumulate. Some, if not all, of this storehouse of information is valuable for purposes of historic record, but its storage, servicing and retreival must result in ever increasing expense as the volume grows. It must be decided whether ORSANCO is to be the only or principal data bank for the Ohio or whether its function is to be more limited. If arrangements are completed and actually made operational for EPA's Storet to become the master data bank, there will be no need for ORSANCO to serve this purpose. However, long range records and rapid access to current data are not necessarily served in the same way. It is therefore important that ORSANCO maintain current data from its gathering and analytical operations. Perhaps full information for a year or two, eventually backed by the historic files in the Storet system, could provide a nonduplicative balance that would serve the widest range of needs. Additionally, it may be necessary for ORSANCO to keep permanent files for types of data not accepted by Storet.

State and federal agencies also should make their contributions to the ORSANCO data collection system. This should be more than the present participation in the robot monitoring program. The results of monthly or other periodic manual samplings, for example, should be reported regularly and immediately to ORSANCO and worked into the information system.

Stream Modeling.

A predictable development from the present ORSANCO monitoring program has been its entry into the field of stream modeling. Mathematical models, if they can be properly formulated and validated, are useful tools in planning for river management. Predictions can be made having a variety of uses. To give one illustration--in areas where there is or may be need to limit the waste burden to be borne by particular receiving waters, it becomes essential to determine permissible waste loadings. In the immediate sense, any limitations which are to be prescribed must be made specific so that they can be written as conditions of permits issued pursuant to the Federal Water Pollution Control Act's National Pollutant Discharge Elimination System (NPDES). In the absence of reliable information as to how given waste loadings will affect the condition of a stream, it becomes difficult if not impossible to write satisfactory requirements.

As pressures on streams intensify, it may become increasingly necessary not only to determine equities among individual water users and waste dischargers but to make equitable allocations for stretches of rivers or for state portions of basins. Ultimately, what municipal and industrial

dischargers within one state may be permitted to put into the river may depend on establishing its probable effect on downstream conditions. It is not enough to say that a given action will make conditions better or worse. Specific effects on temperature, dissolved oxygen, nutrient content, toxic conditions, and many other qualities must be known for significant distances downstream, and in some instances possibly for the river or the river system as a whole. The agency which gathers and analyzes stream data is in the best position to do the modeling. In a basin like the Ohio no single state can do the job. ORSANCO has a jurisdiction coterminous with the Basin and so can fit the pieces together.

ORSANCO has already entered upon this type of activity. To date it has produced a model for the main stem and additional models for selected parameters. Expansion and refinement of the models for the main stem for additional parameters and extension to tributaries is needed. In this connection, it should be emphasized that the utilization of stream models has at least two aspects. There must be enough of a data base on which to construct a valid model, and it must be checked against conditions in the stream as they are actually found to be. Frequent checks, and prompt revisions whenever necessary, are required because of the dynamic nature of the river system. Only in this way can it be determined whether the model is reliable and whether its projections result in accurate predictions of the effects of the introduction of specified changes in waste loading, flow control, natural conditions or other factors.

Planning.

Management of water quality is one highly important aspect of the management of the water resources of the Ohio River system. Moreover, it is not done for its own sake. Rather, the objective is to contribute to the usefulness of the Basin's waters for a variety of legitimate purposes. These waters must serve the needs of municipal and domestic water supply, industrial water supply for both processing and cooling purposes, agriculture, recreation, aesthetic enjoyment, mining, energy production, fisheries and navigation. Quality is an important element in most if not all of these uses.

It must be borne in mind that the ultimate objective is to provide for the needs of the Basin population and to contribute to the strength and well-being of the nation. Accordingly, water quality management must be responsive to local, state, regional and national needs. Of course, ORSANCO does not play a central role in fixing those needs or in deciding the balance of priorities among them. Nevertheless, it should be a responsibility of a regional and basinwide interstate agency to identify the opportunities and constraints which water quality considerations in the Ohio River Basin place on the satisfaction of these several kinds of needs. It is also important to point out on a continuing basis the probable effects on water quality of alternative

balances in water uses. In order to be of real help to federal and state authorities with power over the Basin and its resources, such identifications and analyses must be in specific terms related directly to the Ohio and its entire region.

Comprehensive planning of water and related resources is in the hands of other agencies, but this does not relieve ORSANCO from the need to have and exercise a planning capability. At a minimum, it must be able to understand, make contributions to, and relate its own activities to the larger context of regional needs and values. But more than this, planning is a necessary tool in designing and adapting the other programs of the agency. In particular, the shape of the monitoring system should be made to depend on these present and projected needs in the water quality area.

Further illustrations of the point may be gathered from the expanded stream modeling and waste loading allocation activities in which ORSANCO should engage or participate. Such activities and allocations are in aid of the public objectives which can be identified by participation in regional planning undertakings.

Planning of the types that could benefit from or be affected by ORSANCO participation is done under many different auspices and within several frameworks. For present purposes, they may be identified as those emanating from the provisions of the Federal Water Pollution Control Act and those resulting from a multitude of other activities of the state and federal governments.

Section 209 of the Federal Act directs that Level B plans pursuant to the Water Resources Planning Act of 1965 be completed for all river basins in the country by 1980. It was recognized that in order to make many of the decisions which contribute to proper water quality standards, waste treatment and disposal methods and the quality factors in water use, it would be desirable to have an available context of comprehensive "Level B" basin plans. The statute provides for these to be done by or under the auspices of the Water Resources Council established by the Water Resources Planning Act. Since the Ohio River Basin Commission is a regional agency established under Title 2 of the Water Resources Planning Act, and is composed of both federal and state representatives, it may be appropriate to suppose that ORBC will be a likely candidate for any Section 209 planning undertakings on the Ohio. However, ORSANCO is also represented on ORBC as a matter of right under the Water Resources Planning Act. Accordingly, it would seem fitting that ORSANCO should supply the water quality ingredient in Section 209 planning as well as in other planning efforts of the Ohio River Basin Commission.

As a condition of their participation in key programs under the Federal Water Pollution Control Act, states are also to have "continuous planning processes" (Section 303 (e)). These include water quality related planning activities for all navigable waters. In the case of

interstate water bodies, however, there is a specific requirement that the continuous planning process provide for cooperation with the other states involved. Indeed, it is extremely unlikely that any state could do effective water quality and related planning for common waters, without intimate reference to and coordination with the plans of the other jurisdictions. On the Ohio, the problem appears in two forms. Throughout almost all of its length, the main stem is a boundary river. For some 700 miles Kentucky owns to the opposite shore, but it does not control the policies or practices of land use or waste treatment and disposal in the neighboring states. West Virginia and Ohio also share a 225 mile length of the river between them. There is further the upstream-downstream relationship among states on the main stem and a number of the more important tributaries.

Because of these circumstances, it seems appropriate that ORSANCO should be used as an express part of each Basin state's planning process for performance of its 303 (e) responsibilities with reference to the Ohio.

Finally, there is areawide waste treatment management planning pursuant to Section 208. Some of the Ohio Basin States have already designated areas within which such planning is to be done and others, notably Virginia and New York, may not have areas likely to be designated under Section 208 in the Ohio. For those localities where 208 planning will begin in 1975, it may be unrealistic to consider any significant ORSANCO role. However, for future 208 areas, ORSANCO might well have a part to play. In all probability, it would not be as the agency to have principal responsibility for preparing the areawide waste treatment management plan. The number of such involvements might become too large to permit this, even if it were desirable. However, the interstate agency might well be a participant. Its data and analyses could be directly relevant. Furthermore, in interstate metropolitan areas, the concerns of the states and of EPA that there be interjurisdictional coordination could give an ORSANCO presence special merit.

A wide variety of other planning activities are constantly in progress. These are conducted by comprehensive state planning agencies, by agencies of the Federal Government and by two federal-interstate commissions--The Ohio River Basin Commission and the Appalachian Regional Commission. Also, a multitude of substate regional planning bodies concentrate on problems of a more local character, frequently but not always centered on a metropolitan area.

Except in the case of ORBC, and perhaps ARC, the relationship of ORSANCO to these planning activities is likely to be indirect or occasional. It should stem from the obvious fact that water quality is an important ingredient in virtually every use of water and so becomes a consideration in planning for recreational development, industrial growth, residential concentrations, and many other types of activity.

Water Quality Standards.

The making of water quality standards is part way between the planning process and the taking of enforcement action. Effluent standards (called "effluent limitations" in the Federal Act) are directly regulatory in that they set the permissible limits for discharges of pollutants. Receiving water standards are geared to uses and cleanliness objectives for the streams in question. There should be a relationship between the two kinds of standards, but the degree to which this is so in particular instances must depend in significant measure on the accuracy and completeness of knowledge of the stream, including its hydrologic and purification characteristics.

The Federal Act recognizes such a relationship by providing for identification of particular stretches of a waterway as "water quality limited segments"; in such stretches, waste loading allocations are necessary in order to reach or maintain the applicable stream standards. However, the basic objectives of the statute are to place and maintain all waters in such condition as will support the propagation of fish life and recreational activity. The Ohio does not now have as many water quality limited segments as it may in the future. Changes will occur from time to time as additional parameters are measured; as knowledge of the actual condition of the river becomes more complete; and as the pressures of population and industrial activity increase.

The ORSANCO Compact contains minimum effluent standards in express language, but they are only partial and outdated. Of more present day importance is the companion provision which permits the Commission to make additional standards administratively. In its early years, ORSANCO was active in doing so. However, since the advent of the Federal Water Quality Act of 1965, this function has tended to atrophy.

That statute provided for the first time a procedure under which the states were to submit "water quality criteria" (in reality, standards) to the Federal Water Quality Control Administration. Upon approval, these standards became effective under the Act. Although other standards probably continued to be enforceable, if embodied in or authorized by state law, the emphasis shifted to the federal-state standards making process and to the requirements in force pursuant to it.

In 1966, at the behest of a number of its state water pollution control agency representatives, ORSANCO discontinued its fledgling interest in setting standards within the framework of the Water Quality Act. So far as stream standards are concerned, the 1972 Act continues the system established by the earlier statute. Federal effluent limitations are generally pegged at a minimum of secondary treatment and "best practicable treatment" for industrial discharges. The specific limitations applicable to individual pollutors are intended to be found in their discharge permits, issued either by EPA or by a state having an approved permit system.

Thus, despite some standards making action in 1970, ORSANCO is not now a major participant in the standards area. Its position is due to a self denying ordinance prompted by the 1966 attitude of some of the member states. However, this is a matter of policy and not an inevitable result of either existing federal or state law. The compact provision empowering ORSANCO to make water quality standards administratively is part of the laws of each member state. Moreover, Section 510 of the Federal Water Pollution Control Act Amendments of 1972 allows state or interstate agencies to make and enforce standards equal to or more stringent than those in force pursuant to the Federal Act. Accordingly, ORSANCO action is not preempted. Of course, as a practical matter, it depends on the willingness of the member states to accord the interstate agency a role and on the attitude of EPA.

Under Article VI of the compact, ORSANCO is specifically given only the power to adopt effluent standards for sewage and industrial wastes. However, because as already explained, receiving water standards are planning tools rather than requirements that can be directly enforced against waste dischargers, the Commission should not consider itself unable to participate in the important tasks of formulating and coordinating stream standards.

The monitoring and planning activities which ORSANCO should count among its most important tasks have a direct bearing on standards making. Information about stream conditions is useless unless it is put to work. Planning cannot be done in a vacuum or without relation to the water quality that should be produced and maintained by the actions recommended as a result of the planning process.

Moreover, the first premise on which the existence of ORSANCO rests is that intergovernmental coordination is necessary for a basin jurisdictionally divided among eight states. Coordination among the jurisdictions in the making of stream standards is one of the most clearly interstate problems in the Ohio Basin. The boundary character of the main river and the basinwide influence of some pollutants make it essential that some entity see that the standards for the Basin fit together so that the water quality requirements and goals which each jurisdiction seeks to implement are compatible with those of the other states sharing the river system. The efforts of one state to achieve a given stream quality condition can be vitiated, or at the very least seriously impeded, if the neighbor across the way or upstream is promoting an inconsistent course. While some discharges upstream are so diffused or diminished as the river flows that they have little consequence in downstream states, other discharges may have an influence over hundreds of miles. (Examples are mine acid and salt discharges.)

Of course, standards need not be uniform throughout the Ohio Basin. The varying uses to which the waters are put and differences in subregional priorities can legitimately call for variations. However, the several sets of state standards must be able to coexist. At a minimum, one must

not interfere with the attainment of the others; more positively, it is desirable that each set of standards assist in the attainment of the others.

This kind of coordination can be secured only by ORSANCO or EPA. But the latter, perhaps not less than the several states, lacks a mechanism. The Ohio Basin lies in four EPA regions, each with significant measure of autonomy in reviewing and passing upon state submissions under Section 303 of the Federal Act. On the other hand, ORSANCO is a single agency with basinwide jurisdiction and responsibilities in the field of water quality.

Such a coordinative role would not invade the prerogatives of either the states or EPA. The individual states have the final responsibility for such submissions as they make under Section 303 and ORSANCO has no power to compel changes in them, either prior to or after submission. EPA has the authority to approve or disapprove under the Federal Act, and no authority conveyed by the compact could possibly abridge the rights exercised by EPA pursuant to the federal statute.

The function as here envisaged would be that of providing a forum for discussion and of encouraging and participating in the negotiations among the states. Also included should be comparative analyses of the stream standards, both actual and proposed, and of EPA requirements. The results of such analyses should be presented to the states and EPA as inputs to the coordination process.

What has so far been said leaves to one side the question of whether ORSANCO should itself make stream standards for submission and approval by EPA pursuant to Section 303 of the Federal Act. Of course, it would be inappropriate for this to be done, if the states were also to submit standards covering the same waters. However, there are two other alternatives which could be considered. One would be for the states of the Basin to relinquish to ORSANCO the task of developing standards for waters of the Ohio River and other interstate streams in the Basin. A more likely approach would be for ORSANCO to participate actively in the formulation and revision of standards for the several segments of the river system and to have each state incorporate the results in its own standards. Under such an arrangement, each state would continue to submit its own standards separately. However, coordination could nevertheless be achieved.

The remaining question is whether ORSANCO should avail itself of the invitation extended by Section 510 of the Federal Act and make standards equal to or more stringent than those in force pursuant to Public Law 92-500. Such a course might be especially worth considering if, as presently seems to be the case, effluent limitations and requirements developed by EPA on an industry by industry basis are only for a limited number of parameters and do not include some which are important to the welfare of the Ohio.

It should also be considered that, if, as subsequent discussion in this chapter suggests, ORSANCO should have some part in the enforcement process even if only on a standby basis, the interstate agency must adopt standards and requirements of its own to enforce, including effluent limitations. The compact does not authorize ORSANCO to enforce standards or requirements made by the member states or by U.S. EPA. Further, it is an accepted principle of law that a jurisdiction can enforce only its own laws. Accordingly, if ORSANCO is to be in a position to take abatement action against individual pollutors, it must have standards and requirements of its own, even if these are identical with those of the member states or EPA.

Enforcement.

While "natural pollution" is sometimes responsible for poor stream quality, it is generally true that the failure of a waterway to be in suitable condition is due to pollutant discharges or nonpoint runoff incident to various kinds of human activity. Pollutants are introduced into a stream by effluent from identifiable point sources such as municipal collection and waste treatment systems and manufacturing facilities. On a river heavily used as a highway of commerce, pollution also results from navigational activities. Nonpoint sources, such as runoff from farmland or city streets, is also a major contributor to the burdens which streams carry. These latter sources present a special set of problems which are not readily susceptible of approach by traditional enforcement methods. In this discussion, as in most considerations of enforcement, the focus of attention is the prevention or abatement of substandard discharges from point sources.

The ORSANCO Compact clearly contemplates a role for the interstate agency in this type of activity. The compact empowers the Commission to make and enforce water quality standards and effluent limitations. It provides for public hearings, administrative orders and court actions which can be taken against pollutors.

ORSANCO has not engaged in such activities to any great extent at any time during its quarter century of operation. With the single exception of the Detroit Steel Case, now in the courts, the Commission has undertaken only to participate with one or another of the states in negotiating sessions that might have led to formal enforcement proceedings. The instances have involved a few small or medium-sized communities. In no instances have the pollution problems of any of the major metropolitan areas in the Basin been involved. On each occasion, the case was "given over" to ORSANCO by the state water pollution control agency which believed that the additional pressure that the interstate agency's appearance might bring would be helpful. There is some opinion that it has been, but the number of cases involved is not large enough to provide a firm basis for any generalized conclusions.

The advent of the Federal Water Pollution Control Act Amendments of 1972 is regarded by EPA as presaging a basic change in enforcement methods. Under Section 402 of the statute, each point source discharger to navigable receiving waters (whether municipal, industrial, or agricultural) is required to have a National Pollutant Discharge Elimination System permit, either from EPA or from the state if it has established an EPA approved permit system. These permits contain conditions governing the discharges and can include limitations on both the volume and content of effluents. Failure to have a permit makes the discharge unlawful. Violation of permit terms is ground for revocation and so will ostensibly end the discharger's right to put anything into the stream. The permits are now being processed. Most if not all of the ORSANCO states have either placed NPDES permit systems in operation or are preparing to do so.

If the permit system is assiduously applied and rigorously administered, it will offer a complete method of control over point source discharges and so will make any other means of enforcement superfluous. It is still too early to tell whether the system will actually work that way. However, in view of the minor role which ORSANCO has until now played in enforcement proceedings, and because the Commission could make substantial contributions in a number of other fields, it does not seem wise for ORSANCO to plan on channeling any significant portion of its limited resources into abatement actions. On the other hand, there would be little point to the taking of affirmative steps to amend the present enforcement powers out of the compact. Instead, they should remain as standby authority which can be used if other means of enforcement fail or appear inconvenient or impolitic.

In this connection, it is once again to be observed that Section 510 of the Federal Water Pollution Control Act expressly contemplates the possibility that states or interstate agencies may have effluent limitations equal to or more stringent than those in force pursuant to the federal statute. Section 510 declares that the state or interstate agency may enforce any such limitations. Accordingly, there can be no question of federal preemption which would bar an enforcement role for ORSANCO in any instance where special circumstances may make this useful.

However, the bringing of abatement proceedings is not the only activity directly useful for enforcement. At least two services which ORSANCO can or should be able to render in unique fashion would be valuable.

The first would be a proper outgrowth of the monitoring and related analytical programs. It consists of the offering of expert testimony and assistance. The exact extent of such service would depend on the degree to which the ORSANCO programs, designed to gain thorough and reliable information concerning river conditions and their consequences, are bolstered.

In a narrow sense, it may be enough for a permit or abatement proceeding that violation of effluent limitations is proved. Nevertheless,

it often becomes necessary in court actions to demonstrate the harmful consequences of what the pollutor is doing and to supply a suitable background of information relating to the condition of the stream and its availability or lack of utility for particular uses. ORSANCO staff could appear as expert witnesses to testify to stream conditions and related matters.

Another kind of service that ORSANCO is particularly suited to perform is an extension of its interstate forum function. This has been developed in the sanitary engineering aspect of pollution control because the Engineering Committee of the Commission is composed of technical personnel from the water quality agencies of the member states, from EPA, and from the Corps. It is suggested that consideration be given to establishment of a Legal Review Committee composed of lawyers who serve the enforcement agencies of the member states. This would offer a forum for discussion of common problems in the compact district and how they might best be resolved. One legal matter that could claim attention is agreement on a common definition of what constitutes an abandoned mine; variations of definition among the states (or no definition at all in some cases) hardly provides a satisfactory basis for adoption of interstate control measures for acid discharges from so-called abandoned mine workings. Likewise there is use for illumination of the legal framework on which to build effective regulation of subsurface disposal facilities; this was pointed out several years ago in a consultant's report to the Commission on issues to be faced with respect to underground injection of waste waters.

A continuing function for such a committee could be periodic discussions of enforcement proceedings of common interest. These could involve either specific situations in geographic areas of interstate concern or proceedings from which something could be learned because of techniques used or problems involved.

Certification, Reports, and Compliance Monitoring.

There are a number of regulatory activities which in one way or another have a bearing on enforcement. ORSANCO might be better able to participate in some of them than in others. Whether and to what extent it should become involved is a matter of policy as well as of capability. For the most part, if not entirely, these activities are among the normal state responsibilities, either because placed there by the Federal Water Pollution Control Act or because they contribute to the effectiveness of state water quality management programs.

Section 401 of the Federal Act provides for the certification by states, and where appropriate by interstate agencies, of the probable effects of specific discharges on water quality conditions. This is a part of the permit process employed by EPA and states in implementing NPDES. Of course, if the state itself administers the permit system, it need not make a certification but will merely ascertain and consider

the probable effect of a discharge for which an applicant seeks a permit. If EPA issues the permits in a particular state, the Act gives the state the right to certify and would appear to require EPA to deny the permit, if the certification is adverse.

There is no express provision of the compact which empowers ORSANCO to give certifications such as those contemplated by the Federal Act. On the other hand, there is nothing in the compact which would inhibit it. Since a certification is essentially a statement setting forth the conclusions of a water pollution control agency on the probable effects of a discharge, the more relevant inquiry would seem to be whether ORSANCO is or should be in a position to make the analysis required to present a competent opinion. In some ways, ORSANCO is ideally suited for such a role because it, better than any other agency, is in a position to assess probable effects on waters in other state segments of the Basin, as well as on waters in the immediate vicinity of the proposed point of discharge.

However, it would not be desirable for ORSANCO to undertake participation in the certification process if that would mean a second certification for any discharge in the Basin. Abandonment of the certification function by states in the Ohio Basin does not seem likely. Accordingly, it seems more appropriate for ORSANCO and its member states to think in terms of what contributions the interstate agency could make to the information and analyses on the basis of which judgments are made concerning probable effects on water quality.

Such contributions could be substantial and should serve a purpose whether the states are merely making certifications to EPA or whether they are themselves administering the permit programs. Before evaluating permit applications, states should query ORSANCO to whatever extent the character and content of the interstate agency's stream quality information and evaluation programs make it likely that either a data or analytical input can be supplied. The state water pollution control agency also should solicit ORSANCO comments on permit applications covering discharges which will have interstate effects. If this practice were regularized, it would not be a complete departure from present practice. Even now, ORSANCO reviews some permit applications.

Information also can be supplied to the states and EPA through reports having particular relevance for regulatory activities. ORSANCO has had such a procedure in its status reports on control facilities. Rather than being reports from the interstate agency, they have been reports to it of the status of abatement undertakings. Generally speaking, there have been periodic reports on the construction of facilities designed to remove violations or otherwise to improve water quality. The member states have undertaken to make these reports concerning activities within their own boundaries. When staff capabilities have allowed, ORSANCO has reviewed these reports and conferred with each state about them. The very knowledge that such reports will be expected, and discussions of what they show, can

have a salutary effect in promoting accountability among the individual state agencies with respect to their problems. It can also provide the basis for ORSANCO reports to other Basin states on how their neighbors are doing in meeting some of the obligations which they have under the compact.

For these reasons we have been disappointed to learn that these status reports have not been regularly solicited, furnished and reviewed in recent times. In view of ORSANCO's presently limited staff complement and the internal problems with which the agency has had to cope for several years past, this situation is understandable. However, appropriate administration of a status report activity, accompanied by regular conversations on progress or the lack thereof, would be useful.

Section 305 (b) of the Federal Act calls for another kind of status report to be made on an annual basis. States are to inform the EPA Administrator concerning quality conditions of their waters, to report on the extent to which applicable stream standards are being met, and to assess the costs and effects of meeting or not meeting them. Assuming that ORSANCO's monitoring program and other data gathering and analysis activities recommended in these pages are properly developed and maintained, the interstate agency should take over the responsibility for making at least the Ohio River portion of each state report required by Section 305, or could provide substantial input to aid in its preparation. Likewise, ORSANCO could be clothed with similar responsibilities for interstate tributary streams such as the Allegheny, Monongahela, Mahoning-Beaver, and the Wabash rivers.

Specific information as to how individual waste dischargers are performing is another aspect of reporting. The states have the bulk of the responsibility for this kind of activity. The eight ORSANCO member jurisdictions have performed inspections and other surveillance activities only in part. While all the states have programs calling for inspection and sampling of municipal and industrial treatment facilities, and some have more complete and frequent coverage than others, in practice inspections of such plants as are visited occur, on the average, hardly more often than once a year. Shortage of personnel is generally offered as the reason for deficiencies in this kind of surveillance activity.

ORSANCO has never undertaken to do plant inspections and sampling. To do so throughout the Basin, or even for waters on and directly affecting the main stem would require a very large staff. Such inspections, with attendant sampling and analysis, should be vigorously carried forward. However, there would be little advantage in relying on ORSANCO for this kind of work. The interstate agency might be justified in performing it on some occasions, especially where there is an aggravated interstate pollution problem and where each state would want to know from an impartial source what the character of discharges and treatment within the neighboring jurisdiction's territory actually is. However, ORSANCO has no present

capability along these lines and no resources with which to institute a plant inspection and sampling program. Since the need is at least equally great for the individual states to increase their inspection and related activities, it seems best to advocate strengthened performance by the states. Toward this end ORSANCO should complete a manual relating to uniform procedures for plant inspections and audit on which the staff and the Engineering Committee have already been at work.

Under the 1972 Federal Act, the inspectorial function and other methods for ascertaining the conduct of individual waste dischargers is conceived as "compliance monitoring". In the terms of the Act, the objective is to determine whether permit holders are living up to the requirements of their permits. Much of the reliance is on reports to be submitted by the dischargers concerning their own activities and on self monitoring to supply the data which go into the reports. It is most appropriate for the permit issuers to receive this information. Of course, the validation of the information thus supplied will be a key to the success of the permit approach. However, for the reasons already indicated, it does not seem that ORSANCO is a likely participant in compliance monitoring, except in one way.

Earlier in this chapter, it was suggested that ORSANCO should not be a data collector and receptacle only, but that it should take an active role in calling some of the current information yielded by its monitoring program to the attention of the state agencies. To the extent that sudden changes in stream quality or evidence of generally deteriorating conditions in a particular area may signal behavior requiring inspection or other direct surveillance action, ORSANCO could be of great assistance. However, this could be the case only if ORSANCO undertook a more frequent data distribution than the monthly "Monitor" and if items having specific meaning for a particular state agency or EPA were called directly and pointedly to its attention as soon as observed.

River Management.

If no flow control structures had ever been built on the Ohio River and its tributaries, one of the important influences on water quality would have been variations in flow caused by seasonal factors, periods of high precipitation and droughts. These considerations continue to be significant, but their consequences are now much more subject to control than would otherwise have been the case.

Today the river is managed, but primarily for navigation and flood amelioration. The heavy investments in water transport and the reliance of the population on existing flood protection structures makes it certain that these objectives of management will continue to dominate. Nevertheless, there is still likely to be a significant measure of flexibility in the volumes and timing of storage and releases. Some thought has already been given to the operation of the flow regulation facilities for water quality purposes, within the framework of the navigation and flood

control programs. The Corps does make analyses of its projects for multi-purpose operations and cost-benefit justification. Some proposals are set forth on page 7 of the 1966 annual report of ORSANCO. More should be done along these lines.

Active and continued cooperation among ORSANCO, EPA, and the Corps of Engineers should be the keystone of river management for water quality purposes. This is another aspect of river management which cannot be undertaken on a local basis or even in state segments of the river system. ORSANCO and the Corps already have something of an investment in such a program.

The Corps purchased and installed robot monitors on the Allegheny in order to facilitate operation of its installations at and near the Pennsylvania-New York border for water quality management benefits. The equipment has now been given over to ORSANCO to operate under contract. However, unless a specific river quality management program is developed, it is likely that the result will be only to expand the geographic coverage of the present data collection and analysis activities.

The Corps and the states in other regions already have some experience in cooperative control of stream flow regimen for multiple purposes. Notably, the program of annual scheduling of releases on the Missouri has been in effect for many years and has helped to ameliorate conflicts among water uses in the several parts of that basin, as well as to provide the operating procedures for both Corps and Bureau of Reclamation installations in the Missouri.

The purposes and methodology would not be the same as in the Missouri Basin. The principal source of managed stream flow there is the annually accumulated snow pack which presents a known quantity by early Spring which can then be scheduled as to storage and releases for the balance of the year. In the Ohio Basin, the water comes primarily from rainfall which occurs throughout the year and which therefore cannot be accurately scheduled for flow management months in advance. Nevertheless, the Missouri experience is suggestive and might be drawn upon to create a cooperative flow management program that would provide a mechanism for incorporating water quality considerations.

The ORSANCO stream monitoring program puts the interstate agency in the logical position to guide the correlation of flow releases. It better than any other agency knows, or should know, the quality condition of the entire river system on a continuing basis. It, better than any other agency, could calculate the relationships between releases, withdrawals and storage in the several portions of the Basin and the values of both long range and individual instance management of the regimen of stream flow.

Indeed, the possibilities are larger than mere management of releases. Some of the Corps dams and private utility installations are operated

for purposes of power generation, as well as navigation and flood control. In the past, ORSANCO has made suggestions which have led to operation of these facilities in ways that improve water quality. For example, at ORSANCO's request, some of the power producers have bled oxygen into their discharges and releases and so have achieved improved river quality conditions for this parameter. This experience suggests that proper exercise of ingenuity, under ORSANCO leadership, could result in a variety of measures that would improve the quality of the river in connection with the operation of programs for stream flow management.

Interstate Investigations and Coordination.

On some parts of the Ohio, its interstate character is more apparent and undoubtedly more real than on others. The main stem is a boundary between states and also between Regions 3, 4 and 5 of EPA. Each of these entities has decision making powers, operational activities, or both which can result either in compatible administration of the Basin's waters or which can produce troublesome inconsistencies and conflicts. The list of possible sources of incongruity could be extended at greater length than will be attempted here. However, a few illustrations will serve to indicate the nature of the problems and the services which ORSANCO could provide.

Under the Federal Water Pollution Control Act, each state assigns priorities for applications made by its community sewage treatment systems for construction grants. It should normally be presumed that these priorities are influenced by views of the water quality agencies on a state-by-state basis. They reflect a balancing of concerns as among the several parts of a jurisdiction, both within and without the Ohio Basin. They may also on occasion reflect efforts of a particular state to concentrate on a specific geographic area which is perceived to have a water quality problem requiring special effort. This perspective may vary as seen from across the river or from the upstream and downstream sides of a border.

Coordination of priorities within a state is a necessary objective, and individual states are in a position to pursue it. But coordination within the several parts of a basin--particularly in the same or adjacent areas--is also necessary.

Under the Federal Act, it is the states and not interstate agencies which make up the priority lists. It is not suggested that this be changed. However, by bringing state agencies together and by pointing out to each of them what the policies across the state line are and what their effects may be, the participation of ORSANCO might secure an improved pattern of construction activity.

The problem also involves the several EPA regions. In reviewing grant applications and in determining conditions which will be imposed for the receipt of particular grants, Region 5 occupies a universe which includes the Great Lakes as well as the Ohio, and much in between. Region

4 looks at the Southeast from Atlanta where the population pressures and peculiarities of Florida's development may seem more compelling than the needs of Ashland or Louisville and the many smaller communities along the way. To Region 3, the balance to be sought is between the needs and opportunities of the industrialized lower Delaware Valley and the more thinly settled reaches of West Virginia's portion of the Ohio River. For the New York City based Region 2, the Ohio is a long way off, of peripheral concern in problems and population and less demanding of attention than Puerto Rico for which it also has responsibility.

The focus which each of these EPA regions must preserve cannot be gainsaid and probably should not be altered. But since the Ohio is also a unity, there should be some mechanism for encouraging administrative jurisdictions organized on a different logic to accommodate, in so far as they can, to the activities and policies of the others who share the Ohio and affect its use and development. ORSANCO could be that mechanism and has responsibilities more directly suited to the task than any other agency.

The designation of "water quality limited segments" also needs to be coordinated both laterally across the river and on an upstream-downstream basis. While the Ohio is a relatively wide stream and so may vary in quality from bank to bank, degrees of treatment and limitations of discharges above and beyond "best practicable treatment" or "best available treatment" should be coordinated for both sides of the river, regardless of state or regional boundaries. Further, the determination of how much and what kinds of effluent can be put into particular stretches of the waterway should not be made only with reference to the immediate vicinity. Questions of equitable use of the waste loading capacity among the states must be considered. These encompass upstream-downstream relationships as well as lateral ones.

The possibility of interstate allocation of waste loading capacity does not now seem to compel attention on the Ohio, except perhaps in stretches encompassed by the Cincinnati and Louisville metropolitan areas. However, in years to come, further population pressures and industrial growth are likely to make such allocations real necessities. The direct and indirect use of water for energy production clearly is going to affect temperature, quantity, mineral content and perhaps radioactivity. Tolerances for these factors will have to be assessed for long stretches of the waterway and the just shares of the communities and states negotiated. To make determinations on the basis of individual permits may be too atomistic. At stake is the economic welfare and convenience of many millions of people. ORSANCO is not likely to have the power of decision in these matters. The compact does not confer any such authority beyond standards making, nor would its exercise by the interstate agency likely be politically acceptable. But ORSANCO is and will likely continue to be the possessor of the most complete and most impartial body of information and analyses on which the decisions can be made. As such, and as the joint creature of all the contending jurisdictions, ORSANCO could provide an invaluable stimulus and forum for negotiation of the issues and development of the equities.

There are other kinds of interstate, interagency and interregional problems which are sometimes revealed by episodes, but which may also signal persistent conditions having interjurisdictional effects. One such is the recurring fishkills in various parts of the Basin. In the past several years, these have occurred at the Virginia-West Virginia line on the New River and on the New York-Pennsylvania stretch of the Allegheny. The causes are sometimes in dispute or unknown. On other occasions they are readily determinable but may highlight conflicting interests on either side of the jurisdictional line. The need to investigate such episodes or conditions and to formulate corrective or preventive action is clear.

In some instances, neither of the states involved has been able to concentrate the resources required to investigate the problem systematically or intensively enough to produce an answer. Furthermore, where the parties may be aware that fixing of blame is a possible element in the investigation, neither side may be willing to accept the other's fact finding. If its knowledge of the Basin's waters and its lack of partisanship is appreciated, ORSANCO might qualify as the most appropriate fact finder and recommender of remedial action.

Pollution from Nonpoint Sources.

The realization has been growing that nonpoint runoff from urban areas and agricultural lands is a major contributor to deteriorated water quality and that it cannot be dealt with by discharge permits or effluent limitations. What to do is a largely unsolved problem, perhaps at a stage of consideration analogous to that of point source pollution thirty or forty years ago when the states were formulating their first comprehensive water pollution control laws.

Every state and the Federal Government must consider the problems of dealing with nonpoint sources, but it may be hoped that some of the duplication in such consideration can be avoided. Just as regional leadership was useful in formulating the early water quality standards for the Ohio, so regional and national approaches to the study of nonpoint sources may be fruitful. As the catalyst and as a forum in which all states concerned in the Basin, and several EPA regions as well, can come together for the discussion of common problems and for the formulation of similar programs, ORSANCO may have an opportunity to facilitate advance in the control of nonpoint sources. ORSANCO could take the lead in defining and quantifying the problem and its effects on river quality. Insofar as we have been able to ascertain, this has not been attempted as yet. In this respect, ORSANCO's role could be similar to that which it fulfilled in the 1950s through the work of its industry committees on the point source problems of individual types of manufacturing or mining.

The compact does not provide any powers which would permit ORSANCO to undertake a regulatory role in dealing with nonpoint sources. Indeed, such regulation probably will involve land use controls as well as measures

designed to affect farming practices and municipal sanitation. However, since there is still little consensus as to what should be done, the absence of regulatory authority should not be an obstacle to ORSANCO participation in the consideration of the problem, especially with regard to its specific ramifications in the several parts of the Ohio Basin.

Mine Drainage.

A problem much longer recognized is that of mine drainage. Active mines can discharge huge quantities of acid and other pollutants. An even more perplexing problem is presented by the abandoned operations where the land is no longer of value to the owner because the mineral wealth has been extracted. How to secure pollution control and abatement has taxed the ingenuity of many minds.

Many of the state water pollution control agency personnel suggested to us that ORSANCO should give greater consideration to the mine drainage problem. Their wishes that this be done appear to spring from the fact that so many parts of the Basin, from near its headwaters to its lower extremity, have the concern in common.

In the past, ORSANCO's Coal Industry Committee has gathered and made available information on mine wastes and on the practices of the Industry. Undoubtedly, the Commission could continue to provide a forum for discussion of mine drainage. In doing so, however, it should be aware that other agencies and organizations are also in the field. The Appalachian Regional Commission has given much attention to the problem and is likely to continue its interest. There is now in existence an Interstate Mining Commission established under a compact among mineral producing states, both in and out of the Ohio Basin. Further, the individual states and the Federal Government have considered and undertaken programs of mine sealing and other measures.

There can be no doubt that the subject is important and that it is of substantial concern throughout the Ohio Basin. But under present conditions, it is necessary to appreciate the limits of ORSANCO capabilities when making proposals in this field. To the extent that they are known, the regulatory powers appropriate to deal with mine drainage are largely outside those given to the interstate agency in its compact. For example, the laws regulating mining methods and practices and providing for the rehabilitation of mined lands are not generally within the purview of water quality agencies. They involve land use more than they do water pollution control. Similarly, measures of a public works or financial character seem to be either beyond ORSANCO's authority or better performed by others.

Accordingly, it would seem that because of its regionwide incidence, mine drainage and other problems associated with mine wastes should be kept in mind by ORSANCO, but its role should be primarily as a stimulator of interest and action by others.

Ground Water Management.

A subject which has a less obvious impact on stream quality but which is important is that of ground water management. One would normally not suppose that an interstate water quality agency should concern itself with such a matter. While the problem of ground water quality may be common to all of the jurisdictions, the aquifers or pools involved are interstate only in some instances. Moreover, the states in the ORSANCO Compact have so far done relatively little to manage their ground water resources.

The Delaware and Susquehanna River Basin Compacts give the commissions established by them some authority over ground water through the power to review and approve projects having a substantial effect on waters of their respective basins. Since ground waters are "waters of the basin", significant withdrawals or other actions which materially affect quality can come within the regulatory purview of the interstate agency. However, the ORSANCO Compact contains no provisions of a similar nature.

Nevertheless, the Commission has become engaged in one endeavor which is related to ground water quality. It has compiled a registry of underground injection wells. If kept up-to-date, this registry could supply a basinwide inventory of points of waste discharge to the subsurface and information concerning the practices at these locations. The ability to compare practices from state to state within the Ohio Basin can be of value in helping each jurisdiction to formulate and administer its own programs for the control of underground injection wells.

The subject is also one, owing to its relative newness, in which ORSANCO could provide useful service as a forum for discussion, dissemination of information and development of improved criteria for such installations in order to protect overlying usable ground waters and the surface. A step in this direction was Commission sponsorship several years ago of a comprehensive report setting forth both administrative procedures and geological considerations for control of injection wells.

Power Plant Siting.

The location of a wide variety of facilities having environmental effects is becoming a matter of increasing concern. In general, land use regulation is a matter for local governments, but increasingly with a state ingredient. Except for the efforts of the Lake Tahoe Regional Commission (California and Nevada), no phase of the subject has yet become part of the responsibilities of an interstate agency. At least, this is true if one puts aside the general interest evinced by regional planning agencies which do not have regulatory authority.

However, the siting of facilities which account for large and crucial discharges into the river system can have a direct bearing on water quality

and its management. This has become an issue of concern in respect to new power plants, both conventional and nuclear. Moreover, effects on water temperature, radioactivity concentrations and stream flow can be interstate in character.

Through its Power Industry Committee, ORSANCO has already provided a convenient means of making known to all member states the plans for new power plants in the Basin. It is thereby possible for the water quality agency of a single state to know how installations in another jurisdiction may affect its concerns. This kind of activity by ORSANCO is beneficial and should be conscientiously pursued.

Research.

Each of the four subjects mentioned in the immediately preceding sections of this chapter is one in which approaches and solutions need to be developed. Since the Ohio flows through varied country that reflects most of the life styles and economic profiles found in the nation as a whole, it would be possible to identify many other problems in water quality management for which research must help provide the answers. Furthermore, if we are serious about our commitments to clean water, massive research undertakings must be part of the overall water quality management process.

Everywhere one turns, it is possible to identify potential performers of research. The universities consider it one of their major functions; the Federal Government gives grants and does some of it directly; private industries pursue it within the limits of their own recognized self interest. But the view is widespread that no one is adequately engaged in the research necessary to answer the technical and institutional questions important for improved water quality management.

The difficulty is that research takes investments of funds, most often without any direct or immediate expectation of dramatic or even tangible return.

ORSANCO lacks the funds and the staff necessary to engage in research on a significant scale. However, there are limited research roles which ORSANCO could consider and that would be of substantial value.

A number of the other interstate agencies, both in and out of the water quality field, have on occasion provided sponsorship for research activities. ORSANCO itself has had some experience with this type of activity--notably in the instance of its 1959 aquatic-life resources study as well as in the matter of subsurface disposal practices.

Given present patterns for organizing and administering research activities, there are some attractions in their performance under the auspices of an interstate agency. Individual states are so heavily involved in operational and regulatory activities, that they do not normally

think of themselves in connection with research, except perhaps as users of the results. EPA, too, is primarily concerned with regulatory activities. Its research function is oriented toward providing the funds with which water quality research can be done.

As a regional agency charged with seeing to the water quality welfare and needs of an eight-state basin, ORSANCO is in a particularly good position to identify and focus interest on common problems needing investigation. Whereas an individual state may feel that it has no warrant to take the leadership and responsibility for a problem which, if solved, will benefit its neighbors fully as much as itself, the interstate agency can act for several or many who are similarly situated.

The first focus for ORSANCO should be to identify matters on which research would be particularly useful to the Basin. It should then attempt to interest those with research capabilities in undertaking the assignments. Preferably, ORSANCO should seek to persuade others to use their own resources for the studies and projects. However, in a limited number of instances, and where others cannot be induced to proceed on their own, ORSANCO could act as a grantee and as an active entrepeneur to put the needed resources together for the accomplishment of a research undertaking. In such circumstances, ORSANCO could perform the functions of project management and disseminator of the results. A precedent exists in the phenol treatment plant-scale research sponsored by ORSANCO in the early Fifties.

The number of projects and the variety of subjects on which ORSANCO sponsored research could usefully proceed is very large. Any specific comments should be treated only as possible illustrations.

For example, applied research is needed on combined sewer systems in urban areas. The growing and much emphasized use of secondary treatment may produce many situations in which the efficiency of the sewer system is no more than one-half that of the treatment plant and in which periodic combined sewer overflow seriously undermines the value of the entire treatment process. Strategies should be developed to minimize the problems caused by combined sewers and to determine their true load impact on the waterways.

To postulate water quality conditions on the basis of treatment plant effluents is certain to yield erroneous results. The influence of industrial wastes entering combined sewers (including actual pretreatment practices) and of nonpoint contributions to storm water must be taken into account. Especially the discharge of heavy metals, oil and grease, and other toxic substances into municipal systems should be investigated.

In connection with any ORSANCO sponsored research, however, a caution should be voiced. Research administration cannot be a passive activity, if the results are to be good. It is not enough to act as a collector and disburser of funds, or even to frame the initial specifications for a contract. The administering agency must be willing

and able to keep close watch on the performance of the research which it sponsors and must have the capability to direct and monitor it intelligently.

Technical Assistance.

An area in which the benefits of cooperation have long been thought to lie is technical assistance. Individual jurisdictions cannot justify or afford experts in every field. Water quality management has its share of specialties and problems which are beyond the competence of sanitary engineering and other technical personnel.

The Federal Water Pollution Control Act Amendments of 1972 point up the problem by specifically adopting an industry by industry approach to the formulation of requirements for waste discharges. Even EPA, with its nationwide responsibilities, has not sought to recruit in-house capabilities for all the specialties but it relies heavily on contract procurements to perform the studies needed in the formulation of effluent limitations and other requirements which particular classes of dischargers will be expected to meet.

It seems to make sense that the expertise which individual states cannot afford but must have should be maintained by a central source and made available as need arises. ORSANCO could provide a pool of such experts. But to do so on a regular and comprehensive basis would require a large staff with varied talents. Even so, the usual experience with technical assistance is worth bearing in mind. Most agencies which are capable of providing it come by specialized personnel because of operating or regulatory programs or research in which they are themselves heavily engaged. The demands of the agency's own programs are likely to consume the time of the very people who could provide technical assistance.

Accordingly, it probably is not realistic to conceive of technical assistance as a separately staffed or programmed function. Nevertheless, if ORSANCO develops a strong set of programs along some of the lines presented in this chapter, it will have personnel with special knowledge and skills not otherwise sufficiently available in the Basin and not duplicated by EPA or the states. If ORSANCO becomes known to have a technically expert staff in certain fields, it will have opportunities to give advice and to help both the states and EPA with special problems.

One such kind of possible assistance was mentioned in connection with the discussion of enforcement when it was remarked that personnel from the ORSANCO monitoring and stream survey programs could provide expert testimony at hearings and in litigation. It also seems that ORSANCO could assist other agencies in the design of water quality data collection and analysis systems. The range of potential opportunities for service is large, but specific applications must await the choice by ORSANCO of the program elements which it is to develop in depth.

Training.

An activity similar in its import to technical assistance is training of personnel. The difference is that the former supplies capabilities which the recipient is unable to provide for itself or which it would be inefficient for the agency to maintain on a regular basis, while the latter develops the capability on the recipient's own staff. The types of functions may also differ in that technical assistance is generally conceived as the provision of highly skilled or professional help, whereas training may be provided for any level of employee.

EPA regards training with special favor in evaluating applications for Section 106 program grants. The reason is that effective personnel improves the end result and so may be expected to obtain better water quality from a given quantum of funds and equipment.

The point was first conceived primarily in terms of the effectiveness of sewage plant operators. During the 1960s, it was often remarked before Congressional committees and elsewhere that the quality of effluents was usually much lower than the plants were capable of providing and that the reason was faulty operation and maintenance.

Self monitoring is stressed in the Federal Act Amendments of 1972. Many municipal treatment plant laboratories are at present of limited value. A treatment plant operator training activity would strengthen ORSANCO's program. Many of the treatment plants within the ORSANCO area have been upgraded, or will be, to provide secondary treatment. The secondary treatment plants introduce a biological step in treatment which causes additional problems for the plant operators. While a laboratory was desirable for efficient operation of a primary treatment plant, it now becomes a necessity to operate a secondary treatment plant. The data generated by such laboratories is now meant, among other things, to aid the States and EPA in its compliance monitoring program.

At the present time, operator training is offered in short courses given by universities, regional laboratories of the U. S. Environmental Protection Agency, the states, and in-house training by the larger sewerage treatment plants. Many of these courses are not suitable for training of the laboratory personnel or treatment plant operators who must perform the laboratory tests in smaller plants. The inadequate background of the operators plus the fact that class sizes are usually large make instruction difficult. There is need for more individualized instruction in the relevant laboratory procedures.

ORSANCO could visit, upon invitation, treatment plants (especially the smaller ones) to provide personalized instruction in performing the necessary tests which conform to Standard Methods. The teaching program could provide for a visit by a graduate chemist and sanitary engineer to the individual plants that express an interest in such

training. The sanitary engineer could explain the need and the use for the particular tests that would be performed, and the tests demonstrated and discussed in detail by the chemist. Assuming the personnel were made available, this type of training could be instituted immediately. More elaborate and complex training activities might take longer to develop.

The Interstate Sanitation Commission has a training program for this kind of personnel which is fully utilized and well received. It does not concentrate on the more sophisticated operational tasks. Rather, it specializes in bringing simple instruction into plants to make it possible for employees with little or no previous technical training to perform the basic laboratory tests and other operations required for the monitoring of processes and effluents. The training emphasizes individual instruction on the job rather than seminars or courses to which large groups of operator personnel and candidates are brought for formal in-service and pre-service programs.

The waste treatment agencies in the Greater New York Metropolitan Area have as much access to college and technical school instruction and to the regular courses for plant operators as do most other places in the United States. Yet, this kind of service has demonstrated its usefulness. Accordingly, it might fill a need that appears so far to have gone unfulfilled in the Ohio Basin.

The disadvantage of such a program from the ORSANCO point of view is that the Basin is very large and the only Commission base of operations is Cincinnati. This is a central location and from it a significant segment of the Ohio could be reached. But unless the kind of training program here being discussed could be decentralized, it would likely not benefit all parts of the Basin or all of the states in the Compact.

Within the limits of its resources, ORSANCO has engaged in some activities that might be regarded as training. Its occasional clinics and seminars to disseminate findings of its industry committees and developments in electronic monitoring could be so viewed.

As ORSANCO develops unique services for the Basin, it may be in a position to consider a training function if the states so desire. Perhaps the Commission personnel would have something to impart on a regular basis in fields such as the management and use of water quality data. The point is that a training function should be associated with the strengths in the Commission's programs so that the teaching personnel can bring knowledge and skill to the instructional process.

Information Dissemination and Public Relations.

Whatever the specific elements of the ORSANCO program, there is a continuing need for the agency to communicate with others. This is not a need coterminous with the generally understood domain of public

relations. Press releases, brochures, films, and public appearances all have their place. But it is necessary to ask why and when they should be employed. With whom should ORSANCO communicate and for what purposes?

The answers depend largely on what kind of organization ORSANCO proposes to be. To the extent that it is a technical arm of the state water pollution control agencies, the information it furnishes and the goodwill it seeks to build is with them. To the extent that it helps to administer Public Law 92-500 and otherwise assist with tasks in which EPA or other federal agencies have interests, the format of its information program must cater to that audience. In either case, the techniques and content of an information dissemination program are different from what they would be to reach the general public or the state administrations and legislatures. All of the last named can be important to ORSANCO. How these relationships should be handled is a question that also needs attention.

The Commission has prepared materials in the past which have been designed to inform the general public of its activities and of water quality problems in the Ohio Basin. This has been done through motion pictures (now totaling nine). It has also been considered that the annual report "Yearbook" should be attractively enough produced and written to serve a public relations function. To accomplish this purpose, and also because ORSANCO has been short of staff, the writing of its most recent annual report was farmed out to an outside contractor. Other public relations activities of ORSANCO have been very occasional and cannot be considered part of its regular program.

ORSANCO certainly should inform the public concerning its activities and the problems with which it deals. However, resources presently available for this purpose are extremely limited. In view of the urgent needs to strengthen its substantive water quality work, it does not seem that the Commission should devote any more than an occasional and relatively small amount of money to what is generally considered public information. The Commission must first concentrate on building a program which has clear value for the Basin, the member states and EPA. When it has made a good start in that direction, it will have something around which it can develop a meaningful public information program.

Despite what has just been said, it is important that the Commission staff prepare its own annual report and technical bulletins as it did until recently. At present, the first individuals who must be impressed are the officials of the party states. They must be ORSANCO's immediate reliance for support. This argues for a good and informative technical report on Commission activities. Those who have been directly engaged in the work are best equipped to report on it. If funds are available to secure public relations or other editorial advice to make the report attractive, such an effort may be desirable. However, first emphasis must be on the substance rather than on the form. The preparation of documentaries and other informational materials is a worthwhile service.

The only question is where this should stand in the order of priorities. Since ORSANCO is in the best position to see the Basin as a whole, its production of an occasional film or similar undertaking is in keeping with the agency's overall mission. It may also help to maintain and enhance its image with public interest groups in the region. However, the next several years should make heavy demands on ORSANCO's resources for staff expansion and the development of its technical programs.

Contacts with the state governments and the several EPA regions have fallen into disrepair. This is probably less true of Region 5 than of any of the others because the Director of that EPA Region is an ORSANCO Commissioner and the agency's program grants are handled through Chicago. However, it is disturbing to report that in many of the ORSANCO states where we conducted interviews, we were told that it has been a very long time since the ORSANCO staff head or any of his senior employees visited the state capital. We understand that the new Director is aware of this shortcoming and is undertaking efforts to remedy the situation. It must be emphasized that personal contact between the ORSANCO staff and those in the states and EPA whom the interstate agency serve is essential. In its absence, the impression gets abroad that ORSANCO is a distant, do-nothing organization. Further, the neglect of contacts at the state capitals and EPA regional headquarters limits opportunities for ORSANCO to ascertain what the needs and wishes of the interstate agency's most important constituents may be.

In recent years, ORSANCO has devoted much effort in its information dissemination program to its monthly publication "Monitor". This is a selective presentation on a frequent periodic basis of significant quality data gathered by the monitoring system. As pointed out earlier in these pages, there is considerable doubt as to whether this publication serves the most useful purposes possible. In our visits to the states we have too often learned that "Monitor" is simply filed and seldom consulted, or that no one has a clear idea how and to what extent the data are used.

This suggests a serious need to rethink the entire information dissemination program, to identify specifically the intended audience for each kind of ORSANCO communication; to formulate reasonably definite ideas as to what ORSANCO would like or expect recipients to do with the information; and to devise modes of communication that will fit each purpose. An illustration of how ORSANCO data should be aimed directly toward those responsible for or capable of a specific response is presented in the portion of this chapter dealing with monitoring and related data programs. Moreover, more direct and pointed transmissions of data would repeatedly bring ORSANCO to the attention of the recipient agencies and individuals in ways that point out the vitality and usefulness of the ORSANCO operations.

One step removed from the water pollution control agencies are the higher policy making levels of the member governments -- particularly

the Governor's offices and the state legislatures. Whether and to what extent ORSANCO should seek direct contacts with them is a difficult question. Their knowledge that ORSANCO exists and is a worthwhile agency is important. These instruments of government often determine what forms of organization will be employed and what jurisdictional arrangements will be made to carry out water policy. This includes its intergovernmental aspects as well as those which are entirely internal to a single state. Accordingly, their knowledge of the realities of intergovernmental relations and of the roles which ORSANCO could play is essential in advancing a constructive set of ORSANCO programs and in protecting the agency from inadvertent inroads on its functions and financial resource base.

However, the position of the heads of the state water pollution control agencies on ORSANCO as commissioners must be considered. In the past, they have been relied upon as both the supporters and interpreters of ORSANCO needs and program to their state governments. In significant measure, this should and must be so. However, this derivative kind of contact is sometimes not enough when legislatures and budget officers ask questions, or even worse when they have unspoken doubts in their minds.

ORSANCO has not sought to use its citizen commissioners as emissaries to their state governments nor does it appear to have given them any other tasks of a representational character in dealing with citizen organizations. Some ORSANCO commissioners have been appointed because they represent Industry, civic organizations, university communities, or local governmental interests. But we are not aware that any of them have been asked by ORSANCO to perform specific tasks involving contact on the part of ORSANCO with these agencies and interests. For the citizen commissioners, as well as for the state environmental officials, the representational function should go in both directions. This could forge links between ORSANCO and the general public that do not now exist.

It is important to make government officials and the general public aware of the interrelationships which establish the Ohio River system as an entity. ORSANCO is peculiarly fitted to do this because of its data gathering and analysis functions. Some of the state water pollution control agencies have told us that they would like to have ORSANCO materials which they could use and distribute in explaining the problems of the Ohio Basin and in providing information concerning measures being taken by other states to deal with them. Such a service would be of benefit and could strengthen ORSANCO's ties with civic organizations and other public interest groups throughout the Basin. In considering matters of this kind, however, ORSANCO must make an appraisal of the dollars which it is justified in committing to such endeavors. If, as we believe, it may ultimately become necessary to make equitable allocations of waste loadings to the individual states, an appreciation of the integral aspects of the river system will be essential to gain public acceptance of and cooperation in the negotiation and administration of such allocation on an equitable basis.

CHAPTER 4

Priorities

ORSANCO has two paramount program needs. One is to carry on its data collection and analysis activities more comprehensively and purposefully. The other is to add planning activities which will give the interstate agency the capability to identify the water quality needs of the Ohio Basin, the probable course of future developments which will affect those needs and impact on the quality of river system waters, reveal and assess the interjurisdictional relationships involved and display the factual and conceptual frameworks and alternatives applicable to present and possible future actions of the state, federal, local governmental, and private entities which develop, manage, regulate, use and seek to conserve or improve the waters of the Basin.

In considering the possible program activities for the interstate agency, it is unrealistic to act as though all the subject matter elements presented in Chapter 3 are equally open for immediate implementation. ORSANCO already has investments in equipment and facilities, a staff (some of its members with years of service), and a set of long standing relationships with state and federal agencies. Major changes, including some of those which may be most desirable, will take time to be made effectively. Even if the Commission should wish to engage in all of the activities outlined in Chapter 3 at levels sufficient to be productive, it could not do so. Accordingly, identification of priorities for ORSANCO must consider both the needs of the Basin and the state and federal agencies which have responsibilities related to its water quality, and the pace at which the interstate agency can develop its performance capabilities in various fields.

During recent years, ORSANCO has not been as vigorously active as it should have been. Accordingly, it is at least as important for the Commission to perform effectively the more important of the functions in which it is already engaged as it is to add new ones.

A program activity for ORSANCO can be either operational in the sense of its robot monitoring and data processing, coordinative of the activities and plans of others, catalytic in that it provides the encouragement and impetus for action by others, or cooperative in that it is performed partly by ORSANCO and partly by agencies of the member states, the Federal Government or others. In identifying a program item priority order for ORSANCO, the discussions in Chapter 3 will not be repeated. They should be consulted for accounts of the specific role and function or approach which we conceive suitable for the interstate agency in the particular circumstances of the Ohio Basin.

However, it is important to emphasize that there are relatively few activities which can be performed one hundred percent as coordinative or catalytic undertakings. Unless the agency's own personnel are engaged actively enough in a particular line of activity, they are not likely to have or maintain the degree of professional competence, understanding or imagination necessary to make them useful in the stimulative functions. Nor will they likely have opportunities to achieve and hold the respect necessary to be acceptable as negotiators,

leaders, or representatives of the state and federal water quality programs for whom they are suppose to serve. Accordingly, ORSANCO must do enough of the actual work in enough of the fields so as to be a viable resource.

The Stream Data System.

The monitoring program should continue to be a primary activity of ORSANCO. As explained in Chapter 3, it provides an essential basis for water quality management planning, regulation and operating activities of the states, federal agencies and the Commission itself. Moreover, it is a function for which ORSANCO is presently better prepared than any other. Consequently, it affords the firmest base on which a strengthened ORSANCO can be built.

However, we believe that it is unfortunate to continue to think of the program as simply one for monitoring. This way of regarding the program probably originated from the heavy reliance to date on the robot equipment and its attendant data processing operations. However, this method of data collection and analysis is only a technique for the assembling of information and its conversion into a meaningful picture of stream conditions in the Ohio Basin. It would be more helpful to conceive of the program in terms of this objective than in terms of a particular means for approaching the result.

Several data collection, analysis and reporting methodologies were identified in Chapter 3. ORSANCO should give the highest priority to welding all of them into a well rounded, accurate and instantly usable stream information system.

Robot monitoring should continue to be employed and perfected for those things which it can do best. Although expensive in hardware, it is saving of manpower and so cost efficient in the long run. Moreover, ORSANCO has already made much of the necessary investment.

However, thorough visual examination of the river system, accompanied by the taking and analysis of manual samples, is also essential. This should be added to the ORSANCO program by employing one or more of the administrative arrangements suggested in Chapter 3. In combination with the automatic monitoring, the stream survey method would provide truly comprehensive and detailed knowledge of stream conditions.

The maintenance of a data bank and current interpretative reporting of items needing attention by the state and federal agencies are closely associated elements of an utilitarian stream data program. They should not be considered as separate items.

Planning.

Planning is a logical next step from data collection and analysis. Of course, it requires much more than the information which ORSANCO itself will develop because water is a supporting resource rather than an end in itself. Water is to be placed and maintained in a particular condition so that it may be suitable for the uses to be made of it. Accordingly, the ORSANCO knowledge

and competence must extend to an understanding of the uses and the place which the waters of the Ohio River system have in the life of the Basin's people. The objectives set in applicable statutes such as the Federal Water Pollution Control Act and the various state laws also must be taken into account.

Moreover, planning is the principal tool that ORSANCO can employ to coordinate the actions and policies of the member jurisdictions and their agencies in respect of the Ohio Basin. Since ORSANCO is a forum for the furtherance of intergovernmental cooperation rather than the arbiter of the destiny of the Ohio, its chief impact is in the basis that it can provide for the policy, operating and regulatory programs of the states, federal agencies, and to a lesser extent, local governments and the private sector. The success which ORSANCO may hope to have in coordination will come from its ability to marshal facts and to apply them in persuasive fashion whenever it seeks to promote the meshing of the standards, managerial activities, public works program, and other water quality related activities of the public and private entities that have effects on the Ohio River system.

To these ends, a number of predictive and analytical methods can be used. Deserving of special mention among them is stream modeling. ORSANCO has already undertaken such an activity. It should be expanded so that it ultimately encompasses the entire Basin and all of the significant parameters which are or may become subject to regulatory action or further planning and developmental concern. While other agencies may also find it useful to do stream modeling in their segments of the Basin, ORSANCO's work should constitute the centerpiece of any such efforts. The reason is that only an interjurisdictional approach can lead to development of a comprehensive model of this interjurisdictional river system.

Accordingly, ORSANCO should prepare itself to assume the role of lead agency or participant in planning undertakings.

Coordination and Accountability.

Coordination and accountability appear third on this list of priorities. Nevertheless, they are of at least equal importance with stream data and planning programs. However, they are different in kind from any of the other activities in which ORSANCO might engage.

Coordination and accountability are not substantive subject matter areas. Rather they are techniques and procedures. Effective conduct of them must be built on other programs in which ORSANCO engages.

It is sometimes an express or tacitly held view that coordination consists of providing a meeting room, sending out invitations to confer and furnishing a professional or technical secretary to take and distribute minutes. These services are often indispensable, but they constitute only some of the mechanical tools of coordination. They should not be mistaken for performance of the function.

ORSANCO would have no ability to promote the coordination of stream standards among the several state portions of the river system if it did not have a stream data program to provide the substantive knowledge on the basis of which to call to the attention of the states and EPA the interjurisdictional problems and possible approaches to them.

It may be doubted that any agency will be able to have a catalytic or coordinative input into Section 303 (e) plans made by the states for their parts of the Ohio Basin, unless it is otherwise sufficiently a participant in planning activities to understand the 303 (e) plans, to acquire the insights that make competent analysis possible, and to command the professional respect of the agencies whose planning it seeks to coordinate. Similar observations apply to river basin planning pursuant to Section 209 of the Federal Water Pollution Control Act and areawide waste treatment management planning pursuant to Section 208.

In those instances where it is desirable for ORSANCO to provide leadership, the need is for substantive programs from which to develop both the claim and the competence to lead. The technical expertise or policy creativity essential to anyone who would make worthwhile suggestions to others concerning what they should do is not found in isolation. If recruited by ORSANCO from the outside, individuals having these attributes might perform coordinative functions for the interstate agency on the basis of their previous knowledge and experience. But once in ORSANCO employ, such staff members can keep and further develop the ability to serve as coordinators only if their work at the interstate agency gives them constant and active participation in the program areas where they are to perform the coordinating function.

The usages of accountability are of the same order. ORSANCO is neither strong enough nor the type of agency which is able to compel obedience from the states, EPA and the Corps. The data which ORSANCO collects and the analyses which it makes of them must be the backbone of ORSANCO ability to make one agency or jurisdiction accountable to another.

As pointed out in Chapter 3, the most clearly identifiable accountability mechanism which ORSANCO has employed at some times in the past has been the status report on treatment construction projects. There are several reasons why the use of this accountability tehcnique has faltered in recent years. Perhaps the most important is that ORSANCO has had no more than an occasional and very limited contact with enforcement. Making these reports to ORSANCO has not seemed to the state water pollution control agencies to have any significant context of ongoing programmatic interchange with the interstate agency on enforcement matters. If ORSANCO should decide to undertake the enforcement related activities suggested in Chapter 3, and if its participation in interstate water quality planning becomes substantial, the state water quality agencies would better appreciate the value of status reports to ORSANCO and of any factfinding or negotiation concerning their contents done by or under the auspices of the interstate agency.

But even more than status reports, accountability is accomplished in a number of incidental ways which can be more effective than the consciously labeled activity. In the course of analyzing stream data and calling substandard water quality conditions to the attention of the state, federal and local agencies, accountability can be established in practical and concrete terms.

Another reason why coordination and accountability are unusual kinds of program items is that an idea of their significance cannot be gained by drawing up work plans for them and giving them assigned rankings in the budget and allocation of staff time. Undoubtedly, implementation of these program elements will take time and money. However, it is easier and more meaningful to think of such matters in the context of the standards making, planning, stream reporting and analysis or other subject matters to which they will be be applied.

Other Activities.

Chapter 3 discusses a large number of possible programs. From what is said there, the reader can gain some idea as to our estimate of the relative importance of each item. It does not seem useful to go further here in ranking present and possible ORSANCO activities on a priority scale. For the immediate future, good performance of the several functions just mentioned would command most if not all of the resources that the interstate agency can reasonably be expected to muster.

Nevertheless, there are other activities that ORSANCO can and should engage in on a modest scale or as spin off from undertakings of principal concentration. Synergistic effects can make a tremendous difference in the total worth of the agency.

For example, even if ORSANCO does not specifically identify technical assistance as a separate program function for which it is prepared on a major scale, the possession of a sophisticated competence in the collection and analysis of water quality data should mean the availability of staff whose expertise could be provided on a limited basis to the participating jurisdictions and perhaps, within reason, to others.

It was earlier suggested that ORSANCO may not be able to afford much attention for a public information program. However, if a number of the recommendations made here are implemented, the Commission may find that it is furnishing considerable information to important segments of the public. Good monitoring and planning programs would provide considerable material from which to fashion public information output.

CHAPTER 5

Resources for Program Accomplishment

Utilization of Present Resources.

In considering what the ORSANCO program should be, the Commission's present staff, equipment, and financial resources should not be controlling, although they must be taken into account.

As this report is being written, ORSANCO is undertaking some staff expansion. It also has unexpended funds left from Fiscal Year 1974 and, due to a projection of substantial increase in its monitoring and data processing activities, is budgeting on the basis of hoped for additional appropriations and program grant funds. Therefore, it is necessary to be explicit in identifying what is meant when discussing "current resources" and their allocation. In succeeding paragraphs, the expenditures and distribution of staff activities for FY 1974 will be treated as current. This is done because the year which concluded on June 30, 1974 is a certain and known quantity no longer open to the vagaries of shifts in plans. It is also a convenient base from which to begin the discussion because, at the time of writing, it still represents with reasonable accuracy the manpower actually on hand. The only exceptions are the adding of an Executive Director which occurred in August 1974 and an information specialist at the beginning of 1975.

The tables on pages 62-63 were developed by ORSANCO for use in its amended program grant application to EPA. They show the distribution of staff effort in the immediate past and as projected for the immediate future.

It is apparent that during FY 1974 staff time was fully committed and no additional activities could have been undertaken, nor present ones intensified, without adding personnel or otherwise supplementing the work force. Of course, it is always open to consider whether it would have been desirable to redistribute staff assignments, to eliminate or reduce concentration on some program items, and to substitute others.

The 1974 figures support what is already known: i.e., the monitoring and data processing programs dominate in any consideration of current ORSANCO activities. They account for virtually half of all Commission activity. Indeed, when the general administration of the Commission is put to one side, the figure is approximately two-thirds.

In view of ORSANCO's relatively modest resources, one may ask whether, this degree of concentration leaves enough to conduct any other programs at levels which can make them sufficiently effective. Meaningful coordination of the water quality and related activities of eight states, four EPA regions, and one or more other federal agencies as they impact on the Ohio Basin is a large responsibility. It should not consume the attention of an imposing bureaucracy, but it should receive at least several full man years of energy during any twelve month period.

Table no. 2

Man Power and Funding Requirements

ORSANCO - Program Plan - FY 1975

Comparison of FY 1974, 1975, & 1976

	FY 1974		Total Amended 1975-c)		Projected FY 1976	
	Man Years	Amount	Man Years	Amount	Man Years	Amount
Revenue from:						
Prior year carryover		$ 8,522		$ 90,336-b)		
States		220,000		220,000		$375,000
U.S. EPA Grant		268,200		351,049		376,300
Miscellaneous Income		6,323		3,800		3,800
Prior year receivable				11,200		
Income		494,523		586,049		755,100
Totals		$503,045		$676,385		$755,100
Activities:						
Monitoring and Surveillance	1-3/8	$ 71,732	3	$210,485	4-1/2	$252,700
Data Processing and Evaluation	5	131,666	7-3/4	222,800	9-1/4	239,000
Planning	1-1/4	26,486	1-1/2	41,400	1-1/2	46,300
Criteria, Standards and Special Studies	5/8	13,712	1/2	11,300	1/2	12,600
Enforcement	1/8	22,761	1/8	24,200	1/8	26,700
Public Information and Liaison	1-1/2	38,370	2-1/8	43,100	2-5/8	52,300
Administrative and Executive	3-5/8	96,782	4	123,100	4-1/2	125,500
Net Program Outlays	13-1/2	$401,509-a)	19	$676,385	23	$755,100
Funds Available-carried forward to FY 1975		$101,536				

(a- Reporting has been on a current year - FIFO Basis
(b- Excludes prior year receivable of $11,200 itemized below
(c- See page for details

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Table no. 3

Details of Manpower and Funding Requirements

Details of Amended FY 1975

ORSANCO - Program Plan - FY 1975

Revenue from:	FY 1975 Adjusted Man Years	FY 1975 Adjusted Amount	FY 1975 Addition Man Years	FY 1975 Addition Amount	FY 1975 Additional Req'd Man Years	FY 1975 Additional Req'd Amount	Total Amended 1975 Man Years	Total Amended 1975 Amount
Prior year carryover		$ 90,336-a)						$ 90,336
States		220,000						220,000
U.S. EPA Grant		268,200		$56,749		$26,100		351,049
Miscellaneous Income		3,800						3,800
Prior year receivables		11,200						11,200
Income		503,200		56,749		26,100		586,049
Totals		$593,536		$56,749		$26,100		$676,385
Activities:								
Monitoring & Surveillance	2	$159,536	1/2	$24,849	1/2	$26,100	3	$210,485
Data Processing & Evaluation	6-3/4	208,700	1	14,100			7-3/4	222,800
Planning	1-1/2	41,400					1-1/2	41,400
Criteria, Standards & Special Studies	1/2	11,300					1/2	11,300
Enforcement	1/8	24,200					1/8	24,200
Public Information & Liaison	1-1/8	29,300	1	13,800			2-1/8	43,100
Administration & Executive	3-1/2	119,100	1/2	4,000			4	123,100
Net program outlays	15-1/2	$593,536	3	$56,749	1/2	$26,100	19	$676,385

(a- Excludes prior year receivable of $11,200 itemized below

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Each of the other program items also has a threshold below which its performance becomes subject to question. For example, the table shows one and one-quarter man years of planning time during 1974. This figure, as the others on the table, was developed from the time sheet records of the Commission employees. The planning item included assistance with Section 303 (e) planning as required for performance by the states pursuant to the Federal Act, and internal ORSANCO planning. This latter comprises staff time spent considering how policy directives from the Commission of all kinds were to be implemented and how each of the several ORSANCO program elements should be further developed and administered. Accordingly, a very substantial part of the manpower allocation for planning could have been assigned to the "administrative and executive" category. It would seem that no time reflected on the time sheets was spent on the other kinds of water quality planning called for by the Federal Act or otherwise engaged in by the states, federal agencies, or other public bodies in the Ohio Basin.

Even though the time records and the ORSANCO developed tables appear to warrant this conclusion, our general observation leads us to wonder whether it is literally accurate and whether consideration of these other kinds of planning was in fact entirely neglected. Nevertheless, the point is a significant one. ORSANCO presently possesses relatively little planning capability and, without augmentation of staff in this area, it will not be able to respond satisfactorily to some of its greatest opportunities for service.

We understand that under the revised FY 1975 budget approved on October 25, 1974 two environmental engineers are authorized for addition to the staff. One of them is intended to have some responsibilities of a planning character. However, this position is not conceived to be that of a planner per se nor to add anything like a full man year of staff capability in the water quality planning field.

The Executive Director appreciates the need to reallocate staff responsibilities among present employees in order to secure more balanced coverage of the several program elements already underway or likely to be added in the near future. However, even when necessary reassignments are accomplished, the present staff will not be adequate. Accordingly, the intention to add as many as nine positions contemplates movement in an appropriate direction. Whether the projected types of new personnel are the most appropriate ones depends on the scope and emphasis of the Commission's developing program.

On a small staff, every person must be regarded as a major addition to overall capability. However, the Executive Director should not be thought of as a significant contributor to the operation of any of the specific program elements. No matter what his professional or technical education and experience, his full time should be spent in administering the Commission. In ORSANCO's situation, this means both oversight and direction of staff activities and the greater part of the work in keeping in contact with the commissioners and the higher officialdom of the

member states and EPA. Thus, in this discussion of staff available for performance of each of the program elements, no specific assistance is considered to come from the Executive Director.

In some respects, this exclusion of the Director overstates the situation. For example, should ORSANCO undertake to mediate interstate disputes or to participate in negotiations on behalf of the member states with EPA or the Corps, it is more than likely that the Director will be heavily involved. Nevertheless, it is only safe to consider that the information and analyses employed by him will have been developed by other staff members.

Similarly, the Director is likely to make more public appearances on behalf of the Commission than anyone else. His speeches and participation in meetings or interviews may be regarded as significant contributions to the information and public relations program. However, it would be inappropriate to look upon the Director as the ORSANCO public information officer or even to count such time as he may spend in these pursuits as part of the manpower allotment to a public information program.

Internal administration of the Commission received primary attention from the Acting Executive Director, the Business Officer and some significant portion of the three person secretarial force. Undoubtedly others also spent fractions of their time on administration and this would have to be taken into account in any detailed manpower study. However, for the level of precision required in this discussion, it may be considered that the two professionals and the three secretaries engaged in general administration represent a core for such tasks which must be assigned to this area regardless of the size of the staff and the extent of the ORSANCO program. Expansion or intensification of activities, if very substantial might require an increase in personnel for the administrative function, but program cutbacks would not likely make possible a significant reduction in the present administrative force.

It can also be assumed that unless ORSANCO becomes a very much larger organization than at present, relatively little increase in the general administration category will be necessary to service the internal needs of the agency effectively. In this connection, however, it should be observed that any major increases in staff will sooner or later require additional office space and furnishings. ORSANCO's present offices can accommodate only a modest increase in personnel. Nevertheless, we have not attempted to estimate costs for such an item.

The collection, analysis and reporting of stream data is now the interstate agency's largest activity. Consequently, most of the staff now at the Commission is suitable for such activities. It would be beyond the scope of this discussion to consider what replacements or substitutions may be necessary if some of the personnel presently assigned to this program element are shifted to other duties. Consequently, we will assume that the present staff members, or equivalent replacements, now assigned to the

collection, analysis and reporting of stream data will continue to be utilized for such purposes. It also seems likely that most of the augmentation of staff now planned will be in this area. The monitoring strategy calls for substantial expansion, but most of ORSANCO's personnel contribution should involve field personnel who will spend relatively little time at the Cincinnati office.

New Resources.

The discussion in Chapter 3 supports the idea that the stream data program should continue to be at the center of Commission activities. However, a more varied program is recommended. It is also urged that ORSANCO rely less on outside contractors and more on its own staff and coordinated undertakings with state and EPA personnel for performance of the work. If accepted, these recommendations would necessitate the addition of kinds of staff members not now employed.

Primarily, the additional need would be for field personnel to survey stream conditions by actually being physically present on the waterways, to take and analyze some of the samples, and to maintain the automatic monitors.

No hard and fast recommendations concerning numbers of personnel are possible at this time because much depends on the negotiated distribution of work among the states, federal agencies and ORSANCO. Likewise, estimates of direct costs to the Commission will vary, depending on the distribution of work in making stream surveys, taking and analyzing samples, and in operating the robot stations.

The type of staff not now possessed by ORSANCO, but essential to round out the data gathering system is field personnel. These should be kinds suitable for performance of two basic functions: visual inspection and manual sampling of the waterways, and routine maintenance of monitoring equipment. If ORSANCO makes arrangements with the states to perform some of the wet chemistry checks at the more distant monitoring stations it will be possible to reduce the interstate agency's needs for additional personnel assigned to maintenance. As noted in Chapter 3, it also would be desirable for such ORSANCO personnel to pay visits to stations in the ORSANCO network operated by others. This would be for the purpose of making sure that their procedures and performance are such as to supply data consistent in kind and quality with that obtained from ORSANCO's own stations. In addition, some of the Commission's senior professional and technical personnel who now rarely work outside the Cincinnati office should pay reasonably frequent visits to the field operations in order to maintain a comfortable familiarity with them, as well as for purposes of supervision.

No effort is made here to calculate how much additional staffing the field work of senior personnel would require in the totaling of man years of activity for ORSANCO. The reason is that it is impossible at this time to assess the effect of such redistribution of present staff assignments that might be made among existing personnel in shifting the emphasis of the data

gathering and analysis functions from essentially office situated work to a combination of office and field activity. It is certain, however that changes such as those envisaged in Chapter 3 would require the addition of some personnel whose primary work locations would be in the field. Individuals of this kind are not now employed by ORSANCO. Some of the present ORSANCO staff members probably would be capable of performing field work. However, their training, experience and compensation is more than called for by the necessary field functions. Accordingly, it would be an underuse of their abilities to reassign them in such a way.

Recognizing all the caveats already stated, one might reasonably consider an ORSANCO field staff of ten. This would include four sanitarians with enough education in the sciences to qualify them to inspect and appraise river conditions, and also to be the backbone of the ORSANCO component of the intensive stream surveys. In this connection, it should be noted that the 1976 projected budget for ORSANCO already envisages three "field aides" who appear to be fairly close to the salary level, and perhaps to the qualifications, which we would consider appropriate for the sanitarians.

The sampling and maintenance duties of the field force might be served by two electronic technicians and four semi-professional or semi-technical fieldmen.

It should be emphasized that these suggestions are based on the premise that large parts of the overall data gathering, analysis and reporting system will be performed by the states and federal agencies, but with ORSANCO coordination. It should also be understood that the personnel involved are not to be considered unipurpose staff members. To some extent, they may be used interchangeably on the several aspects of the field operations. Their presence in the field would give ORSANCO a dimension to its program which does not now exist and which could produce great flexibility.

The yearly operating cost for the field activities here outlined might total $146,400. A breakdown of this figure shows a budget allowance of $58,400 for the four sanitarians, an estimated $7,000 in travel expenses which includes gas, tolls, repairs, and finally $5,000 for depreciation of the vehicles. The total is $70,400. The initial capital cost is estimated at $20,000 of which $12,000 would be spent on the purchase of the four motor vehicles and $8,000 on necessary equipment for the motor vehicles.

To support the maintenance of the remote water monitoring system, two electronic technicians and four fieldmen would be hired at a yearly salary operating cost of $60,000. Travel costs and depreciation for two vans and two other motor vehicles would account for $4,000 and $12,000 respectively, giving a total of $76,000 for operating costs. An additional $18,000 would be needed to purchase and equip the four vehicles.

Differences in cost between the present ORSANCO stream data program and the one proposed in this report will depend in part on the amount of shifting of program emphasis and personnel responsibilities that actually

occurs. Some degree of lessened emphasis on robot monitors in favor of more manual sampling could mean that funds and manpower allotments otherwise destined for present categories could be used to accomplish parts of the new or expanded components.

Much also depends on the proportions of state, federal and ORSANCO personnel and other resources which will go to make up the cooperative undertakings. The ORSANCO budgets and staff allocations will need to reflect only the stream data activities being directly performed by the interstate agency.

The most clearly new item would be the stream surveys to be made by intensive physical traversal of the waterways in boats. Judging from the experience of the Interstate Sanitation Commission in conducting similar surveys, they could be accomplished for an expenditure of not to exceed $100,000 per year, if four surveys were done annually. This figure includes boat and crew rentals for a sufficient number of days to do the work. To the extent that state or federally owned boats can be contributed, the cost could be reduced. Also, it seems probable that, after the initial surveys establish a good data base, the number of surveys per year could be cut back.

Planning (including stream modeling and the several kinds of activity discussed in Chapter 3) would require the addition of a kind of personnel not now on the ORSANCO staff. It is true that senior professionals now in ORSANCO employ have had the kinds of experience on the job and with the Ohio Basin to engage in some activities of a planning character. Indeed, such attention as ORSANCO has been able to devote to Section 303 (e) Planning, as required of states pursuant to the Federal Act Amendments of 1972, has been accomplished by persons who are not planners by academic training or principal work experience. However, there are limits to what can be done by pressing staff members into service when their major interests and responsibilities lie in other necessary fields of interstate agency activity.

It may be possible to accomplish the stream modeling ingredient of the proposed planning program with present personnel. They are engaged in the work now. The amount of additional time that they could give to this aspect of the Commission program depends on the nature and extent of reassignments of work responsibilities that may occur in the process of strengthening ORSANCO's overall staff activities. However, nothing additional is suggested here because we do not anticipate that a significant increase in time spent on modeling should be projected until some of ORSANCO's other needs have been met.

To coordinate state activities for the Ohio Basin of the several kinds envisaged by the Federal Act Amendments of 1972 and to make contributions of a substantive nature to them will require personnel with specific water resources planning education and experience. The field is a large one and could justify more of a staff increment than is presently warranted in view of other needs. An addition of two or three such planners in the near future is highly desirable. At current salary scales, this would mean a

cost of $30,000 to $50,000 annually.

The addition of, or increase in the level of activity for any one or more of the other program elements suggested in Chapter 3 probably would involve cost factors. No effort will be made to estimate them here because they involve variables too numerous to postulate at this juncture. Much depends on the kinds of program elements which the Commission chooses to emphasize and for which it increases its staff capabilities. Moreover, the development of stronger and more varied programs will itself lead to a readiness to engage in some of the most vital functions of an interstate agency on a more frequent and sustained basis. For example, a more numerous professional and technical staff will find it easier to devote time to participate in the negotiation of interstate and federal-interstate matters, to undertake project management of research, or to render technical assistance. Assuming enhanced staff capability, some increment of these functions could be accomplished as by-product activities, or by adding only modest costs for limited travel.

Obtaining the Resources.

In FY 1974 ORSANCO expenditures were substantially below income. This was due to a temporary internal situation which made the agency less active than it would normally have been. As we have seen, the projections for 1975 and 1976 call for levels of expenditure which will require about fifty percent more in appropriations and grants than ORSANCO has ever received in the past. Moreover, the financial plans approved on October 25, 1974 and the program delineations on which they are based would fully commit both the funds which ORSANCO might previously have been expected to receive and the increased support being requested of the states and EPA. As these pages have shown, the current ORSANCO intention is to expand its program, although not entirely along the lines suggested in this report. Yet, the Commission has also evidenced an intention to reexamine its program in the light of this study and to make such changes as in its view may be warranted.

The main difference between the plan underlying the October 1974 budget projections and the recommendations contained in this report is that the former is more closely tied to a continuation of the Commission's activities in the present mold, albeit with considerable expansion.

Implementation of the recommendations made in this report could result in shifts of emphasis in the stream data system, with reductions in some aspects and increases in others. The overall program would be a larger one than the one presently envisaged by the Commission, but the costs to ORSANCO would not necessarily be commensurately higher. By redirecting or only modestly expanding some of their efforts in the Ohio Basin, the member states and EPA, acting in concert with ORSANCO, could acieve the more balanced and much more useful program of stream data collection, analysis and use.

Nevertheless, it must be recognized that a program which ascertains and accurately reports the wider range of quality conditions on a timely basis does require a greater level of expenditure than needed for a robot monitoring and attendant data processing operation alone. We believe that once the water quality management agencies, Governors, State Legislatures and EPA are aware of the differences between the results to be produced by the narrower and broader programs, it should be possible to demonstrate to their satisfaction the merit of the more comprehensive approach.

There are two elements of our recommendations which would most clearly result in greater direct expenditures by ORSANCO. These are the diversification or enrichment of program to be carried on by ORSANCO itself and the extension of the interstate agency's activities to include the tributaries on a more regular and consistent basis. The former is emphasized in Chapter 3 and the latter receives attention in Chapter 7. But even these new or broadened activities are not necessarily to be regarded as costs that would not otherwise be incurred.

In a number of instances, the program recommendations are for activities which will be performed to implement the Federal Act Amendments of 1972. As a practical matter, states will find it necessary to perform many of them with their own funds. Federal grants will provide only part of the cost. Where interstate agency performance is less expensive, more convenient, or productive of a superior result, entrusting the activity wholly or partly to ORSANCO may actually accomplish a saving or return the best value. Where the alternative is EPA or other federal agency performance, the advantages of ORSANCO participation may be financial, administrative, or in the promotion of better intergovernmental cooperation.

CHAPTER 6

Staff, Committees and Commission

Staff.

When this study began in May 1974, the Commission had thirteen employees, including one temporary and a long time senior employee who was Acting Director.

Of course, with so small a work force, it would be fictional to construct a table of organization that showed each person confined to one type of activity or even to those most suitable for his or her training and experience. But among them, they either were doing all that ORSANCO accomplished or they had to find such ways as they could of supplementing their input.

On August 15, 1974 a new Director assumed his duties. Early in 1975 an information specialist was added. Thus, at the time of this report, the staff totals fifteen; it has never been larger.

It must be borne in mind that ORSANCO is not intended to carry the basic responsibility, and certainly not the complete onus, for water quality management throughout the Basin. Nevertheless, even the conduct of the present ORSANCO programs at reasonable levels of performance requires greater professional and technical time and more supporting personnel activity than a staff of the present size can possibly provide.

The situation places the staff, and ultimately the Commission, in an unfair position. By purporting to run a program which tells everyone almost everything they might wish or need to know about water quality conditions on the Ohio, ORSANCO is placed in the position of embracing more than it can be expected to achieve. It has sometimes attempted to appear to do miraculous things and hope that they will be accepted as authoritative because they constitute the best that can be done under very limiting circumstances.

A belief that the system is doing more than in fact it can, stands in the way of improvement. Thus, it may be difficult to persuade the states and others that the expansion called for in the recent staff report on monitoring strategy, to say nothing of other meritorious changes, should be made.

For example, it has been explained to us that the policy of contracting out several of the agency's key operations is an advantage because it permits flexibility. This method of operating avoids building up a staff of a particular kind which might not be suitable if ORSANCO's work should undergo a change in emphasis. Even so, a degree of inflexible specialization has been produced by the need for several computer personnel who cannot readily share in other work.

Nevertheless, this may be so as a generalization, but it leaves the Commission with a staff whose capabilities are too narrowly restricted.

Contracting.

Contracting out the maintenance of the robot monitors makes ORSANCO completely dependent on the contractor. If there are no staff members who can regularly make visits to the monitoring installations and only one or two with training and experience that would permit them to evaluate what they might see on inspection, the Commission itself is in a poorer position to understand its own system, to develop improvements in it, or even to check on the service received from the contractor.

This may be a particularly opportune time to reassess the contracting policy. Now that expansion of the monitoring network is being sought, an increased volume of activity may be anticipated. It is generally the case that an operation becomes more feasible in-house as its size and frequency increases.

Of course, this is not to say that contracting is an inappropriate practice, or even that services received from present contractors are unsatisfactory. Many of the program elements suggested in Chapter 3 undoubtedly would require the services of contractors. However, the Commission staff should keep intimate control over ORSANCO's key operations. This is most likely to be achieved on an in-house basis.

Use of Committees.

Another device which has been used to supply resources not possessed on a staff basis is the extensive use of committees. As will be pointed out shortly, this is not the only purpose for their utilization. However, it has been an important consideration.

Preparation of industrial waste control manuals produced by ORSANCO in past years is a good case in point. Each such publication was developed by a committee composed of members of the industry concerned. Undoubtedly, this brought a great storehouse of expertise to the Commission at little or no expense. But for a public agency to depend so heavily on the interests subject to regulation could make ORSANCO vulnerable to criticism. Some might look askance at placing the imprimatur of a public agency on treatment practice manuals prepared by such sources, especially if they had reason to know that available technical supervision or evaluation from the staff was limited.

ORSANCO also uses a committee for its work on aquatic life resources. In this instance, the membership of the committee is recruited from persons who are experts in the field and who do not appear to have any affiliations of kinds that would be open to question. However, the formulation of a very limited program and the financial situation is such that the committee meets only several times a year and is remunerated only for days in attendance at meetings, including travel expenses. We understand that individual committee members do some work in the intervals between meetings on an uncompensated basis.

However, it is difficult to see how ORSANCO can sustain a meaningful effort relating to the problems of aquatic life on the Ohio in this way. The problem is compounded by the fact that the members of the committee are regularly resident and employed outside the Basin and so are unlikely to maintain an intimate knowledge of the river system and its environs. This limitation is mitigated only in part by the practice of selecting the Committee from among persons who have spent previous parts of their careers in the Basin. However, the committee approach would be only somewhat less undesirable as ORSANCO's principal reliance if its members were resident in the Basin.

The usual function of committees composed of persons not otherwise associated with a public agency is to provide advice and to help keep the agency informed of interest group opinion. Some of them may furnish information which lightens the tasks of the staff and which provides the agency's governing authority with parts of the background useful to the consideration of policy issues. However, the extent to which ORSANCO has relied on such inputs in the past as substitutes for or major supplementation of staff work is open to question.

This is even truer now than during the 1950s and 1960s. At that time, interest representation on the governing boards of agencies charged with regulation of water pollution was widespread and generally accepted. In more recent times, however, such representation has become less customary because of the feeling that it interferes with the objectivity of the public agency. Whether or not this has ever been so in ORSANCO's case is not now relevant. However, the development of a staff that can itself do the agency's work is vital. The importance of public confidence in ORSANCO's impartiality is beyond question. It should be emphasized that these observations are in no way intended as disapproval of the full use of advisory committees provided only that they are employed in ways customary for such bodies.

The kind of committee structure ORSANCO should have depends on the kind of agency it is to be. If ORSANCO adopts the premises underlying this report, and if its programs develop along some of the lines proposed here, ORSANCO will be a fact finding, planning and coordinating agency. Its data and views will have an effect on the regulatory policies and actions of state and federal agencies, but its own direct regulatory functions will be of a standby character and will come into play only occasionally.

Commissioners.

Each participating state and federal jurisdiction selects its own three ORSANCO commissioners according to its own laws and appointment policies. The patterns vary, and the exercise of executive discretion in the several jurisdictions can produce a shift in the kinds of members who compose the Commission as a whole. There is a considerable variety which, at least if one judges from member affiliations, produces a mixture of representative qualities. The largest single group is of officials who hold

full-time positions in the state and federal governments and whose responsibilities are directly in the field of water resources and environmental matters. The citizen commissioners are and have been variously drawn from academic life and industry. Presently, and for the first time in the Commission's history, one commissioner is the operator of a public treatment plant and another is a representative of a state League of Women Voters. Accordingly, there is at least some representation from officialdom, special interest groups, and the general public.

Two of the present intergovernmental commissions having water quality management responsibilities are federal-interstate compact agencies. This means that their compacts (those for the Delaware and Susquehanna River Basin Commissions) have been enacted by Congress as federal laws instead of merely being consented to by Congress in the manner of most interstate compacts. Another consequence is that the United States is a full party and has a vote equal to that of a party state.

As the Delaware and Susquehanna River Basin Compacts are much broader in scope than the ORSANCO Compact and include regulatory powers of kinds that could not be effective unless embodied in federal as well as state law, the status of federal-interstate compact rather than merely of interstate compact seems appropriate to their needs. In ORSANCO's case, however, much of the effect of a federal-interstate compact is achieved in practice by the presence of the three federal commissioners. This is the same voting strength as that of a party state, except that the compact excludes the federal commissioners from voting on the taking of enforcement action. Perhaps even more important than the vote is the fact that the federal commissioner who represents EPA takes an active part, both in the Commission and on its Engineering Committee.

It remains to be considered what kind of a body ORSANCO proposes to be and on that basis, to determine what the Commission itself and its committee structure should expect their roles to be.

Our suggested answer to the first part of the question has already been given. ORSANCO has its greatest opportunities for service as a fact finding, planning and coordinating mechanism. For this purpose, a commission composed partly of state and federal environmental officials and partly of properly chosen representatives of key elements of the public is quite suitable. However, the commissioners themselves are not likely to present an ideal distribution of persons who can represent or reflect in sufficient depth all of these points of view.

Further, the commissioners, if they act only through attendance at and participation in commission meetings, are not likely to have a determinative impact on the work of the agency. A one-day meeting held three times a year does not give a commissioner more than a cursory acquaintance with the problems and activities of ORSANCO. On the other hand, it may be unrealistic to expect much more from individuals who are unpaid citizen representatives. The public official members, whose service on ORSANCO is in the nature of ex officio duty, may be expected to devote considerably more time, and a number of them do. However, this fact alone gives the several kinds of commission members unequal influence.

The position and use of committees can help to redress the balance, at least so far as giving full exposure to the points of view of the varied constituency.

For this purpose, a proliferation of committees is not now necessary. A stream monitoring program, for example, does not require an industry-by-industry examination of problems. Although the kinds of planning and co-ordination that ORSANCO is most likely to be doing will benefit from a broad information base, they too are unlikely to require a continuous review from individual forms of manufacturing enterprise. The only foreseeable exception appears to be in the field of energy. The need dramatically to expand energy sources, and the pressures which this is virtually certain to put on coal production, as well as the use of all fossil fuels and nuclear materials, argue strongly for the rearrangement of some of the present ORSANCO committee organization to establish an Energy Committee which would encompass both mining and power generating activities. The other industrial pursuits could be represented on a consolidated Industry Committee.

An interest group which has not generally been considered by pollution control agencies is Agriculture. In the past, it has not been thought important to do so because Agriculture is not usually identified with point sources. However, there would seem to be at least two reasons why an advisory committee on Agriculture might be merited. One is that farmers are water users. Especially as supplemental irrigation grows in the more humid parts of the country, farmers will become increasingly concerned with the quality of water in streams in much the same way as industrial users. Secondly, if ORSANCO should decide to interest itself in the problems of nonpoint sources, Agriculture will be an important consideration. Under such circumstances, farm interests should have an input to Commission deliberation.

Another kind of interest which ORSANCO has constantly dealt with is that of local government. Cities, counties, and special districts are responsible for the collection and treatment of wastes, including their disposal. While the Commission itself presently has one member who is responsible for a local treatment system, the interests of local government in the quality of the Ohio are substantial and diverse enough to merit the kind of recognition that an advisory committee would accord.

Then there is the question of input from the general public. This is always difficult to obtain in a truly comprehensive fashion because most members of the general public are inarticulate or not sufficiently informed to present views on water quality issues in specific or tangible form. However, a committee that would have membership from civic organizations which display interests in water and from recreational interests could round out a balanced network of contacts for ORSANCO with the Ohio Basin community. ORSANCO already has such an advisory committee but needs to develop further its input.

If one of the aforementioned committees is inappropriate to consider a particular problem needing attention, the special committee device could

be employed. However, it is our belief that the proposed number and kinds of advisory committees would cover the desirable range of ORSANCO's public contacts.

Another reason to keep the number of regularly functioning committees at a minimum is that, in order to be most effective, each committee should receive regular staff services from and meet with an appropriate senior staff member. In some instances, it also might be desirable to place Commission members on one or another of the committees. There is precedent for this because at times in the past ORSANCO did designate a commissioner as liaison member on industry committees.

However, if either or both of these practices are to be followed, a large number of committees would place unreasonable burdens on staff time, on Commission members, or both.

Engineering Committee.

The Commission also has an internal committee structure for the consideration of such matters as policy, finance, and engineering matters. These are composed of Commission members and, in the case of the Engineering Committee, of a mixture of members and senior state and federal agency personnel having water resources responsibilities. Most of these committees require no special comment in this report. However, the Engineering Committee holds a special place and does merit discussion.

There is a feeling on the part of some ORSANCO commissioners and among others who have occasion to observe the Commission's workings that the Engineering Committee has at times become the principal policy organ of ORSANCO and that its meetings have sometimes made the important decisions. Those who express this point of view go further and assert that the Commission is merely a proforma ratifying body to make official what the Engineering Committee has decided.

These sentiments are reported here, not because they are necessarily correct, but because the Engineering Committee has over a long period of years been the place where substantive issues of water quality management on the Ohio are most thoroughly discussed. As such, they have provided a much better place than the Commission meetings to acquire an understanding of ORSANCO activities and of the views of the states concerning the interstate agency's role and program.

Perhaps "Engineering" is not appropriately descriptive of the Committee's scope. The rationale for the title is that the Committee is concerned with technical matters of sanitary engineering and related disciplines having to do with water pollution control. However, because its members are administrative heads or representatives of state water pollution control agencies, EPA, the Department of the Interior and the Corps, the Engineering Committee has considered water quality problems and programs more broadly than in terms of scientific or technical aspects.

This report has emphasized the importance of coordination as a function for ORSANCO. It has been pointed out that this is a need on a federal-

state as well as on an interstate basis.

The Engineering Committee is one of the mechanisms that is available for the furtherance of coordination. But one important element is lacking. Region 5 of EPA is present because its Director is an ORSANCO commissioner and has taken an interest in the Engineering Committee as well as in the Commission itself. This might encourage the supposition that all of EPA is thus effectively represented because, within that agency, Region 5 has been considered to have the principal role in dealing with ORSANCO. However, the coordination of policies and actions of the several EPA regions as they affect the various parts of the Ohio Basin is not achieveable by or through Region 5. For this reason, it is suggested that consideration be given to representation of all four EPA regions on the Engineering Committee. In matters where voting is important, such a course might make it necessary to conform the EPA vote to its proportionate place on the Commission. However, it seldom becomes a question of totaling up the formal affirmatives and negatives. As members of the Committee, all four EPA regions, the Corps, the Interior Department and the eight-state water quality agencies could come together for the resolution of common matters. It is recognized that the ORSANCO Compact is generally viewed primarily as an interstate coordinating mechanism. However, the participation of the three federal commissioners which is pursuant to direct provision of the Compact suggests that ORSANCO was also conceived in federal-state terms, although it seems doubtful that during the 1930s and 1940s there was any real conception of the pattern of federal-state relations that has since developed.

Source of Initiative.

The relationship of the Commission, its staff, and the committee structure is important for a variety of reasons. It is elementary that the Commission is the governing board and that the other organs provide means of informing it or getting its work done. But there is more to it.

A vital question in determining ORSANCO's role is where the ideas and initiatives for the interstate agency's functions and program are to come from. In any given instance, the source could be almost anywhere. Even a suggestion volunteered by an outsider might strike fertile ground. However, the environment in which ORSANCO lives makes it more likely that its shape and progress will be powered by some engines more than by others.

EPA carries a large persuader in the form of its program grants. Its importance as the administrator and interpreter of the crucial federal water pollution control law also should be emphasized.

The states are vital to ORSANCO because the compact is state law and because each of them contributes funds. But if ORSANCO is to prosper, the staff must be the primary engine for the development of the agency's role; for the identification of new program possibilities; and for the presentation of them in ways that will win approval from the commissioners, the states and EPA.

The commissioners are part-time officials whose principal interests lie elsewhere, either in the state agencies which they serve full time or in the private pursuits from which they draw their livelihoods. It is not to denigrate their interest and helpfulness to say that most of the time they are not concerned with ORSANCO at all.

This is at least as true of the members of advisory committees. Each such member may serve because of private or personal motivations which lead to a concern with public machinery for water quality management on the Ohio. But, except by accident, none is likely to have the knowledge or the perseverance to formulate and develop program plans for the interstate agency.

Unlike any of ORSANCO's components, the staff is continuously on the job and, unlike any other component, the professional and personal welfare of the staff is more affected by the course the agency takes. The staff is legally controlled by the Commission and its constituents. Moreover, this is as it should be. But unless the staff informs, persuades and proposes, no one else is likely to think of uses for ORSANCO.

This is yet another reason why the present chapter began by considering the condition of the staff. Size means expense. But insufficient size means a lack of time to think and analyze and an absence of the diverse skills and points of view essential to identify the agency's proper missions and implement them with imagination.

CHAPTER 7

The Interests of Participating Jurisdictions

Many of the interests of the eight states and the federal government in managing water quality in the Ohio Basin are held in common. So are some of the values which they may hope to obtain from an interstate agency. However, the various jurisdictions are bound to view the river system from their own geographic position on it and in terms of its relationship to their overall needs and responsibilities.

Each of the states and the United States, therefore, have differing stakes in ORSANCO. Nevertheless, in this analysis, it is helpful to group the participants and then to examine such individual differences as may be significant. Five states (Pennsylvania, West Virginia, Kentucky, Ohio and Indiana) may be regarded as having the largest concerns. They are on the main stem. This waterway and its tributaries within or bordering their territory constitute major resources associated with large parts of their geographic area. The United States may be similarly regarded in that it has jurisdiction over and responsibilities for the whole Basin, but important though the Ohio may be, it is only a small part of the nation's total water resources.

New York, Virginia and Illinois have a less intense interest in the problems of the main stem of the Ohio. In the case of the first two states, their presence is only on tributary or headwater streams. Illinois borders the lower part of the main stem, but in a sparsely populated area.

The actual or potential value of ORSANCO to the member states and the United States can be properly judged only by examining the present and possible future programs of the interstate agency. Substantiated opinions can then be formed as to whether the services rendered or proposed are worthwhile and who will benefit from them. Such a discussion of program components appears in Chapter 3.

The first fact to be considered is that ORSANCO is comparatively little known. This may not be recognized by those whose professional activities bring them into fairly frequent contact with ORSANCO or by sanitary engineers and other water resources specialists who have learned of ORSANCO through the technical literature. Nonetheless, it is true that very few of the people on the street have ever heard of ORSANCO. Even the present cadre of state and federal officials who, by reason of their work responsibilities, might be thought to have some interest in the condition of the Ohio Basin, if taken as a group, know relatively little about this interstate agency. Undoubtedly, this situation will change if ORSANCO increases its level of activity and diversifies its programs. However, it is desirable to reexamine the ORSANCO clientele and the geographic focus of the agency's activities.

The district over which the Compact gives ORSANCO jurisdiction includes the entire Basin, aside from the bulk of the Tennessee and Cumberland watersheds. Yet, it seems to have been the predominant view that

the interstate agency should be concerned almost exclusively with the Ohio River from Pittsburgh to Cairo, and with its tributaries only to the extent that water quality conditions in them demonstrably affect water quality in the main stem. Whether correctly or not, in most cases that has been taken to mean that ORSANCO should concern itself only in short stretches of particular tributaries immediately above the confluence with the main stem.

Of course, this approach has not been followed with complete consistency. At various times ORSANCO has been involved with studies on the Allegheny, Mahoning, Monongahela, Muskingum and the Wabash. Most recently, the assumption of responsibility for the Allegheny River monitoring stations originally installed by the Corps is an undertaking far removed from the main River. Nevertheless, with relatively few exceptions, the proposition has been accepted by ORSANCO for some years.

Geographic and hydrologic circumstances will continue to argue for more involvement of the interstate agency on the main stem than elsewhere. Nevertheless, we believe that more attention should be paid to the tributaries and the headwater rivers than has heretofore been the case. Certainly, ORSANCO should concern itself with those tributaries which are interstate in character and with those which have or may have a significant influence on the main stem. The reasons for this view will become apparent from an examination of the values of the interstate agency with respect to both the narrower and the broader concepts of its responsibilities.

General Values.

The interstate agency has functioned as a forum for the sharing of information and experience. Our interviews in each of the eight states have testified to this point in greater or less degree. The performance of this function has not been necessarily limited to the specific areas for which ORSANCO gathers data, exhibits interest in enforcement, or for whose benefit it seeks to influence the flow regimen.

The work of the Industry Advisory Committees has been frequently mentioned in this connection. During the 1950s and 1960s, they undertook studies and prepared manuals on waste problems and treatment methods which were considered valuable sources of information by all the states. The materials were not necessarily limited in their utility to industries and regulatory agencies on the main stem of the Ohio, nor even to the Ohio Valley as a whole. Indeed, interest in them was sometimes international.

It is of continuing benefit to the administrators of the eight states to meet periodically. When they do so, they gain knowledge of each other's problems and attitudes. It is true that some other organizations (notably the Association of State and Interstate Water Pollution Control Administrators) offer somewhat similar opportunities. However, they do so only once a year and on a nationwide basis which makes the contact more general, and perhaps even more casual.

Virginia, New York and Illinois, for example, have only limited regional forums in which all can share experiences. For two of these three states, the Great Lakes Commission created by interstate compact and the Great Lakes Basin Commission established under Title 2 of the Water Resources Planning Act might serve similar purposes. But they do so only slightly. Because the focus of neither agency is specifically on water quality, the state pollution control administrators do not often attend their meetings, and in any event, each lake is in many respects a separate entity.

Some of the activities discussed in Chapter 3 will have value for all member states, regardless of the specific areas at which they are directed. For example, it has already been pointed out that the registry of deep wells can be used for comparative purposes as well as for information on particular injection sites. Also, if ORSANCO were to engage in the sponsoring of research, the findings, in most cases, would have a basinwide application or even a broader significance. Presumably, members representing states not on the main stem would have a voice in selecting the projects and so could influence choices so that they would be of regionwide or general interest.

The problem of federal-state coordination also is one which has broader significance for the member states than the geographic limits of the Ohio Basin. Each of the eight states can benefit from exchange of views on the policies and attitudes of three other EPA regional offices serving different sectors of the Basin. Thus, they may acquire some insights which will assist them in negotiations with their own EPA regional organizations.

There is also a value to membership in an organization which affords continuing information as to developments and attitudes in other parts of a Basin which the state shares. If interstate allocation of waste loadings becomes appropriate, or if planning to forestall its necessity is undertaken, all of the eight states may be concerned to assure that the equities are properly considered and balanced.

Further, if flow regulation for quality purposes is much developed for the benefit of the main River, control of withdrawals, diversions and releases is likely to be practiced in the headwaters and far up the tributaries as well as closer to the main stem. All states would want to have a voice in this process.

Specific Values.

Other values of participation in ORSANCO depend on the agency's programs being applied to particular parts of the Basin. Accordingly, it is difficult to look further at ORSANCO from the point of view of each of the member states and of EPA without determining whether the Commission will be active in: all parts of the Basin, on the Allegheny and Monongahela and the main stem of the Ohio River only, or on the Ohio River and some other selected tributaries. Before proceeding to discuss each of these alternatives, some observations on the significance of the compact under present circumstances for New York, Virginia and Illinois are in order.

At present budget conditions, New York contributes $2,332 annually to ORSANCO, and Virginia's share is $7,524. It does not require much service from the interstate agency to make such expenditures worthwhile. Contacts with the other states in the Basin, the availability of a forum in which regional problems can be discussed, and even an occasional gain of information or insight is sufficient to more than justify this kind of cost.

Perhaps of more significance is the amount of staff time which any member state should spend in examining ORSANCO documents and attending ORSANCO meetings, if participation is to be fruitful. Under present circumstances, this does not amount to more than a few days a year and thus represents a minimal internal cost.

In view of the relatively small amount of specific attention paid to the New York and Virginia portions of the Basin in the past, we sought to ascertain whether either state had ever requested services of the interstate agency that were not forthcoming or suggested any alterations in its program for the purpose of increasing ORSANCO activity in ways that they would consider beneficial to them. No such requests ever appear to have been made.

Illinois is in a slightly different category from the two headwaters states. It is at the lower end of the Basin and thus the recipient of whatever pollution finds its way into the river system and has not been dissipated in the journey downstream. However, because its percentage of the basin budget is small, Illinois currently contributes only $11,088. This sum is greater than either New York or Virginia but is still not in a range that would require much in the way of benefits to justify the purchase price. Indeed, being a party to the compact obligations that pledge the upstream states to control and abate pollution in the waters which sooner or later reach Illinois, is itself worth something. In this sense, the existence of an active regional forum in which Illinois can regularly make known its desires with respect to water quality management on the Ohio River is a positive advantage.

The ORSANCO Program Area.

The several alternatives of geographic area in which ORSANCO should concentrate its activities have often been in the minds of the people most intimately associated with the interstate agency. However, the reasons for choosing one or another are seldom articulated. Consequently, even identifying them accurately and fairly may be open to some contrariety of opinion. Nevertheless, an analysis of the geographic focus of ORSANCO attention must present them as the analyst perceives the problems.

The proposition which seems to have widest adherence among the member states is that ORSANCO should concentrate its activities on the main stem from Pittsburgh to Cairo. It should concern itself with tributaries only for short distances above their confluence with the main stem, and then only where it can be easily demonstrated that conditions are such as to markedly affect the Ohio River. Since the compact gives ORSANCO jurisdiction

over the entire river system within the member states, the justifications for this narrower definition of the area of active interest must be examined.

One explanation is that the main stem is nearly one thousand miles long and is a big enough bite for ORSANCO to chew. Given the interstate agency's present and past resources and its distribution of them among and within its several program activities, there has been little opportunity or substance to devote to matters off the main stem.

Another consideration is that nobody really loves a policeman. While interstate accountability is one of the primary reasons for the compact, the states are understandably sometimes ambivalent toward the forms it might take. This is especially to be considered in the light of the enforcement powers which bulk so large in the language of the compact. Even though ORSANCO has in fact participated only marginally as a direct enforcement agent, there may have been a certain amount of concern over the possibility that it might do so and that, in such circumstances, it would be better to keep the interstate agency off the tributaries. The state agencies tend to regard many of these as intrastate waters, even though they are parts of an interstate system.

The view that ORSANCO could fully occupy itself on the main River if it chooses to do so is sound enough. Anything like full implementation of the program possibilities discussed in Chapter 3 would require much more staff and money than ORSANCO is likely to have for some time to come.

On the other hand, such a geographic focus of attention restricts the value of the agency for the two states not on the main stem. While they have not articulated complaints, the absence of protest should not be taken as approval. No Virginia commissioner has appeared at an ORSANCO meeting for several years. Contact with that state has been limited almost entirely to participation of a Virginia member on the Engineering Committee.

Moreover, the hydrologic interdependence of the several parts of the entire river system is more than a slogan. As noted elsewhere in this report, some pollutants such as acid mine wastes and salts do spread their influence for hundreds of miles from the point of discharge. Indeed, as the entire river system comes to be more intensively monitored and as pressures on waters of the Basin become greater, additional interrelationships may come to light or become much more significant than they were thought to be.

If stream flow regulation for quality purposes is seriously undertaken, the involvement of headwaters, streams and tributaries will become essential. This is already indicated by ORSANCO's assumption of responsibility for the Allegheny River monitors originally installed by the Corps.

Indeed, the service orientation of present and possible future ORSANCO programs does not justify uneasiness on the part of those who have felt uncomfortable toward the admission of a potential new enforcer in their midst. There may be genuine questions as to how many and what kinds of burdens

ORSANCO can assume at any given time. However, virtually all of the things that ORSANCO is likely to do in coming years are informational, analytical and coordinative rather than directly regulatory. So long as the ultimate policy decisions as to enforcement under Public Law 92-500 are left for the individual states or federal agencies, all concerned should be benefited by the activities of a more vigorous ORSANCO.

Finally, it should be observed that ever since the "conference procedures" of the 1956 Federal Water Pollution Control Act came into operation, and certainly now that the Basin must take account of federal EPA powers under the 1972 Act, it becomes unrealistic to look askance at the possibility of ORSANCO assistance on the tributaries. Both EPA and the member states could be well served by the application of ORSANCO services that might on occasion prevent problems from arising or could resolve them without the need for the most forceful kinds of federal intervention. This is as true of problems on tributaries as of those on the main River, provided only that they have some interstate aspect.

In the course of this discussion, most of the advantages and disadvantages of ORSANCO activities comprehending more than the Ohio River and immediately adjacent portions of tributaries have been mentioned. However, some additional observations should be made.

In our view, the chief concern is the enlarged scope of ORSANCO tasks which would involve increased funding and staff. The participating jurisdictions will determine what resources they wish to make available. But attempting to project what may be possible is not a simple task. Reactions may depend on appraisal of the value of such new or expanded programs as the interstate agency could offer.

An increase in monitoring and stream survey activity to include segments of the Basin not now served may involve expense that sooner or later someone will find it necessary or justifiable to afford. To the extent that ORSANCO undertakes it, others will be spared the effort. Moreover, it is better to have a basinwide monitoring and survey program from which the maximum information can be ascertained about interrelationships than to have compartmentalized data collection and analyses which develop data only for individual state segments of the river system.

Further, it should be emphasized that in considering a basinwide monitoring and stream survey program, it is not necessary to presume direct ORSANCO operation of the entire undertaking. There could be any number of patterns of ORSANCO-state-federal agency performance. The most important thing would be to have a single network, well coordinated and integrated into a meaningful whole. ORSANCO might operate the entire system or it might be part operator and part coordinator.

Most of the other activities in which ORSANCO might engage do not require its physical presence on a continuous basis everywhere on the Ohio River system. This may be illustrated by an interstate agency's role in mediating or otherwise helping to solve a specific interstate problem.

There does not appear to be any inevitable reason why ORSANCO services in fact finding on the New-Kanawha rivers shared by Virginia and West Virginia would be less worthwhile or essentially different from those which it might perform for states on opposite banks of the Ohio River.

Nor is the need for promoting the coordination of EPA regions confined to the Ohio River proper. The Allegheny flows from Region 2 to Region 3 in two separate meanderings. The New-Kanawha rivers are shared by Regions 3 and 4. The Mahoning is a problem for Ohio, Pennsylvania as well as EPA Regions 3 and 5.

It may be argued, however, that an eight-state agency is not a suitable participant in a subregional problem. But there is no real reason to believe this is so.

Some interstate agreements, of which the Potomac River and Atlantic States Marine Fisheries Compacts are examples, authorize the establishment of "sections" for the consideration of problems of primary concern to some of the member jurisdictions but not to all. Thus, the Atlantic States Marine Fisheries Commission has maintained a North Atlantic Section, a Middle Atlantic Section, a Chesapeake Section, and a South Atlantic Section--each coincident with a group of migratory fisheries which do not significantly overlap into the other geographic regions. However, this degree of formalization is not really necessary to the separate consideration by the interstate agency, or some of its members, of problems which are of peculiar concern to them alone. This is especially true where the functions involved are service or mediation oriented. Commission votes are not likely to be important in such situations. Accordingly, there should be no legal or practical barrier to ORSANCO staff or members dealing with matters which are of less than universal impact. Indeed, this is frequently the case even on the main stem.

In individual instances, the states involved may prefer direct contact between themselves and may have little need for a third party--even one to which they both belong. Where this is so, there is no virtue in soliciting the intervention of ORSANCO merely to find things for the interstate agency to do. However, where ORSANCO programs have given the interstate agency special knowledge or competence, or where it could be the convenient vehicle for performing or procuring a study of a bistate problem, it should not be dismissed merely because the area in question involves a tributary rather than the main stem.

On occasion, the Commission has recognized the validity of this proposition. In addition to the already mentioned studies on tributaries and recent assumption of responsibility for the Allegheny River monitors, one may cite the proferred lead agency role in the Ohio River Basin Commission's water quality task group for the Monongahela. ORSANCO declined to serve in this capacity because the Commission felt that at the time

when the assignment was offered, it did not have the available staff to perform it. However, the Commission recognized that the decision to refuse was regrettable.

The ORSANCO policy of limited activity on the tributaries begets a circular set of effects. Because this type of restriction on the agency's present programs is known to the state water pollution control officials, they do not now think of ORSANCO as having anything to contribute to the solution of their problems off the main stem. Consequently, the states do not seek to involve the interstate agency in such matters. In turn, nonparticipation strengthens the feeling that ORSANCO would have little or nothing to offer, even if invited.

The key to the situation is the nature and vigor of ORSANCO programs. The stronger and more relevant they are to the states in a particular part of the Basin, the more likely the interstate agency is to be thought of when help is needed.

The extent to which ORSANCO will eventually be actively involved in waters of the Basin other than the main stem of the Ohio River, interstate tributaries and for reasonable distances up other tributaries having a significant impact on the main stem is one that cannot be categorically predicted at present. In the estimation of a purist, there can be no doubt that the Basin should be viewed as a whole. However, extending ORSANCO's program to the tributaries mentioned will involve so considerable a reorientation of the present ORSANCO focus as to occupy some years of program development. As already indicated, the interstate agency is now small, to the point where it consists of an almost irreducible staff complement. How much growth there should be and at what pace will be determined by the programs that the Commission finally authorizes. In any event, however, it is best to strengthen capabilities at a rate that encourages solid development and not to swallow more than can be digested at any one time. Accordingly, ORSANCO should work toward a truly basinwide set of programs gradually. On the other hand, some activities can be performed for all eight states without major commitment of resources beyond what is necessary to serve the needs of six.

Values for EPA.

We generally think of ORSANCO as functioning under an eight-state compact. But there is a ninth member whose degree of participation is hardly less than the others. The Federal Government has not enacted the compact. It is not legally bound by such obligations as the compact places on the states. But in fact it shares abundantly in two basic attributes of membership. The compact gives to the Federal Government three commissioners, just as any member state. Through its program grants, the Federal Government contributes more funds than any member state.

Three agencies have traditionally represented the Federal Government: the EPA or its predecessors, the Corps, and the Fish and Wildlife Service.

But of these, it is most relevant to speak of EPA. Its program grant funds are the federal financial contributions most crucial to ORSANCO's budgets, even though the Corps and the U.S. Geological Survey also provide funds through contractual and other arrangements.

Consequently, the values which EPA can hope to receive from a strong ORSANCO are somewhat analogous to those which benefit the states. Since water of good quality is the objective, activities which help to secure and maintain it contribute to or make easier the discharge of EPA responsibilities. It follows that for EPA, as for the member states, the measure of ORSANCO's value is in the programs which the interstate agency conducts. Most if not all of the program possibilities discussed in Chapter 3 are or would be of benefit to EPA as well as to the states.

At least since the enactment of the Federal Water Pollution Control Act of 1956, EPA and its predecessor agencies have been in a supervisory position. The Amendments of 1972 have made this position even clearer and more dominant than before. EPA is responsible to Congress and the American public for seeing that the Federal Water Pollution Control Act works. EPA is and will be judged by its success in achieving the goals of fishable, swimmable water everywhere, or at least by the measurable and steady strides which are made in this direction. But EPA cannot accomplish these results with its own forces alone, nor is it supposed to do so. It must rely on the states. They are to develop the stream standards which become both federal and state law; they are to do or get done much of the planning for water quality management; they are to help run the permit system and increasingly to assume operational responsibility for it; they are to monitor and report on progress in achieving the goals of the Federal Act; they are to check compliance by waste dischargers and to prosecute the bulk of the actions when violations are found.

The lodging of so heavy a policymaking role and of so much of the responsibility for achievement with EPA while placing so many of the implementing activities in the states creates mammoth needs for coordination so that the system will fit together as a functioning whole. These needs run in several different directions.

The first is a problem of federal-state coordination. EPA has sought to handle this directly by dealing with each of the fifty states. In many respects, the federal law requires this. Individual states must have Section 303 (e) planning processes approved by EPA; construction grant funds are allotted in state chunks and thence distributed to local units of government by a complex state-EPA process; individual states are eligible for assumption of permit system responsibilities, with EPA approval. The items in the list could be multiplied.

But neither the states nor EPA is organized to treat the Ohio as a basin, or even as a whole main river. Such treatment is essential if many aspects of the Federal Water Pollution Control Act are to be administered equitably, or perhaps at all. ORSANCO is just such an agency as can provide the multi-jurisdictional-interstate-federal, EPA regional bridge needed to bring the pieces together basinwide.

ORSANCO cannot fulfill this coordinating role because of any power to compel others to accept its judgments. The compact contains no such authority, except in the field of abatement orders where, as previously indicated, the interstate agency's role is most likely to be supplemental. However, the interstate agency can perform it by virtue of its basinwide jurisdiction and the superior knowledge and insights which its monitoring, data analysis, planning and other programs should give it. The states, EPA, and other agencies to a somewhat lesser extent, should find benefit in according ORSANCO a place because of the services it can render.

However, any benefit which EPA can realize from the interstate agency's presence must rely heavily on the federal agency's willingness to deal with and through ORSANCO. Unless EPA considers ORSANCO as the fulcrum in regional affairs relating to the Ohio, the states will be hard put to it to do so. In many ways, EPA approval processes have become so crucial that they can be made virtually to determine the procedures and channels which the states as well as EPA will employ. If EPA makes it known that it expects ORSANCO to have a part in coordinating standards and requirements on opposite sides of the river, or above and below state lines, the chances are that the interstate agency will be able to participate meaningfully. On the other hand, if EPA channels most or all of its significant communications directly to the individual state capitals, the purposes for having the interstate agency will be undercut and its only role will be to provide a forum in which the states may from time to time seek to formulate their views in disputes with the federal authorities.

Assuming a willingness, and even some initiative on the part of EPA to recognize ORSANCO as a regional water quality agency, other factors become important. First among them is the vigor and initiative exhibited by the ORSANCO staff and commissioners in finding ways to be useful. One cannot emphasize too strongly that no one is likely to formulate and insist on a vital interstate agency program if ORSANCO does not do it. Even the state water pollution control officials -- those serving as ORSANCO commissioners and others who can affect the agency's welfare -- have primary responsibilities in their own intrastate agencies. To them ORSANCO must be at best a secondary area of interest.

The final consideration is the states themselves. As already indicated, they cannot be expected to invoke ORSANCO participation at every turn where simple contacts between state capitals will achieve desired results effectively and rapidly. But they must get into the habit of using ORSANCO as their major avenue of interstate and interstate-federal relations and actions when the Ohio Basin is involved.

If all of this sounds like a circular process, it is. One of ORSANCO's worst liabilities is the dormancy which has afflicted it for several years past. Until improved and more varied program performance makes it clear that the interstate agency is truly a reliance for defining and resolving interstate problems and for getting important things done, its aid will not be sought. Yet ORSANCO can build this kind of confidence only if its member jurisdictions and EPA are willing to invest something in encouraging the intergovernmental machinery to work.

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ORSANCO is an interstate agency. A compact was enacted by the eight member states, and consent given by the United States of America in 1948. This study analyzes and recommends prospective roles that this agency can best perform which would be complementary to or in lieu of activities for which the member States or the federal government is responsible in controlling and abating water pollution in the Ohio River drainage basin. The study was needed because of the change of strategy and Congressional mandates imposed by the Federal Water Pollution Control Act Amendments of 1972 (P. L. 92-500). A study of this nature and scope had not been performed since the agency was organized 27 years ago.

17. KEY WORDS AND DOCUMENT ANALYSIS

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