FINAL REPORT OF THE REGION V LAND USE STUDY GROUP

LAND DISPOSAL OF WASTEWATER: A LAND USE CASE STUDY

by

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INTRODUCTION

Governmental authority for land use and land use control has traditionally rested with the States and localities. For this reason, land use responsibility at the Federal level exists largely in a "no-man's land" of responsibility and interest. Few persons within the Federal Government are fully cognizant of "who has what" federal authority with respect to land use; even the Government Organization Manual is ambivalent on the question of where, or whether, federal land use authority exists -- with the result that questions of proper land use and the protection of the land resource tend to be ignored within the Federal establishment. Federal land use authority, where existent in direct or indirect form, is dispersed among a variety of governmental entities: the Departments of Agriculture, Army, and Housing and Urban Development and the Environmental Protection Agency, to name but a few. As result of this dispersion, federal program administrators -- in EPA as well as other agencies -- are prone to ignore the land impact of their programs relative to those other considerations for which Federal authority is salient and well-defined.

That the Federal Government has been relatively indifferent to problems of land use, for whatever reasons, is manifest in the statutory authority and administrative structures and practices of the Environmental Protection Agency. When EPA was administratively created and charged with Federal-level responsibility for the protection and enhancement of the environment, nearly all of the federal program re[illegible]ity and related statutory authorities with respect to the

conservation and regulation of the physical environment was transferred to and consolidated in EPA. Accordingly, EPA delineated administrative niches for air and water programs and for "categorical" functions such as solid waste, radiation and pesticides control. The coverage of these EPA programs are roughly indicative of the inclusiveness -- and, hence, the exclusiveness -- of Federal statutory authority with respect to environmental protection. Hopefully the reader will anticipate the next comment: that land use responsibility is significant by its absence among EPA's responsibilities.

Although EPA is regarded as the federal agency whose mission it is to protect and enhance the environment, in truth that mission is delimited administratively and by statutue to two elements of the environment: the air and the water; the land resource remains largely unrecognized as an area whose protection requires governmental intervention. The virtual absence of any land use authority on the part of EPA has debilitated the Agency's effort to protect and enhance the total environment. Because the air, the water and the land are functionally interdependent parts of the total environmental system, air and water programs are not comprehensive of the environmental system; and human effort to induce the enhancement of air and water resources without co-equal responsibility and concern for the land resource is not likely to produce any net enhancement for the total environmental system. It is against this backdrop that this report was conceived and written.

This report was prepared as part of a national land use study commissioned by EPA and carried out under the aegis of the Agency's National Youth Advisory Board. The initiation of this nationwide effort resulted from the concurrent interest of EPA Administrator William Ruckelshaus and the EPA Youth Advisory Board in the relationship between land use policies and practices and the operating responsibilities of EPA. In a memorandum dated April 5, 1972, Administrator Ruckelshaus stated in part:

> It is apparent to me that as an agency we need a better picture of the relationship between land use policies, practices and methanisms and environmental protection, particularly from the point of view of EPA's operating responsibilities . . . The National Youth Advisory Board had earlier advised me of its interest in doing a national land use survey with special application to the policies and programs of EPA. This coincides with my own desire that such a study be undertaken, and I have approved the carrying on of this study by the Youth Advisory Board.

Administrator Ruckelshaus further stated in this memorandum that study teams comprised of temporary personnel should be formed at EPA's Washington headquarters and in each of the Agency's ten regional offices for the purpose of carrying out this land use study.

This report is essentially a case study. As such, it focuses upon the impact upon the land resource of the land disposal method of wastewater treatment. For the benefit of the lay reader, whom we hope this report will reach, the land disposal method of wastewater treatment (also referred to as the "land treatment" or "living filter" wastetreatment method) is distinguished from conventional forms

of wastewater treatment in that it involves the irrigation of wastewater onto crop land, where the plants and soils are relied upon to assimilate the various wastewater constituents which would otherwise be potentially harmful if allowed to pass into a watercourse. It should be noted, however, that the land disposal systems which will be discussed herein employ conventional treatment methods prior to the disposal of wastewater on land. A further similarity of conventional treatment methods and land disposal systems is that both involve ultimate discharge into watercourses. After the irrigated wastewater in a land disposal system filters through the soil, it is collected beneath the ground and carried to watercourses for ultimate discharge.

Organizationally, this report divides into two basic parts. First, it examines some of the implications of the land disposal system being constructed in Muskegon County, Michigan, an EPA-funded project which is destined to become the largest scale application of the land disposal concept in this nation's history. Against this backdrop, the second part of the report examines the land use implications of the Army Corps of Engineers' Chicago-South End Lake Michigan (C-SELM) Wastewater Management Study, which has proposed plan alternatives for a massive land disposal system to serve the Chicago-Gary consolidated metropolitan area. This examination of the C-SELM Study separates into two sub-parts: the first focuses on the conduct of the C-SELM Study itself, explaining how it came about and how it is being carried out; the second sub-part assesses the foreseeable impact of the planning study from the perspective of the various governmental jurisdictions which would be affected if any of the land disposal alternatives proposed in the C-SELM Study were effectuated. Following our examination of the C-SELM Study, we present

our concluding assessments of the C-SELM Study, after which we have articulated a list of specific recommendations based upon preceding analysis and examination.

This case study was written with three basic objectives. The first two of these objectives are intrinsic to the focus on the land disposal method of wastewater treatment. First, we wanted to determine the effect which wastewater management might have upon the land resource if large scale land disposal systems become widely adopted as a means of providing tertiary wastewater treatment to comply with present or anticipated water quality standards. Secondly, we wanted to determine the nature and amount of consideration being given to land use and land use planning in the planning and development of land disposal systems. Our third objective was not specific to our focus upon the land disposal method of wastewater treatment; in fact, it presumably could have been accomplished in any one of a variety of case studies. This third objective was to conduct a case study which would serve as a "window" through which we could better understand and make recommendations with respect to land use problems which may arise from governmental action to protect or enhance some aspect of the natural environment.

Before deciding to focus this study on the land disposal method of wastewater treatment, several other topics were considered from the standpoint of the insights which they might offer. In the end, the land disposal topic was chosen because of the authors' recognition that (1) the potential land impact of a land disposal system has received a dearth of analysis relative to the attention given to the

potential impact of such a system upon the water resource and (2) that that this imbalance must be corrected. The need to correct this imbalance of attention is made more acute by the intensified interest in planning and developing land disposal systems which has resulted from the Muskegon County Project and related developments. The reason for our interest in the Muskegon Project should therefore be fairly obvious. Our decision to specifically examine the C-SELM Study is explained, in part, by the expediency of examining a planning project within the proximity of the Chicago office where this report was written. Notwithstanding the expediency of examining the C-SELM Study, we were interested in this particular Corps of Engineers' project for the simple reason that it involves plan alternatives for a land disposal system that would be larger than the Muskegon County system by several orders of magnitude. Accordingly, we have not assumed that the C-SELM Study is exemplary or entirely representative of land disposal planning in general or that the prospects for or desirability of constructing a land disposal system in the C-SELM area are indicative of the prospects for or desirability of a large scale land disposal system elsewhere. There is an admitted risk involved in generalizing our conclusions with respect to the C-SELM Study to present or future land disposal projects elsewhere. The authors have been mindful of this risk and have articulated their conclusions and recommendations accordingly.

The authors appreciate the assistance of the numerous individuals and organizations which provided information or other assistance which was useful in assembling this report. Five individuals in the EPA Chicago Regional Office were especially helpful at one stage or another in the preparation of this report and deserve a special thanks:

Harlan Hirt; Steve Polonscik, Carl Wilson and Dwight Chaiken; and Louvenia Hollins. None of these persons should necessarily be associated with the conclusions of the authors. We should also express our appreciation to the Chicago District Office of the Army Corps of Engineers, which formally responded to our inquiries once they were submitted in writing. In addition, we are indebted to the highly factual history of the Muskegon Project which was written at the Center for Urban Studies of the University of Chicago under contract with the (Federal) Water Resources Commission; our explanation of the inception and implementation of the Muskegon Project drew heavily upon the odering of events contained in the CUS report.

Any factual errors in this report are immediately attributable to the authors. Moreover, the conclusions and recommendations contained herein are those of the authors and should not be construed as the judgements of EPA. The authors were temporarily employed by EPA for the express purpose of writing a land use study for the Region V Youth Advisory Board and for the national land use study being carried out under the auspices of the Agency's National Youth Advisory Board. During their summer employment with the Agency, the authors were given independent discretion in the preparation of this report. Nevertheless, while the authors accept full responsibility for this report, they are hopeful that this Agency and other individuals and organizations will support the recommendations contained herein and take affirmative action to implement the same.

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TABLE OF CONTENTS

PART I - MUSKEGON COUNTY WASTEWATER MANAGEMENT PROJECT

A. County Overview

Muskegon County is located in the west-central portion of Michigan's lower peninsula along the eastern shore of Lake Michigan. (See map on next page.) The County area is characterized generally by both a flat glacial lake plain and a gently undulating outwash plain. Alluvial lowlands are the lowest land surfaces in the County; in these lowlands are located major drainages of the County, the Muskegon and White Rivers and Black Creek. The lower portion of the alluvial lowlands contain broad lakes, including Muskegon, Mona and White Lake, formed by the damming of their outlets into Lake Michigan by shoreline dunes. These shoreline dunes form a nearly contiguous ridge along the Lake Michigan shoreline. Sand dunes also exist in the interior of the County. These are less pronounced than those along the shoreline and form distinctive rises on the relatively level plains of the County.

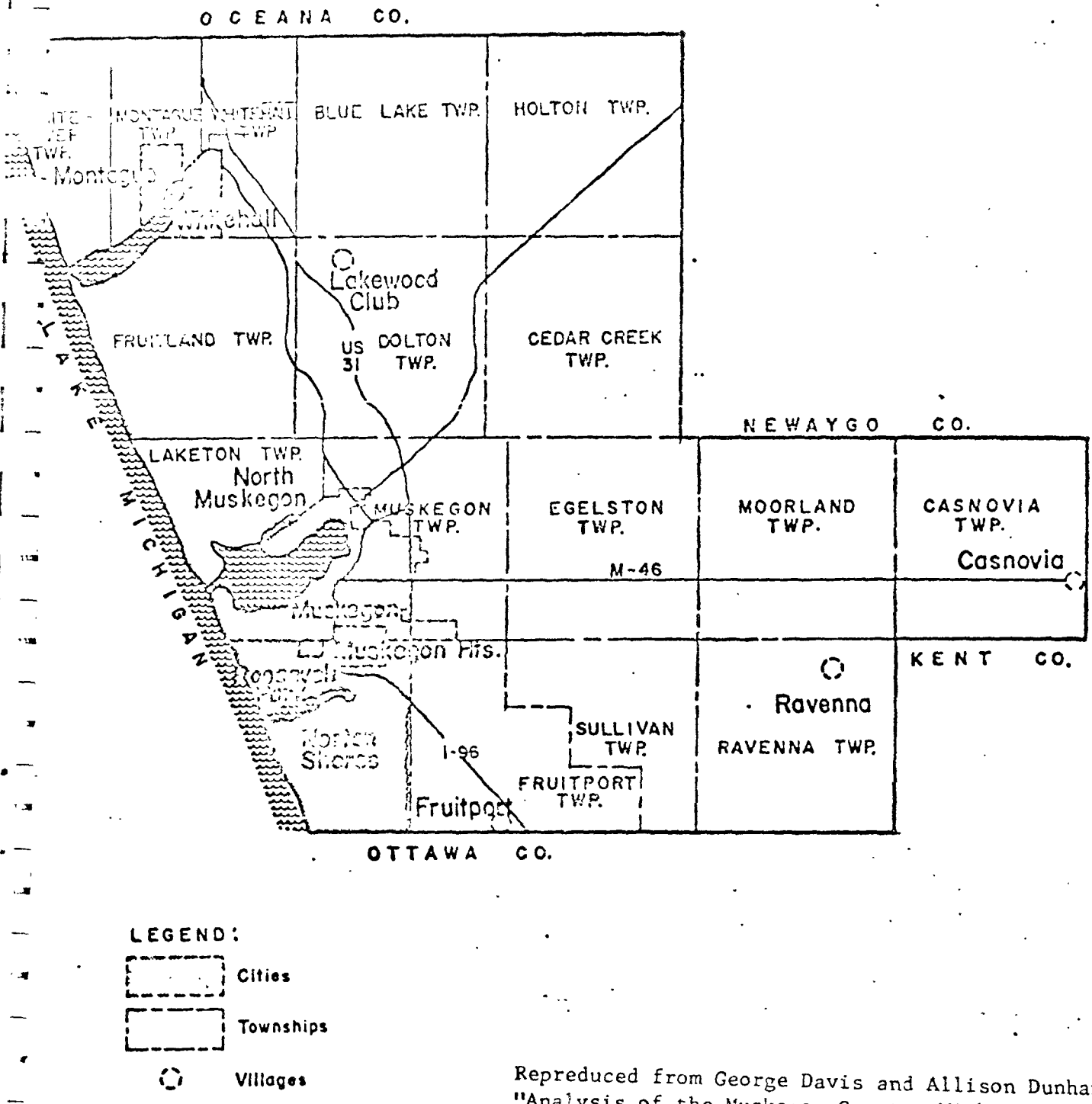
Muskegon County covers an area of 510 square miles with a total water surface area of 11,600 acres. There are sixteen townships, seven cities, and four villages within the County. The metropolitan complex of the City of Muskegon and Muskegon Heights, which houses 80 percent of the County population, serves as the social and economic center of the County. This metropolitan complex focuses on two dunes-impounded lakes, Muskegon and Mona. A smaller, but important, urban complex lies to the north of the Muskegon-Muskegon Heights metropolitan complex; this is the area formed by the twin cities of Whitehall and Montague, both of which focus upon a third dunes-impounded lake, White Lake. This total urban area is the largest located on the eastern shore of

GENERAL LOCATION MAP OF MUSKEGON COUNTY

Reproduced from George Davis and Allison Dunham, "Analysis of the Muskegon County, Michigan Wastewater Management Project," Center for Urban Studies, University of Chicago, 1971.

MUSKEGON COUNTY, MICHIGAN

POLITICAL UNITS



LEGEND:

Cities

Townships

Villages

Repreduced from George Davis and Allison Dunham, "Analysis of the Muskegon County, Michigan Wastewater Management Project," Center for Urban Studies, University of Chicago, 1971.

Lake Michigan. It is also the terminus of an urbanized corridor extending from Detroit, through Lansing and Grand Rapids.

The County, the 208th largest Standard Metropolitan Statistical Area (SMSA) in the United States, had a 1960 population of 149,716. Preliminary tabulations of the 1970 Census indicate a growth of 6,361, or 4.2 percent, to 156,077. However, while moderate growth was experienced throughout most of the County, the central cities of Muskegon and Muskegon Heights experienced a net population decrease of 4.5 percent and 12.8 percent respectively. Rural farm population constitutes only two percent of the total County population.

The primary natural resource within the County appears to be its water access. Lake Michigan, which constitutes 20 miles of the western boundary of the County, provides the area with much of its water supply. In addition, the dune-impounded lakes, Muskegon, Mona and White, are focal points for the urban areas of the County. Other natural resources include sand and gravel, salts and some gas and oil. These resources are utilized locally. Agricultural productivity in Muskegon County is considerably lower than that of comparable urban counties in Michigan (such as Kent County to the east), due primarily to poor soils.

Muskegon County became a prosperous center of urban activity commencing around 1840. Prior to that time, during the nineteenth century, the economy of the area was based almost entirely upon the exploitation of the pine forests that blanketed the area. This lumbering was responsible for attracting the first wave of white settlers to the region. But by the turn of the century, the timber resources had

been badly depleted by clear-cut logging practices. Where 37 sawmills had been active in 1888, only three remained in operation by 1896.[1] The decline of the lumber era brought on a period of depression which lasted two decades.[2]

In response to the demise of the lumbering industry and the resultant economic decline, the region organized to attract new industry. By 1910, they were successful in attracting over forty new industries to the area. Although a great diversity of industries were attracted during this period, they consisted primarily of heavy industrial activities requiring a minimum level of skilled labor and offering low-to-moderate levels of income.[3] The lumbering era, through its location of sawmills along the Muskegon and White Lakes, had set the pattern for industrial uses to be located along these shorelines. Thus, when new industry arrived in the area, it too located along these shorelines nearby to the older industries which had supplied heavy materials to the lumber mills. The lakes were used by industry for easy transportation and as a receptacle for their wastes.

Two other resources wasted in the County during this period are worthy of note. The first, the land, was left barren behind the lumberjacks; it had neither the topsoil nor the proper drainage to support a viable agricultural segment of the economy. The second resource, gas and oil, was discovered in 1927, just in time to make

the effects of the depression less traumatic. The development of extractive operations for these resources enhanced a period of industrial growth lasting until the 1950s. By 1940, however, the oil and gas fields were no longer productive.

The impact of Muskegon County's urban growth and heavy industry has taken a heavy toll on the area's physical environment. The shorelines had always been its most striking feature. But decades of industrial sprawl, pollution, and landfill had left the lakes in a degraded condition. The mining of sand and unregulated growth patterns had destroyed large areas of the shoreline dune. Air pollution grew offensive near the cities, and the fringe areas became characterized by leapfrogging urban sprawl.

B. Political Problems

The confusing assortment of local governments within Muskegon County has hampered the ability of those governments to come to grips with the cause and effect of environmental degradation in the County. This situation has led to various proposals for altering governmental arrangements within the County. Three specific proposals of this sort have been raised: governmental consolidation; creation of a special water and sewer authority; and the development of a larger role for County Government in areawide planning.

Consolidation has been a popular issue throughout the last fifty years in Muskegon County. The urbanized area of the County consists of two larger cities, Muskegon and Muskegon Heights; three smaller cities, North Muskegon, Roosevelt Park, and Norton Shores; and extensive development within the neighboring Muskegon townships

without any one unit occupying a relatively dominant position. Among other things, this situation has created a confusing patchwork of utilities and public services that in some instances appeared to hamper regional development.[4]

In 1959, a citizens' committee attempted to bring about a public referendum on the question of consolidating the various government units surrounding the City of Muskegon. This particular effort was eventually doomed by an October 1958 ruling from the Michigan State Supreme Court that consolidation could not be accomplished by a vote of a simple majority of the voters within the proposed new city; rather, a majority would be required in each of the constituent government units (Taliaferro vs. Genesee Supervisors). In response to this ruling and to the increasing evidence that voters in the townships were hostile to consolidation, the petition for a referendum on consolidation was withdrawn.

On the heels of this failed effort to bring about consolidation, new citizens' committees were established in 1959 in the County's center cities of Muskegon and Muskegon Heights. To test voter response to the issue of consolidation, these committees petitioned for a referendum on the concept of consolidation; a subsequent election would be held to approve a city charter for any new consolidated community. In 1961, the combined voters of Muskegon and Muskegon Heights voted down the concept of consolidation. In the City of Muskegon, which would have been the center of the proposed consolidated community, the vote was heavily in favor of consolidation while in Muskegon Heights the issue was defeated by a slender

margin. Only 32 percent of the registered voters in both cities voted. Post election analysis revealed that the very significant black population of Muskegon Heights had voted against consolidation. The black community apparently felt that it would lose its political effectiveness in the context of the larger consolidated city.[5]

In 1962, a second referendum on the concept of consolidation was held. This time the proposal was defeated by a larger margin than previously, due in part to the even smaller number of voters who came to the polls.[6] This effectively ended the consolidation efforts in Muskegon County.

With the failure of consolidation in Muskegon County, local leaders who were interested in securing water and sewer facilities for newly developing areas turned to a more specific approach. The issue of water and sewer extensions and the sale of water to smaller communities became the focal point of attempts to provide areawide planning and operation of water resource systems. This concern had become particularly intense due to the City of Muskegon's aggressive annexation policy, which was adopted in an attempt to control the establishment of separately incorporated villages surrounding the City of Muskegon. In conjunction with that policy, the City of Muskegon used the extension of water supply lines as a sanction: unless an area annexed itself to the City of Muskegon, it would have to pay a surcharge for the extension of water supplies from the City of Muskegon which would be equivalent to those extra taxes which would fall upon that area if it were annexed by the City of Muskegon. The various problems associated with the areawide

management of water resulted in two attempts to solve these problems: the regional water study of the Muskegon Area Economic Planning and Development Association (MAEPD); and the organization of the Muskegon Area Water and Sewer Authority.

The membership of the MAEPDA felt that the provision of water on an areawide basis in Muskegon County would serve as an economic stimulus. Accordingly, the MAEPDA concluded on the basis of a regional water study performed by Bauer Engineering that the only feasible means of administering an areawide waste water system was to establish an areawide organization which would own and operate all waste treatment and water supply facilities in the area. Realizing that the Cities of Muskegon and Muskegon Heights would not relinquish their individual water and sewer authority, which was their most important tool in controlling development in the area, the MAEPDA elected to develop a totally independent water and sewer system. In February 1964, it helped to establish the Muskegon Waste Water and Sewer Authority for that purpose. The authority began its planning effort immediately using the consultant firm that had prepared the earlier MAEPDA study. When the Cities of Muskegon and Muskegon Heights once again refused to entertain the prospect of joining an areawide water and sewer authority, the Muskegon Area Water and Sewer Authority proceeded to adopt a plan calling for a completely independent system. That plan was submitted to the Federal Water Quality Administration in 1966, in an application for federal construction grants. At the same time, the City of Muskegon submitted its own grant request for the extension

of its sewer system. This resulted in the FWQA rejecting all grants in the Muskegon area until some type of regional planning was adopted to resolve the duplication of systems in the area.

The damper which the FWQA's action placed upon the effort to bring about an areawide water and sewer authority served to usher in a more salient role for County Government in areawide planning and the financing and construction of water and sewer facilities. Recognizing the vacuum of authority in those area, the County acceded to the wishes of the Cities of Muskegon and Muskegon Heights and moved to assume responsibility for areawide planning and the provision of water and sewerage services. In 1966, the County established a County Department of Public Works, which contributed to the dormancy of the Muskegon Area Water and Sewer Authority. With the advent of a County Department of Public Works, it was possible for the County to provide a financial guarantee for the townships when they constructed water distribution lines, and water could be supplied by the central cities, thereby removing the need for the Water and Sewer Authority.

Another milestone in the elevation of county wastewater management responsibility was the County Board's appointment, in 1964, of a County Planning Commission, climaxing a long-standing effort to establish a county planning function. In July 1967, when the A-95 grant review requirement of the Federal Office Management and Budget took effect, the County Planning Commission was redesignated as the Muskegon County Metropolitan Planning Commission and certified as the A-95 review agency or "metropolitan clearinghouse" for the Muskegon SMSA. This federal action had a snowballing effect upon the preceding

effort to enlarge the responsibility of County Government. For one, the County Planning Commission was at once armed with County authority as well as the significant federal authority mandated to A-95 agencies. Secondly, the fact that Muskegon County is itself a one-county SMSA has meant that an existing unit of general-purpose local government, i.e., the County, qualifies as the locus of federally-defined A-95 grant review authority. In contrast, the numerous multi-county metropolitan areas, such as the five-county Chicago SMSA, have been impelled by the Office of Management and Budget to establish or recognize an umbrella-like single-purpose unit of government to perform the A-95 grant review function; in such cases, the establishment or increased authority for a metropolitan-wide institution has--in some ways--occasioned a devolution of the planning authority of existing units of local government.

The purpose of recounting the succession of attempts to bring about areawide water resource management and planning in Muskegon County--events which led to an enlarged role for County Government--has been to demonstrate that the residents of the County were given the opportunity to consider the consolidation of government units and the erection of a special-purpose authority and found those arrangements to be wanting. The only arrangement which Muskegon County residents were willing to tolerate for the provision of areawide wastewater management and planning was the assignment of those responsibilities to County Government. The fact that the residents of Muskegon County chose to rely upon an established unit of general-purpose local government, i.e., the County, for

areawide wastewater management and planning facilitated the later task of implementing a county-wide wastewater management plan.

C. Inception of the Muskegon Wastewater Management Project

In the summer of 1968, Rod Dittmer, the Director of the Muskegon County Planning Commission, went to the Center for Urban Studies of the University of Chicago in search of consultant services to assist the County in preparing a water resource policy study. Mr. Dittmer was specifically interested in securing the services of Dr. Gilbert White, a noted authority on water resource management. Upon learning that White had left the faculty of the University and was no longer in the Chicago area, Dittmer turned to Dr. John R. Schaeffer, at that time a Research Assistant at the Center for Urban Studies and a frequent contributor to water resource planning efforts in the Chicago area. In August of 1968, John R. Schaeffer and Associates were formally contracted by the Muskegon County Planning Commission to prepare a water resource policy study for the County. This study, which was completed in November 1968, provided the basis for action in developing a county water resource management policy statement.[7] The new policy statement, which was adopted by the County Board in February 1969, served notice that the County was prepared to halt inadequate waste treatment practices. It extended the involvement of the County to any water or sewerage facility involving more than one governmental unit, which could affect the operations of another governmental unit or which affected general county development in any way. With this statement, the County asserted itself as the mediator between the various factions quibbling over water resource

problems, and as the prime policy maker within the County.[8]

In order to meet the January 1, 1973 deadline for achieving the treatment standards of the Lake Michigan Enforcement Conference, Muskegon County had to submit an application to the Michigan Water Resources Commission by May 15, 1969 in order to receive funding to commence a wastewater management project during fiscal 1970. In response to this timing, Schaeffer proposed a land disposal/spray irrigation system for wastewater treatment as a county-wide answer for the 1973 dealine for 80 percent phosphorus removal and secondary treatment as prescribed by the Lake Michigan Enforcement Conference and required by the State of Michigan. While the County Board of Supervisors deliberated upon this proposal, Schaeffer and the County Planning Commission proceeded to plan for the spray irrigation concept. On March 25, 1969, the County Board finally approved Schaeffer's proposal and agreed to retain Bauer Engineering to develop a more detailed proposal for submission to the Water Resources Commission.

Whereas previous wastewater management efforts in Muskegon County had applied minimal treatment to sewage before discharging wastewater into natural water bodies, the Schaeffer proposal dictated the principle that effluents should not be released to the natural water bodies at all. Instead, secondary-treated wastewater should be placed upon the land, using the natural properties of the soil to assimilate waste material from the secondary-treated effluent -- after which this treated effluent would be discharged into water courses. The novelty of the Muskegon Plan does not derive from the land disposal concept

itself, which is as old as man. Rather, the novelty of the Muskegon Plan is that it represents the largest scale application of the land disposal concept in this nation's history.

The response of the Michigan Water Resources Commission (WRC) to the Muskegon Plan was triggered by the Commission's concurrent receipt of a proposal from the City of Muskegon and its previous receipt of a proposal for the White River-White Lake system which served White River and Montague Townships. As a result, the WRC ruled that the County, the City of Muskegon and the two townships had sixty days to iron out their differences -- after which the Commission itself would intercede to solve the differences. In addition, the Commission directed Muskegon County to procure the approval of its plan from the Michigan Department of Health, a normal requirement for all proposed waste treatment facilities.

During the months following submission of the proposal, discussions with the State Department of Health with regard to obtaining a permit produced a number of scientific reservations regarding the Muskegon County proposal. The nature of these reservations indicated that six months of work would be required to satisfy the Health Department's questions along.[9] At the same time, the existence of a rival program in the same area necessitated a resolution of divergent opinions within Muskegon County. In light of this situation, a three-part program was embarked upon.[10] First, efforts were made to develop local acceptance of the County program (generally at the expense of the City of Muskegon's program). Second, efforts were made to maintain interest in the County program at the State level and to postpone any decision

by the State until the County was able to assemble all of the pertinent evidence supporting its position without question. Finally, efforts were made to obtain a federal research and development grant to support the feasibility study which the Bauer firm had under way.

To gain local acceptance of the spray irrigation proposal and to neutralize any possible opposition, Schaeffer, Rod Dittmer and members of the County Planning Commission re-vitalized their speech-making to local organizations while saturating the local media with favorable information on the spray irrigation concept. The proponents of the Muskegon Plan concentrated much of their activity upon winning the support of various local residents who were regarded as being "influential." As part of that effort, a field trip was arranged for various local decision-makers and certain State officials to visit Pennsylvania State University's small-scale operating spray irrigation project, which has been partially funded by EPA. Although it is unusual for planning and engineering consultants to become actively engaged in the political implementation of their planning proposals, the key role which John Schaeffer played in urging adoption of the Muskegon Plan and the generous support which he and the other proponents received from Bauer Engineering were weighty contributions to the eventual adoption of the spray irrigation proposal.

The other major effort was to convince the City of Muskegon that it was to their advantage to withdraw their proposal and to accept the County scheme. The eventual decision by the City of Muskegon was largely a result of two factors. For one, by the early spring of 1970,

the Bauer Engineering firm, which had been contracted to perform the engineering aspect of the project, had completed the feasibility studies for the spray irrigation project. Their study held that there was sufficient evidence to indicate the feasibility of a county-wide spray irrigation system for wastewater treatment. Second, the speech and education program conducted by Messrs. Schaeffer, Dittmer and the members of the County Planning Commission was successful in winning the support of numerous important people throughout the County, including numerous persons in the City of Muskegon.

An additional activity was the need to obtain, on short notice, a research and development grant from the FWQA to fund the feasibility studies necessary to meet the reservations of the Michigan Department of Health. This grant was obtained after a series of talks between the Muskegon interests and Schaeffer and the FWQA. This was facilitated to some degree by the growing interest in the project of Congressman Guy Vander Jagt and subsequent discussion of the project with Russell Train of the Council on Environmental Quality and David Dominick, Commissioner of the Federal Water Quality Administration.[11] Although feasibility studies had already begun, federal research and development funding did not become available until February 1970.

The culmination of the effort to convince local interests of the desirability of the spray irrigation proposal came on June 27, 1970, when the Michigan Water Resources Commission approved the Muskegon Plan. The factor which was most responsible for this success was the feasibility studies which Bauer Engineering prepared with FWQA funds to provide evidence that a spray irrigation system was viable.

Three additional tasks were required to facilitate final implementation of the Muskegon Project. First, a permit had to be obtained from the Michigan Department of Public Health before construction could begin. Second, optimum financing of the project from State and federal sources had to be obtained. And finally, local financing had to be arranged.

Even after the feasibility studies were completed in July of 1970, the Michigan Department of Health continued to have reservations over the reliability and safety of the proposed project. Nevertheless, Muskegon County was apparently satisfied itself that spray irrigation was safe and reliable; the County went ahead and advertised for construction bids on the project, even though they had not obtained the Health Department permit required before commencing construction. The bids which were received ran two-to-four times the costs projected by the Bauer firm, resulting in a rejection of all of these bids and design modification and elaboration pursuant to a second round of bids. Meanwhile, discussions with the Department of Health continued, during which time political pressures were being brought to bear on the governor through the efforts of Congressman Vander Jagt.[12] Final approval by the Department of Health was officially received in April 1971. Shortly thereafter, a second advertisement for construction bids was made which produced more reasonable bids and the contract for construction was let.

In addition to the basic Federal Sewerage Works Grant and Associated State Funds, Muskegon County sought to obtain an additional Federal Research and Development Grant as a further source of federal funding. By its very nature, the Federal Research, Demonstration and Development

Grant program is intended to provide federal financial support to develop and "de-bug" new technologies. However, Muskegon County's interest in obtaining such a grant does not appear to have derived from a concern on their part that the spray irrigation concept of wastewater treatment needed further study. The actions of the proponents of a spray irrigation system for Muskegon County indicate their outward confidence that spray irrigation was viable in all respects in Muskegon County. Accordingly, a Federal Research, Development and Demonstration Grant appears to have been sought as an available source of federal funding which, by its nature, did not require conclusive proof on the part of the grant recipient that the project being funded was without complications. The Great Lakes Regional Office of the FWQA, which was the predecessor to the Region V (Chicago) Office of EPA, appears to have become involved in Muskegon County's process of application for a Federal Research, Development and Demonstration Grant after the decision to award the grant had been made. Through the assistance of Congressman Vander Jagt and his staff a number of meetings were held with high-level Federal administrators for the purpose of stressing "the importance and potential of this research."[13] These efforts proved successful, and by October 1970, the FWQA had found the funds to provide an initial research and development grant of about one million dollars, which could later be increased to $2.3 million.

One of the final tasks necessary to implement the spray irrigation proposal was to arrange to sell the revenue bonds which would provide the anticipated 16 million dollar contribution of the County to the

total cost of the project. The only difficulty rested in avoiding any type of litigation which would prevent sale of the bonds. A group of citizens from the White Lakes area of Muskegon County formed an organization to oppose the project and indicated that they intended to file suit to restrain its implementation. They intended, however, to wait until a late moment before instituting suit. In order to head off this suit, lest it interfere with the timely sale of County revenue bonds, Muskegon County brought suit for a Declaratory Judgement against the citizens group, and also made it a class action in order to have the maximum effect of the judgement. The effect of this suit for Declaratory Judgement, if successful, would be that the citizens group would have its day in court and could not bring further suit with respect to the spray irrigation project. To avoid this prospect, the citizens group filed a counterclaim under a then recent Michigan statute whereby individual citizens may bring action to obtain relief against the State, where an alleged pollution of the environment is likely to occur.

The case was advanced for early trial and was heard by all three of the circuit judges for Muskegon County. After hearing testimony from various experts--including supportive EPA testimony--and convening an extraordinary court session at Pennsylvania State University to observe the spray irrigation demonstration project, the Court unanimously ruled that the design for Muskegon's spray irrigation project was basically sound and that construction should therefore not be prevented. Specifically, the Court held that the design of the spray irrigation system was not likely to constitute a nuisance or a hazard to public health to the residents of the area or County; that there

was no likelihood of migration of groundwaters outside the perimeter of the proposed site; and that private wells and natural water bodies outside the site would not likely be polluted by the return of the treated water.

The Court also unanimously held against the counterclaim of the citizens' group by stating that the great weight of evidence established that the proposed system was not likely to pollute the air, water or other natural resources. The opinion established that there was no feasible and prudent alternative to establishing some kind of adequate wastewater treatment in the County. The final decision was reached in May 1971, opening the way for subsequent sale of the bonds in July 1971.

The significant aspect of the Muskegon County Court decision in favor of the County's spray irrigation plan is that it was limited to the safeness and workability of the design for the Muskegon Project. The Court did not rule that the Muskegon Project would work; it held that the design for the project was workable -- and reserved the right to adjudicate whether the system is a health hazard or nuisance after the system goes into operation. In this light, the Court decision is hardly profound. It merely confirmed through the Court what natural processes and small scale spray irrigation projects have shown: that the concept of spray irrigation is practicable and effective. Similarly, the Court testimony of EPA officials in support of the workability of the design of the Muskegon Plan does not indicate the Agency's position on the safeness and effectiveness of the Muskegon Project, which necessarily must await the completion and operation of that project and the performance of certain monitoring and surveillance. As

compared with other methods of wastewater treatment, the safety and effectiveness of a spray irrigation system is much more dependent upon proper management. Accordingly, the management of the Muskegon Project must be observed in practice--especially in light of the project's unprecedented scale in the United States--before an informed judgement can be made on whether a relatively large scale spray irrigation system can be safe and effective.

D. DEVELOPMENTAL ASPECTS OF THE "MUSKEGON PROJECT"

1. Effect on Land-Use

When the 10,000 acre Muskegon Project is completed, 6,000 acres of land will be utilized for the spray irrigation of wastewater. This land was formerly the agricultural and residential property of three separate townships. Approximately twenty-five percent of the land from one township and fifteen percent of the land from another was designated for the use of the project. Much of the land is agricultural while some of the space is forest land or is covered by scrub brush. The development of this land for irrigation of secondary treated wastewater treatment will effect land use in many ways.

Roughly 200 families have been affected by the process of relocation from the disposal site and of these residents some are still dealing with the county and/or the courts with regard to the imposed relocation. This aspect of the project, which is eighty percent complete, has not impeded the implementation process, however; construction work on the lagoons and other projects is proceeding while condemnation actions continue. It has also been necessary to relocate some business establishments; this is being accomplished in much the same manner as the relocation of private homes.

Those farmers who are required to move have the right to relocate on land similar to the land they vacated. In some cases, this will mean that a large amount of land not previously used for agricultural purposes will now be utilized in that capacity. Because the land at the disposal site will continue to be used for agricultural purposes and most of the farmers will relocate on land they can farm,

agricultural acreage will increase. This phenomenon may overburden the local agricultural market, forcing some farmers out of the market.

Several easements passing through the site will be removed. Power transmission lines will remain on the site while gas mains will have to be relocated. Telephone lines will retain their easements and a major east-west thoroughfare which passes through the site will remain intact. Several other secondary roadways will be closed off; however, these roadways were mainly used by the residents in the area and will therefore serve little purpose once these residents have been relocated.

About 4,000 acres of forest land will have to be cleared of timber. At present, it appears that the only feasible means of destroying this cut timber will be by burning. Some of this timber land was used for recreational purposes such as hunting. Within this area a private shooting club previously existed until it was removed for the benefit of the project. A small amount of the forest land was also used for nurseries which provided ornamental trees.

No land use plan is in existence for the County of Muskegon, although an inventory of the County's existing land use and its developmental factors has been compiled by the Muskegon County Metropolitan Planning Commission. The absence of a land use plan reflects the lack of consideration that has been given to land use during the implementation of the County's wastewater management plan. Indeed the Impact Statement itself is noteworthy for its brevity on the subject of land use. Roughly five short paragraphs of the Impact Statement were given to land resources. This is particularly interesting because the change from a structural system of wastewater

management to a land system is obviously going to have a far reaching impact of unknown consequence on land use. Much of the consideration given to land use on the Impact Statement is focused on the absence of land use plan prior to the inception of the project. For example, the Impact Statement points out that the removal of existing sanitary waste treatment facilities from the lake shore and the stream improvements produced by the low flow augmentation with high water quality would create open space green belts and potential park land. The Statement goes on to point out that these new spaces will only be utilized beneficially "provided that an effective land use plan becomes available." This is not a new idea, but one that is basic to the whole concept of spray irrigation with its potential for effecting land use. Accordingly, the Impact Statement recommended that all the land embraced by the project--especially the land and facilities that could be used for new purposes--be included in the planning base. In order to achieve the most beneficial use of newly created open space and to avoid a detrimental impact on land use, plans must be completed prior to construction. The plans must reflect the needs of both the urban and rural communities wherever an impact will be felt.

The impact of a land disposal system on land use is felt by the citizens of both the urban and rural areas - in different ways. In the urban area, the shoreline lakes will be affected. Rejuvenation of this area should facilitate development, resulting in an increase in land values. If water resource management is to serve as the catalyst for rejuvenation in this area, then land-use planning must be conducted which reflects the nature of that change.

The rural area demands similar attention. The use of rural land is intrinsic to the design of a land disposal system. The system requires large areas of agriculturally productive open space with a particular type of soil composition. The soil must serve two functions: one, it must be of a type to provide for the proper drainage (to act as a "living filter"); two, it must be able to support the growth of suitable crops. Only a certain type of land can meet these specifications. Not all rural land can meet these requirements, but all the land that does is rural.

The use of rural land to solve urban water pollution problems necessitates prior planning that takes into consideration the needs of both rural and urban areas. Viewed from this perspective, land disposal can serve as a vital link between the rural and urban areas and as an adjunct to proper planning for the best use of both land areas. Planning in this fashion will encourage the examination of the forces and demands of growth simultaneously influencing both areas. For example, the disposal site in a rural area can serve as a catalyst for growth in that area or it can serve as a buffer against urban sprawl.

2. Costs

The total cost of Muskegon's wastewater project is expected to be $42 million at this writing. This figure includes construction, engineering, legal, administrative and research costs. The anticipated expenditure for each of these items is broken down as follows: construction - $32 million; relocation - $1.3-1.5 million; land acquisition - $3-4 million. Land acquisition and relocation costs will be assumed by the County and the Environmental Protection Agency.

Construction costs are eligible for 55% federal funding and 25% State funding. The EPA has provided $6,381,840 in construction grant funds for the project thus far. Actual federal funding up to the level specified for research and construction programs requires the availability of funds from additional appropriations by the approval of Congress; however, this may change should the Federal Water Pollution Control Act Amendments of 1972 become law. The EPA could conceivably contribute up to seventy-five percent of the total eligible project costs. If this project is funded to the extent of its eligibility under existing law, it would be the largest single grant ever awarded by EPA's Office of Research and Monitoring.

3. Construction

Construction work on the project began in September 1972 and, as of August 1972 is now fifty percent complete. Not all of the land specified for acquisition has been purchased due to court disputes over purchase prices; but, construction has proceeded in those areas not effected by these disputes. Sewer transmission pipeline is virtually in place and most of the sewer feeders have been completed. All but one access-point pumping station is on-site and awaiting installation. The lagoon dikes are 15-20 percent complete and channels have been dug for most of their intended length. Work is progressing on the interior of the control building. Approximately 1,000-1,200 acres of forest land has been cleared and it appears that the cut timber will be burned - despite the effect upon the air resource.

4. Agricultural Considerations

The amount of wastewater that can be applied to the soil at any given time is limited by the ability of the soil to absorb nutrients and by the hydraulic transmissibility characteristics of the soil. If wastewater is applied to the soil in excessive amounts, the soil may become flooded or may not be able to absorb the phosphorus, organic wastes, and other contaminants which could then potentially escape the control of the system. (Up to a point, agricultural yield can be increased by increased water application.) In short, managerial variables play a decisive role in balancing the treatment processes against optimization of agricultural profit which in turn creates an atmosphere of rivalry between the engineering and farming interests.

The crops that can be grown when effluent is used as a means of irrigation are limited by health and safety considerations. Generally crops irrigated with effluent are limited to those that require careful and controlled conditions such as cooking before eating by humans. Most of the crops expected to be grown will be suitable as industrial raw material, e.g., corn and potatoes for starch, and alfalfa for feed. It is not known yet whether pathogenic bacteria and viruses will remain viable in significant number or will die after a long period of time after application in the climate in Muskegon County. These aspects will be closely monitored at the Muskegon site in order to determine what the hazards and limitations are when crops are grown from secondary treated wastewater. "That which works at Muskegon may not work elsewhere" is a maxim that applies to land disposal because of its many variables.

A consideration arising from the fact that the County owns the land and will grow the crops, is the economic effect of marketing the products that will be grown. This puts the County into direct competition with other farmers and crops will have to be planned according to what the market can absorb. Whether this can be accommodated considering the above mentioned restrictions and without flooding the market is yet to be determined. The Teledyne Corporation has contracted to operate and maintain the system and will receive an incentive bonus according to the excess of earnings over a certain amount of the total profit in addition to a fixed management fee. Thus, an impetus has been provided as an incentive for economic completion.

5. EPA Involvement

No single project manager from the EPA in Region V is working full time on monitoring the project. A task force of EPA Region V personnel is overseeing the project and preparing a status report. Responsibility on the task force is divided in accordance with the sources of EPA funding for the project by Division (Construction Grants, Research and Monitoring, and Surveillance and Analysis). The purpose of this committee is to coordinate the evaluation of the project and provide technical assistance to Muskegon County and its contractors.

At present the evaluation of the project is an in-house operation. However, the task force is investigating the contribution that could be made by the Federal Food and Drug Administration and the Soils Conservation Service and the Agricultural Research Service of the Department of Agriculture.

E. CONCLUDING ASSESSMENTS ON THE MUSKEGON EXPERIENCE

1. Strategic Use of County Government

One of the most distinguishing features of the Muskegon experience is that the proposal for a county-wide land disposal system did not involve the creation of a new unit of government to operate that system. In fact, the only arrangement which Muskegon County residents were willing to tolerate for the provision of areawide wastewater management and planning was the assignment of those responsibilities to county government. Accordingly, the proponents of the spray irrigation proposal capitalized upon the available opportunity to use county government as the shepherd for their scheme. This reliance upon county government was facilitated by the fact that Muskegon County is an individual SMSA; its county planning commission is therefore a metropolitan planning commission. Consequently, the Muskegon experience does not furnish evidence of the ability of a multi-county SMSA to carry out a metropolitan-wide land disposal system.

2. Reliance upon Political Resources

The effectuation of the Muskegon Plan owes in large measure to the ability of the proponents of the plan to command the support of political figures who were able to use political pressure to encourage various organizations and individuals to support the proposal. The funding and certification of the project resulted from the proponents' success in coalescing a dispersed base of support among elected and administrative officials and influential local decision-makers. Because the spray irrigation proposal was carried out on the basis of advocacy by county government and elected and administrative

officials, the fact that the system is being implemented should not be interpreted as evidence that citizens are willing to support application of the spray irrigation concept in their own community.

3. Limitations upon Citizen Participation

Active support for the Muskegon Project on the part of the citizenry of Muskegon County was never requisite for the implementation of the spray irrigation proposal. The proponents of the project demonstrated a keen awareness that clamorous public opposition could imperil their proposal but that active citizen support was unnecessary. The strategy of the proponents for mollifying any incipient public opposition to the project was to barnstorm the county with speech-making while saturating the local media with favorable information on the spray irrigation proposal. In face of the technical documentation which the proponents provided in support of the project, there was no citizens' group, local government or aggrieved citizen which could match the volume of effort and technical articulateness of John Schaeffer, Bauer Engineering and the County Planning Commission. As a result, viable citizen opposition to the project was effectively disqualified from the start. The advocacy role played by county government and the support which the proponents secured from local "influentials" appear to have occurred at the expense of representative county government and citizen participation in the planning process. The fact that the proponents resorted to bringing a suit for Declaratory Judgement to head-off a court challenge from an opposing citizens' group exhibited the intransigence of the proponents' commitment to implementing their proposal -- even if it meant denying a meaningful public airing of disagreement with their scheme.

4. "Functional" Aspect of the Muskegon Wastewater Management Plan

In spite of the reference to the Muskegon wastewater management plan as an example of comprehensive water resource planning, the fact remains that that plan is not comprehensive in the sense of multiple functions; it is comprehensive only insofar as water resources are concerned. Accordingly, the amount of deliberate planned consideration which the Muskegon Plan devoted to land use and other functions beside water resource management is extremely limited. In the absence of any real comprehensive or land use plan for Muskegon County, the wastewater management plan thus becomes the incontrovertible basis for subsequent planning and development. The fact that the land disposal method of wastewater treatment has such a direct and wide-ranging impact upon the land resource as compared with conventional methods of tertiary treatment makes it all the more necessary that land use planning be carried to completion for Muskegon County to prepare for the anticipated impact of the county-wide spray irrigation system.

5. Tentativeness of the Muskegon Project

Because of the success which the Muskegon Project has enjoyed in receiving certification, multiple sources of government funding and favorable publicity nationwide, it has become commonplace to think that the Muskegon County land disposal system also represents a technological "success." Contrary to this general impression, the technological success of the Muskegon Project remains highly tentative until such time as the system becomes fully operational and is performance-tested on a continuous basis while in operation. The fact that the design for the project has been deemed "feasible" does

not guarantee initial, complete success; rather, it indicates a technological judgement that any anticipated problems can be resolved through the application of existing technology without a major restructuring of the project concept. Accordingly, EPA has required as a condition of its research and demonstration grant to Muskegon County that evaluation studies be performed over three- to five-year periods in four critical areas of project performance. Once the Muskegon Project becomes fully operational and conclusive evidence is obtained from the continuous monitoring of the system, there will be some basis for determining whether the Muskegon Project is indeed a technological success. Until that time, there is nothing about the Muskegon Project which indicates the technological effectiveness, or even feasibility, of a similar land disposal system on such a large scale.

PART II - THE RESPONSE TO THE MUSKEGON PROJECT

Late in 1970, the Office of Management and Budget and the Public Works and Appropriations Committee of Congress approved the Department of the Army's (DA) request to conduct a wastewater management program. The authority for this approval is derived from Section 206 of the Flood Control Act of 1958, which gives the Army Corps of Engineers (Corps) broad powers to insure navigability within America's waterways. The purpose of the study is "to determine the advisability of improvements in the interests of wastewater management, ...and[to]evaluate general alternatives for the management of wastewater on a regional basis" within the five major metropolitan areas cited for examination. The regions affected are the Marrimack Basin (Boston), San Francisco, Detroit, Cleveland-Akron, and Chicago, the last three of which are within the jurisdiction of EPA Region V. These five major urban areas include 12 percent of the urban population of the United States. The following discussion concentrates on the Corps study for Chicago-South End Lake Michigan.

A. Areas Identified

The Chicago-South End Lake Michigan (C-SELM) area encompasses nearly 90 townships and portions of seven counties. Four of those counties are in Illinois and three are in Indiana. Drainage for the 2,800 square mile area is ultimately to the Illinois River through the Illinois waterway system or Lake Michigan by a complex of rivers and channels. The predominant feature of the area is the large urban area of Chicago and surrounding cities in Indiana. The area of Chicago alone includes a population of 7.2 million (1970 Statistics) and is characterized by its diverse industry and economic stability. Heavy industry in the area is largely steel and petroleum. Wastewater

originating in the area contains an undetermined number of constituents (toxic substances, pathogens, oxygen demanding wastes, biostimulants, radioactive substances, suspended material, heat, surface material, dissolved solids) which may or may not be pollutants. The pollutants contained in the water bodies in this area can be divided into three general classifications: industrial wastes which are independent of municipal systems; municipal wastes, which include domestic, commercial and some industrial loads; and stormwater runoff from urban and suburban areas.

B. The Chicago-South End Lake Michigan Experience

1. Basic Assumptions

In August 1971, the first phase study for the C-SELM Pilot Wastewater Management Program was completed and submitted to the Secretary of the Army by the Office of the Chief of Engineers, Army Corps of Engineers. These feasibility studies were performed mainly for the purposes of identifying the problems of wastewater management by improving water quality standards, maximizing the cost effectiveness, assuring that all the alternatives considered the economic, social, institutional, and financial advantages and constraints, and the technical aspects. This report set forth a range of choices for managing wastewaters from the perspective of improving water quality while considering programs for total water management and total resource management. The technical phase of the work was based on the idea that wastewater management will be the primary vehicle for meeting regional water resource needs.

2. Findings

The feasibility study recognized various wastewater management alternatives. All of these alternatives had three basic management

features: 1) collection; 2) treatment; and 3) disposal. The basic philosophy behind the alternatives is that wastewaters are part of the total water cycle and that waste constituents or pollutants should be "considered as resources out of place." The study attempted to define these pollutants and to examine their characteristics as potentially beneficially substances. In this way, the reuse of pollutants is the underlying concept behind all the alternatives. While each of these alternatives has different features, they have been categorized into three groups; these are: 1) conventional advanced biological, 2) conventional advanced physical-chemical, and 3) land disposal. The third alternative, land disposal, provides chemical and/or biological treatment to the secondary level prior to application of the wastewater to the land. Thereafter, the assimilative capacity of the soil acts as a "living filter" and "purifies" the water before it is retrieved through tiles lying beneath the soil. The pollutants removed from the wastewater and collected by the soil are believed to have a potential for stimulating plant growth for agricultural purposes as well as for conditioning soils. These tiles beneath the soil collect the water and transport it through conveyance devices back to its original source.

3. Standards

Various alternatives for achieving these three management strategies were analyzed against the standard of "No Discharge of Critical Pollutants" (NDCP). The basis for this NDCP standard arises from a recognition by the Corps of the frustration caused

by planning on the basis of existing standards, which are ever-changing. Because the study was set within the planning frame of the year 2020, the list of acceptable pollutants are expected to be more detailed and restrictive than the present standards. Two standards are set, the present standards at the bottom of the spectrum and NDCP at the top, against which the Corps is developing their list of alternatives. Thus, the selection of final alternatives is expected to reflect the maximum purity of sewage effluent and urban runoff possible. This is an all-or-nothing proposition with no options for developing any incremental assessments in achieving their goal. Once the standard of NDCP has been set and a commitment has been made to this goal, wastewater management systems which could achieve standards falling along the continuum from the present standards to NDCP go largely ignored. Setting such a narrow approach as NDCP has the effect of reducing the number of viable alternatives that could otherwise be considered during the planning framework period. From the standpoint of a regulatory agency, the standard of NDCP could well make enforcement of such a criterion economically untenable. The assumption is, of course, that the complete removal of all critical pollutants from the water is the most environmentally sound way of cleaning our water system. This assumption, however, may not be the best approach from the standpoint of protection of the total environment.

4. Memorandum of Understanding

Subsequent to the approval by the Congressional Committees commissioning the studies, a memorandum of understanding was executed April 1971 between the EPA and the Office of the Secretary of the

Army. This memorandum applied to the feasibility studies and stated that they were to be conducted with the participation, consultation and cooperation of the EPA. By encouraging communication and coordination between EPA, the States and local governments, the memorandum attempted to lay the groundwork for a well-rounded study. This memorandum of understanding plays a significant role in the relationship between the two Federal agencies and is indicative of the overlapping areas of responsibility within the field of water management.

5. Phase I and II

a. Basic Assumptions

The transition which the Corps made from the feasibility study to the Phase I survey-scope study was not smooth; nor was the transition made without touching off objections to the study as a whole. For a more detailed analysis of the EPA's official opposition to the continuance of the study, see section c., below.

On 18 February 1972, the Corps released the report on the feasibility studies and undertook Phase II consisting of survey-scope studies. The Phase II report contained a list of 19 alternatives which capitalized on the breadth of available technology for the best known treatment performance. The recommended alternatives were all various combinations of the three systems previously mentioned: 1) advanced biological, 2) advanced physical-chemical, and 3) land disposal.

The presentation of these alternatives evidences that certain assumptions underlie the whole approach which was taken to the study. One such assumption was that, in order to achieve the best system of regional wastewater management, institutional restraints should not

be initially considered. While this approach allows the maximum flexibility for design, it ignores the political considerations that must be considered at some point in order to lend "real world" credibility to the study. Although the Corps takes into consideration the socio-economic impact of wastewater management, they apparently assume that the waste treatment method that costs the least will be the best system to implement. This approach does not necessarily take into account actual social and environmental costs.

b. Other Input

However, the Corps of Engineers has awarded a contract to faculty and staff members at Northwestern University (Illinois) and to members of the Northwest Consortium (Indiana) to perform a socio-environmental evaluation of the impact of a C-SELM wastewater management system. The methodology adopted for this evaluation calls for a listing of the primary impacts of each of the plan alternatives for C-SELM. These impacts are then assessed against a listing of "human impact dimensions," thereby establishing matrices for quantitatively determining the effect upon human values of each of the plan alternatives. The final results of this socio-environmental evaluation were not available at this writing; however, the nature and timing of this evaluation--as established by the Corps of Engineers--has already come under criticism from members of the evaluation panel who have technical backgrounds in sewage disposal. The thrust of their criticisms has been that they are being asked to evaluate the socio-environmental impact of wastewater management systems in the absence of established evidence that those systems are technologically proficient. The Corps of Engineers has responded to this

situation by stating that technical aspects of the various plan alternatives would have to be accepted as given in the course of the socio-environmental evaluation and that the panel members performing that evaluation should not be considering technical questions.

c. EPA's Role

All of the C-SELM Study reports have been submitted to the Steering Committee for the C-SELM Study. The function of the Steering Committee is to provide guidance and necessary input to the Corps to insure that its efforts are complementary to the efforts of the States and to federal requirements. A representative from EPA sits upon the Steering Committee as an invited observer and provides minimal input to the Study. Thus, EPA's participation in the C-SELM Study consists of having a nominal representation on the Steering Committee which the Corps established for the study. This kind of nominal participation is particularly significant in light of the fact that the C-SELM Study represents a federal effort to protect and enhance environmental quality--normally the responsibility of EPA. EPA's piecemeal influence upon the C-SELM Study does not coincide with the impression held by the public, however. In the news media, the water management study is often referred to as a joint study of EPA and the Corps of Engineers. One Ohio newspaper stated in an editorial regarding the Cleveland-Akron study that the "wastewater management study was commissioned by the Federal EPA in seeking ways to rehabilitate Lake Erie." An Indiana Division of Planning newsletter depicted the C-SELM Study as an EPA effort: "The study <u>Alternatives for Managing Wastewater in Chicago-South End of Lake Michigan Area</u>,

was prepared by the Chicago District Office of the Corps of Engineers in cooperation with the Federal Environmental Protection Agency."

d. Steering Committees

The Steering Committee established for the C-SELM Study is comprised of representatives from Federal, State and local agencies concerned with wastewater management and natural resource planning as well as representatives from citizens' groups. The following governmental organizations have been invited to participate on the Steering Committee for the C-SELM Study:

Federal - U. S. Environmental Protection Agency, Region V

State:

Illinois - Department of Business & Economic Development
- Environmental Protection Agency
- Institute for Environmental Quality

Indiana - State Board of Health
- Stream Pollution Control Board
- Department of Natural Resources

Regional:

- Interstate Planning Commission

Illinois - Northeastern Illinois Planning Commission

Indiana - Lake-Porter County Regional Planning and Transportation Commission

Local:

Illinois - Metropolitan Sanitary District of Greater Chicago
- Chicago Department of Water and Sewers
- Chicago Department of Public Works
- DuPage County Public Works Department

- Bloom Township Sanitary District
- Joliet Department of Public Works
- North Shore Sanitary District
- Lake County Dept. of Public Works & Buildings

Indiana - LaPorte County Planning Commission

Various advisory committees such as the Committee on Commerce and Industry have also been established to provide input to the study. The establishment of these advisory committees is the principal means by which the Corps has attempted to encourage public involvement. Through these groups, the public has been invited "to participate in the plan formulation process and also function in an advisory capacity." Representing the public on these committees are conservationists, commercial and industrial representatives, people from the local sanitary districts and planning entities and members of various civic groups. Based upon input from the conservationists, a prototype model for the development of a North Branch of the Chicago River corridor was established as part of the study. While this prototype study was done in connection with the C-SELM Study, with assistance from NIPC, the joint Congressional Committee resolution authorizing the C-SELM study is silent with regard to such a prototype plan for the North Branch of the Chicago River.

The representatives from commerce and industry provided the Corps with input of a different sort. They have helped the Corps establish the degree of future water usage and recycling that could be anticipated by industry if the NDCP water quality standard becomes law. Representatives from the coal mining industries have provided the Corps with guidance in regard to the possibility of integrating sludge disposal

into strip mining operations. Persons with the Aggregate Producers Association have assisted the Corps' principal consultant, Bauer Engineering, Incorporated, in surveying the feasibility of selling the rock that is mined for the deep tunnel conveyance systems in the Chicago area market.

The local sanitary districts and planning entities have advised the Corps of financial concerns, operational and maintenance considerations and institutional relationships. The above descriptions of the various advisory committees and steering committees briefly describe the ideal nature and associations existing between the Corps, the regulatory agencies and citizens who would be effected in some way by the implementation of the plans contained in the study. Further examination of their role is required in order to see how these relationships actually work.

e. Participation Problems

The short time frame for the C-SELM Study has frustrated the ability of participants to contribute meaningfully to the course of the study. Because of the amount of ground which is being covered in the C-SELM Study in a relatively short time and the profusion of materials which the study has generated, meaningful participation in the study would require that each of the participants devote the bulk of his or her time to the course of the study. However, none of the agencies participating in the study have been able to expend the resources for a personnel to work on the C-SELM Study on a full time basis. During several Advisory Committee meetings, committee members have complained about the fast pace of the study and the

large amount of material requiring their attention in that short time. In response, Corps officials in Chicago have indicated that the schedule for the study was beyond their control and that the pace of the study was also difficult for them.

The procedure followed by the Corps for presenting new material limits the effectiveness of the committees. At various stages during the study, meetings have been convened to present and review the work accomplished by the Corps. Since committee members do not have an opportunity to review the new material before these meetings, they are able to make only superficial observations. The Corps could make better use of feedback from the committees if the committee members had the opportunity to study the material prior to their meetings. As an example of the timing of the presentation of the material, the Phase III report to the Steering Committee was printed and in the hands of the Corps on August 11, 1972, and was not distributed to the Steering Committee until immediately after the committee meeting on August 17, 1972. The chair person of the Citizen Advisory Committee, Ms. Lee Botts, who represents the Lake Michigan Federation, has asked whether citizen input to the study is useful since the tight schedule imposed upon the study indicates that its progress will be unaffected by citizen input.

6. Land-Use Implications of Alternative Methods

a. Description of Three Methods of Treatment

Advanced Biological Process

In the advanced-biological process, polluted water is collected and conveyed to treatment plants where it is processed through degritting, primary settling, aeration, secondary settling, nitrification, and denitrofication, post aeration, and monitoring prior to its return to the water resource. The addition of tertiary treatment would remove pollutants and nutrients which are not adequately removed by secondary treatment process. Depending upon the alternative, the number of additional tertiary treatment plants varies, but the maximum number of new plants that has been recommended for any one alternative is five (5). This alternative requiring five new plants would preserve some of the existing biological plants in C-SELM and recommend updating them to a tertiary level. As a complete system, the advanced biological plants would be designed to handle the 1990 estimated average daily flow of 2376 million gallons per day (mgd) and peak flow of 4154 mgd. (The Corps has responded to the question of how many gallons of wastewater per day are projected for the year 2020 with a figure of 4080 mgd; this figure is broken down into Domestic-commercial-1720 mgd, Industrial-1205 mgd, Storm-1155 mgd.) The water reclaimed during the biological

treatment will be discharged into the streams to provide for low flow augmentation. The sludge that is separated during the process is treated and moved by pipeline to a land site and plowed into the soil as a conditioner and fertilizer. The Corps estimates that the resulting land requirement for this system will be 34,750 acres to treat the one ton of sludge produced per million gallons of wastewater treated. An estimated 40,000 people will have to be displaced under this system but this figure is so high in comparison with the other methods of treatment that it is unclear as to the reason for such a large displacement.

Advanced Physical-Chemical

In the advanced physical-chemical process, polluted water is collected and transported for processing through lime clarification, carbon absorption, climoptilolite ammonia removal, filtration, chlorination, post aeration and monitoring prior to its return to the water resource. Plans calling for physical-chemical treatment require the total elimination of all existing treatment facilities and the construction of eight new plants. These plants would be designed to handle the estimated daily flow of 2376 mgd. The sludge would be treated and shipped as a conditioner and fertilizer on a recommended 144,859 acres. These plants would produce an estimated 0.5 tons of sludge per million gallons of wastewater treated.

Land Treatment System

The land treatment system is composed of seven basic components as follows: (1) collection and transmission facilities which convey wastewater generated in the service area to rural-agricultural areas; (2) biological treatment of the raw wastes prior to application to the land; (3) storage lagoons which provide the storage capability when irrigation of wastewater is not feasible, such as during rainy or freezing weather; (4) irrigation land and facilities which apply the wastewater onto the land at controlled rates to coincide with the critical nutrient requirements of agricultural crops during the growing season; (5) the soil, or "living filter", which is the medium wherein potential wastewater pollutants (organics, nitrates, phosphates) are utilized by agricultural crops; (6) a drainage system which collects the water percolating through the soil, and (7) sludge disposal land and facilities which apply the settled solids from the storage lagoons onto the land at controlled rates to increase the humus and nutrient content of the soil by agricultural purposes. The land disposal system requires a base of 552,000 acres or 860 square miles: however, none of the estimated acreage requirements include the management of rural stormwater run-off.

The Corps' plans also call for the management of urban-rural storm water run-off. In order to accomplish this task, the Corps has devised a scheme of utilizing in-stream impoundments to capture and regulate storm water run-off that could be used for irrigation on additional adjacent agricultural land. When provisions are made for collecting, storing and treating essentially all run-off from urban-suburban areas, the total average daily treatment plant flow increases to an estimated 3,630 mgd for the C-SELM area. The amount of additional land that would have to be included in the various land treatment alternatives, can be estimated by figuring an average of 190 acres per mgd into the design base estimate.

b. Land-Use Considerations

All three treatment methods have an impact on present and future land-use. The chemical and biological treatment methods can affect land-use through the elimination of existing treatment plants. In some areas this might have a long term beneficial impact depending upon where the sites are located and how the vacated space is utilized. Also waste treatment management can be expanded into multi-purpose facilities. For example, the treatment plant alternatives provide opportunities to develop new urban industrial parks that would rely on reclaimed water for water supply purposes. The placement of plants in an area where industrial growth should be planned and

encouraged could result in a beneficial effect on land use. Also the treatment plants sites can be landscaped and designed to provide recreational and open space benefits to the urban area.

In either of the treatment plant alternatives, the land impact of a wastewater system would be contained within the service boundary of that system -- in contrast to a land disposal system, which would involve the disposal of wastewater in areas not serviced by such a system. Because the land impact of the treatment plant alternatives would be contained within the service area for those systems, it is more likely that the implementation of such systems would be carried out in consonance with supportive land use planning, since those who would be serviced by a treatment plant system would have a stake in the land impact of that system. This kind of incentive for the performance of land use planning in connection with the implementation of a conventional treatment wastewater system is largely absent in the case of the land disposal alternatives, which would dispose of most wastewater outside the wastewater management service area.

Both the treatment plant and the land disposal systems incorporate a major sludge management technique. The disposition of sludge can be designed to produce beneficial land use results. Both systems incorporate a major sludge management technique.

The use of sludge for the reclamation of a strip-mined land and for the reconditioning of over-worked soil are mentioned as possibilities. The Metropolitan Sanitary District of Greater Chicago has begun to barge the sludge collected from their storage lagoons in the Chicago area to Fulton County in Illinois, but they have not as yet applied that sludge to the land.

c. Land Disposal and Land-Use

Of the three methods of wastewater treatment, the land treatment method has the greater impact on the use of land.

There are, however, some beneficial effects of such a system. Through the elimination of treatment plants in the urban area, the land disposal method provides an opportunity for urban redevelopment or provision of open space. The land treatment alternative might encourage power plants to locate adjacent to the treatment sites in order to utilize the water in the storage lagoons for cooling if the quality and quantity of the water proves to be acceptable for this purpose. Land treatment could also be used to provide buffer zones to control urban growth. If agricultural areas are converted into a multi-purpose treatment sites then this land will still be retained for agricultural production and will serve as a control on open space.

1) Social Parameters

The principal social parameter affecting the effectuation of a land disposal system is the community and residential displacement which it would cause. In Muskegon County, residents who are required to relocate have a vested interest in land disposal should they remain in the County. If the irrigation system works as well as anticipated, then the citizens of the County will directly benefit from the cleaner environment. The problems are contained within boundries of the County and benefits will flow directly to the residents encumbered by the move. What they have sacrificed individually is, in some senses, being expended for the common good of the area in which they live. This is not the case in C-SELM. The residents who will be required to relocate are not going to receive the services that their counterparts in Muskegon County will receive. Selling the residents of Kankakee County, where the major disposal site is located, on the benefits to be received as a result of their move presents a major obstacle since they will not be served by the system. The possibility of enjoying a cleaner environment will not be quite as alluring to them since they live outside the C-SELM boundaries. The effect of spray irrigation upon their environment might even be adverse as will be discussed below with regard to

power plants siting, industrial expansion, farming prospects, recreational opportunities, and conservation.

Where disposal sites cross state lines, planning, institutional and legal problems become major obstacles. Many of the residents of these rural areas are by their nature indisposed to concern for the problems of the City of Chicago and would consequently resent the intrusions from the "city-people" to the north. If these psychological and philosophical impediments are overcome, other social problems appear to be equally difficult. Questions that still remain unanswered deal with such matters as the disruption of transportation, communication and other utilities, lost tax revenues, and unemployment.

2) Economic Parameters

If land for the treatment site is acquired by eminent domain, the relocation of so many people will undoubtedly have a detrimental effect upon the community they will be called upon to leave. Unlike other civil constructs which displace only small fractions of a community, the C-SELM project may involve the relocation of entire communities. The removal of the tax base within communities partially effected by the move and the entire abandonment of other communities presents problems of a local nature. At the same time, the

relocation will have a pronounced effect on the surrounding communities. Whether the adjoining communities will be able to absorb the influx of so many people without seriously taxing the services and utilities must be considered. Unemployment can be expected to increase within these communities. Most of the people being transplanted will be agriculturally oriented and so the limitations on the amount of new land and new job opportunities may force some people to change their professions. The Corps, however, claims that unemployment will not be a problem and contend that land disposal will increase the number of opportunities for work. It is true that land disposal requires more employees than the treatment plant alternatives, but this does not necessarily mean those jobs will be suitable for the displacees remaining in the area. This portends a dependence upon the growth of industry to solve the unemployment problem.

Another economic consideration is the uncertain effect upon the local economy and the local agricultural market of varying crops on the spray-irrigated land in order to meet the health and safety requirements for production of edible crops. The impact upon the market place would be phenomenal if productivity is doubled as is claimed. The same result may occur if there is a limited acceptance of crops. The impact

that a land disposal system would have on the market value of land in the area of a treatment site must also be considered. To whom might this induced benefit accrue? If an increase in land values occurs, the amount of money paid for the acquistion of land will rise, incurring an appreciable rise in the cost of the land disposal system. This factor has not yet been considered, but it all depends on the relative wealth of the land owner. A wealthy land owner could be expected to hold-out on selling productive land until the price was right for him, while less wealthy land owners and marginal farmers are more likely to sell quickly. Most of these questions remain unanswered at this point, but the range of possible answers should become more evident when the Corps decides whether they will suggest that the land be purchased out-right or leased from its present occupants.

3) Managerial Variables

Whichever alternative is finally selected, the question of management of such a large and complex apparatus as land disposal presents many problems. There are basically three aspects of management: engineering, operations, and farming. In Muskegon County, a private corporation has been retained to supervise, manage and operate these three activities.

For a project the size of C-SELM, there is no existing governmental entity having a territorial jurisdiction large enough to effectively manage such a system except for the federal government. Whoever manages C-SELM will have difficulty in maintaining the delicate balance between the treatment of the effluent and the growing of crops on such a large scale. At Muskegon, the corporation referred to above has a contract that provides additional monetary remunerations if profits above a stipulated amount can be derived from agricultural production. Such a provision illustrates a potential conflict that lies at the very essence of land disposal. Is such a system designed for treating wastewater or for enhancing agricultural production? Are the two necessarily compatible? The goals of the farmer interested in high yield agricultural production might be counterproductive to the goals of the manager in charge of the rate of effluent to be applied to the land. One would want to increase his crop yield through increased irrigation and fertilizer application while the other would want to maximize water applications at minimal additional costs. Soil inconstistency lies at the very heart of the problem and any change in the balance between the two parties could result in a serious damage to the soil. Land disposal is therefore like a finely tuned engine and its delicate

nature requires the masterful attention of experts. This again raises the question of who is qualified to operate such a system. At the time of this writing, only superficial attention has been paid to this complex issue. In order to control such a large area with so many variables like harvesting, application rates, meterological variations, and crop production, it appears that only an organization the size of the Corps is large enough to manage such a system.

4) Power Requirements

The increase in power requirements in this region by the year 2020 is estimated to be at a minimum 55,000 megawatts of electrical generating capacity. The Corps of Engineers has estimated that the energy utilization for land disposal would increase the demand upon existing power generation by twenty to thirty percent. Chicago's power system is currently working at ninety percent capacity which leaves little room to absorb the increased demand caused by land disposal. In order to mollify this negative aspect, the Corps proposes the development of electric power generating facilities at the disposal site as one of the synergistic options of a land disposal system. Such a proposal has been made at Muskegon, and the construction of a power plant, either fossil or nuclear, is being seriously investigated. The development of power generating facilities adjacent

to land treatment sites is a desirable option from the perspective of power company interests since such land would already be held in the public sector, facilitating the appropriation of that land for a power plant. Also, since an Environmental Impact Statement would have already been completed for the construction of a land disposal site, power companies may be correct in assuming that an additional impact statement for a power plant would be unnecessary. If the power plant were constructed and had a deleterious effect upon the environment, it could be said that the land disposal system was being used as a shield against the environmentalists' sword.

The advantage of having the power plant adjacent to the disposal site is that the wastewater stored in the lagoon could be used for cooling purposes. At Muskegon, however, the power company contends that stored water could be unsuitable for their purposes, which might negate a major presumption underlying the proposal of a power plant add-on. The Corps, however, says that the power companies will be cooperative because "the possibilities of paying for the costs for clean water as an incidental part of the electric bill is a real one." One effect of having a power plant on the site would be the encouragement of industrial growth. With this thought in mind, it becomes more

important that the local people directly impacted by a land disposal system be given an opportunity to consider the alternative uses of the land required for land disposal.

5) Developmental Parameters

In considering the impacts on land use within the disposal area, there are a myriad of developmental considerations to be taken into account if land disposal takes on the characteristics of a catalyst for subsequent growth. Consideration must also be given to planning for the land which would be freed by the removal of conventional treatment plants for a land disposal system. If a land disposal system were to be completely adopted, the existing secondary treatment sites would be rendered obsolete. The capital investment in these existing conventional facilities would be depreciated to nearly zero. According to a source at the Metropolitan Sanitary District of Greater Chicago (MSD), phasing-out existing conventional facilities would free approximately 1966 acres of land within the boundaries of MSD's jurisdiction alone.

Most of this land now owned by the MSD and not being used for wastetreatment facilities is used for industrial purposes. If MSD were to remain in existence after the adoption of land disposal system,

this land would probably continue to be leased to industry. Only a small portion of the land held by MSD for future conventional facilities is leased for recreational purposes, but freeing this land might provide areas suitable for urban redevelopment or for buffers or greenbelts, depending upon where this land is located.

6) Ecological and Aesthetic Parameters

Locations specified for conversion to disposal sites in some cases encompass wildlife areas and, at one location, a state park. The construction of land disposal sites in these areas would have a detrimental impact on both the quality and quantity of the natural wildlife in those areas. By changing these areas into irrigation sites, the present habitat and characteristics of animals, trees, and other vegetation would be significantly altered. The people remaining on or near the irrigation site would also experience negative aspects of a land treatment plant. During the winter, when the storage lagoons freeze over, the system may become anerobic, causing distinct odor when the ice thaws in the spring. The Corps predicts, however, that this situation will only occur during three weeks out of the year during stratification.

The possibility of seepage into the ground water is a foreseeable problem to the residents in the area. The Corps contends that seepage will not occur, however; yet the risks are too high to accept this prediction on its face without more evidence.

The hydraulic effects of a land disposal site in the Kankakee River Basin could be substantial. The plan alternative calling for a single Kankakee Treatment Site serving all of the C-SELM area would require the removal of roughly 700 square miles of headwater drainage area in the Kankakee Basin. It is quite possible that the flow depletion will result in a more polluted river as a result of less water to absorb solar energy and assimilate materials draining directly from land remaining in the watershed. This reduction of flow may effect point sources of water pollution in the Lake Michigan area as well. The amount of water lost in transit and as a result of evapotranspiration during storage and irrigation may well offset the benefits to be achieved by the system. Evapotranspiration will also have an effect upon the air resource. The increase in the moisture content of the air surrounding the lagoons may result in a change of climatology as the air resource becomes impacted during aerosol spraying and some effluent will aerosolize and escape to the air. Methods can

be implemented to reduce the loss by reducing the pressure of the spray or providing for a buffer around the site. Reducing the pressure during spraying would mean that more land would be required. The purpose of erecting a buffer zone around the irrigation site would be to restrain the public from having free access to such a potentially hazardous area. A drawback to this buffer zone concept is that the cost of additional land would significantly elevate the cost of the system and add to the total land requirements.

C. EPA's INTERFACE WITH THE CORPS OF ENGINEERS

1. Nature of the Interface

EPA has a definite connection with present efforts to plan and develop land disposal systems for wastewater treatment. The Agency is directly involved in the Muskegon Project, which has been awarded EPA program grants totalling 2.3 million dollars, one of the largest grant packages for a single wastewater project in the history of EPA and its predecessor agency(ies). Moreover, the Agency is indirectly linked to the interest in developing land disposal systems insofar as that interest derives from efforts to comply with water quality standards promulgated and/or enforced by EPA.

2. EPA's View of the C-SELM Study

EPA views the Muskegon Project as a trial demonstration of the spray irrigation concept and has not fully supported the Corps' interest in developing similar systems of the same size or larger, pending evaluation of the actual operation of the Muskegon system. At present, reference to the safety and workability of a land disposal system of the type and size being constructed in Muskegon County is largely speculative since the Muskegon system is not scheduled for partial operation until July 1973. With this background in mind, it is interesting to consider how the Corps of Engineers became involved in regional wastewater management planning and how they have carried out that planning to date.

On November 23, 1971, a congressional committee resolution was passed giving the Corps of Engineers requested authority to proceed with studies of alternative methods of wastewater treatment. That resolution stipulated

that these studies were to be performed with the participation, consultation and cooperation of EPA. What EPA's position was at this time on the conduct of these studies remains unclear, but on April 14, 1971, EPA and the Corps of Engineers signed a joint agreement which set out in detail the concurrence of both parties to mutually assume responsibility for the first phase of the feasability investigation aspect of these wastewater management studies.

Despite the formal appearance of a joint partnership between EPA and the Corps of Engineers, the Corps clearly took the initiative in carrying out these studies. While the relationship between the two agencies was to be one of client-consultant, whereby the Corps was to serve as a consultant to EPA and State and local governments, EPA was never directly involved. On occasion EPA advised the Corps on various technical aspects with regard to EPA policy and requirements, but no central liaison for communication between the two agencies was ever established. The position which EPA informally took was to allow the Corps to carry the studies forward while EPA awaited the opportunity to evaluate the study results.

In March 1972 a meeting of EPA officials was held to evaluate the findings of the Corps at the request of the Office of Management and Budget. This group unofficially concluded at that time that the Corps' studies had placed too much emphasis upon land disposal alternatives as compared with the alternatives for conventional tertiary treatment, which were given a "wink and a promise." It was also concluded at this meeting that, while EPA could have become more involved in the early stages of these studies, the headstart which the Corps had by March 1972

would make it difficult for EPA to ever become an equal participant in the studies.

The most significant development in the relations between the two agencies in regard to the wastewater management studies occurred approximately one year previous to the meeting of EPA officials to evaluate the studies. That development arose from Administrator Ruckelshaus' letter of October 29, 1971 to the Secretary of the Army. The letter set forth the official position of EPA towards the wastewater management studies being carried out by the Corps of Engineers. In brief, the letter called on the Secretary of the Army to terminate the five study projects as well as any other wastewater management studies being performed by the Corps of Engineers. The basic objections which the letter raised were that these studies tend to superimpose long range wastewater alternatives upon local planning and that "especially in the case of land treatment methods, [they] suggest an alternative which runs counter to the thrust and financial capabilities of local planning." The letter furthermore expressed concern that the Corps studies were not giving adequate attention to land use policies and programs and underscored the fact that EPA policy is intended to encourage State and local planning.

The disapproval of the Corps of Engineers' wastewater studies which Administrator Ruckelshaus expressed in his letter to the Secretary of the Army sparked a letter of response from Congressmen Vander Jagt and Ruess, ranking members of the House committee which commissioned the Corps studies. Their letter requested that EPA withdraw its recommendation that the Corps of Engineers terminate its wastewater

studies. (Congressman Vander Jagt, whose district includes Muskegon County, Michigan, was an effective proponent of the Muskegon Project.)

Administrator Ruckelshaus' letter of response to this request reiterated his concern over the small attention being given to land use in the Corps' wastewater studies. In pointing out how the Corps' expertise could best be used, Mr. Ruckelshaus stated that the Corps had an obligation to define the land use impact of their various alternatives.

In spite of the stipulation of the committee resolution that the regional wastewater management studies were to be conducted in close cooperation with EPA, the role of EPA in the continuation of the C-SELM Study has been that of an invited participant on the Steering Committee with equal status to other participants.

While the dispute over the conduct of these wastewater management studies was continuing in Washington, the Corps of Engineers was considering other regions where wastewater studies could be carried out. On March 15, 1971, the House and Senate Public Works Subcommittees on Public Works authorized the C-SELM Study and four other regional wastewater management studies. In addition to the C-SELM Study, studies were authorized for the following areas: San Francisco Bay and Sacramento-San Joaquin Delta Area; Southeastern Michigan; Cleveland-Akron Metropolitan Area and the Three Rivers Watershed Areas; and the Merrimack River Basin (Boston). Since receiving these authorizations, the Corps of Engineers has requested and received authorization in the 1973 fiscal year for nine additional studies. These studies will be

carried out in the following areas: Colorado River and Tributaries (Texas); Seattle, Washington; Pudget Sound, Washington; Spokane, Washington; Boise, Idaho; Duluth, Minnesota; Kansas City, Missouri; St. Louis, Missouri; and Denver, Colorado. As of July 11, 1972, these were all of the studies which had been authorized. However, the Corps of Engineers has continued to explore the possibility for additional studies, and it is possible that they have received authorization for additional wastewater management studies.

Demonstratively, the Corps of Engineers has intense interest in continuing and furthering the wastewater management planning it has performed to date. The reason for the Corps' interest in pursuing this objective was evidenced by a letter from the District Engineer of the Louisville District, COE to the EPA Region V Administrator. The letter states in part:

> Participation by the Corps [in wastewater management planning] could add to regionalization of range in the evaluation of alternatives and formulation of plans and could facilitate the examination of the full potential for economies of scale. However, after completion of planning and agreement on the alternatives to be utilized, the Corps is interested in participating in the actual implementation (construction and operation) of a wastewater management program or other urban water resource programs <u>only where there may be a clear national interest</u> or where it may be specifically desired by the interested local or State authorities. [emphasis supplied]

The fact that there is no existing non-federal organization with a territorial jurisdiction large enough to encompass C-SELM raises the spector that the Corps of Engineers would be the logical authority to

construct, operate and maintain a wastewater management system for C-SELM--if a plan for C-SELM could be justified on the basis of "clear national interest."

In connection with the Corps of Engineers performance of regional wastewater management studies, an interesting twist of events would occur if the Federal Water Pollution Control Act Amendments of 1972 becomes law in its present form. * The provisions of the House and Senate bills with respect to regional wastewater management (Section 209 of S.2770 and Section 208 of H.R.11896) are virtually identical in their language dealing with the responsibility to be carried out by EPA and the Corps of Engineers. Both bills give EPA the initial authority to approve selection of the areawide planning organizations which the states are required to appoint. If a state failed to appoint an areawide authority to carry out wastewater management planning, EPA would notify the Secretary of the Army of that failure and request the Corps of Engineers to conduct the planning for which that state had forfeited responsibility. Although the denouement of this chain of events would be that the Corps of Engineers could become engaged in wastewater management planning much as it is now under the authority of the Flood Control Act of 1957, it is significant that EPA would have the discretion to spell-out the Corps' responsibility for such planning. In this situation, it might be more difficult for the Corps of Engineers to engage in water quality management planning which did not meet the approval of EPA.

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*This Act became law just as this report was being concluded. Nevertheless, it is still too early to determine how its effectuation will actually affect the relationship between EPA and the Corps of Engineers with respect to the Corps'wastewater management studies.

PART III - THE C-SELM STUDY FROM THE PERSPECTIVE OF STATE AND LOCAL JURISDICTIONS

A. States

1. Knowledge of C-SELM Study

The States of Illinois and Indiana have had formal participation in the C-SELM Study through the Steering Committee which the Corps of Engineers has established for the project. From Indiana, three State agencies are represented on the C-SELM Steering Committee: the Department of Business and Economic Development, the State Environmental Protection Agency and the Institute for Environmental Quality. From Indiana, three similar organizations are represented on the Steering Committee: the State Board of Health; the Department of Natural Resources; and the Stream Pollution Control Board. Also participating on the C-SELM Steering Committee are the Northeastern Illinois Planning Commission (NIPC) and Lake-Porter County (Indiana) Transportation and Planning Commission.

Not taking part in the C-SELM Steering Committee are Indiana and Illinois State Planning Offices, both of which are relatively new. The Indiana Planning Office, which is a Division of the State Department of Commerce, has been apprised of developments in the C-SELM Study by a participant in the Steering Committee who represents the State Board of Health. The Indiana Soil Conservation Service, which has responded to the C-SELM Study by performing soils tests to determine the suitability of Indiana soils for land disposal, has also helped inform the State Division of Planning relative to the C-SELM Study.

That the Indiana Division of Planning is aware of the C-SELM Study was evidenced in the July 1972 issue of their monthly newsletter, "Planning Comment." The issue carried an article on the C-SELM Study entitled "Chicago Metro Waste Disposal." Directly below that title, the article showed the graphic conceptualization of the C-SELM land disposal alternative which involves disposal of all of the wastewater from C-SELM on a land area lying outside C-SELM in Northwestern Indiana. Considering the modest good will which exists between Indiana, especially in downstate regions, and Chicago, it is unsurprising that the Indiana Division of Planning should overtly draw attention to the fact that a land area in Indiana might be used as the receiving ground for all of the wastewater from the C-SELM area. Of course, this wastewater would arise from three urbanized counties in Indiana as well as from the larger Illinois portion of C-SELM, but that might not abate the concern of Indiana residents that their State might be receiving wastewater from the Chicago metropolitan area, since the urbanized portion of Northwestern Indiana bordering on Lake Michigan is politically and sociologically distinct from rural downstate Indiana. A more explicit indication of the concern which the C-SELM Study has caused the Indiana Division of Planning is found in the unusual editor's note attached to the newsletter article on the C-SELM Study. This note stated: "[The C-SELM Study] is the type of intergovernmental program which cannot be implemented, if the planning is done unilaterally. This is an urban problem, requiring rural cooperation." In the face of this attitude toward the C-SELM Study, it is noteworthy that the above-mentioned article mistakenly referred to the C-SELM Study as a cooperative venture of the Chicago District Office of the U. S. Corps of Engineers

and the Federal Environmental Protection Agency.

2. Foreseeable Land-Use Impact of a Land Disposal System

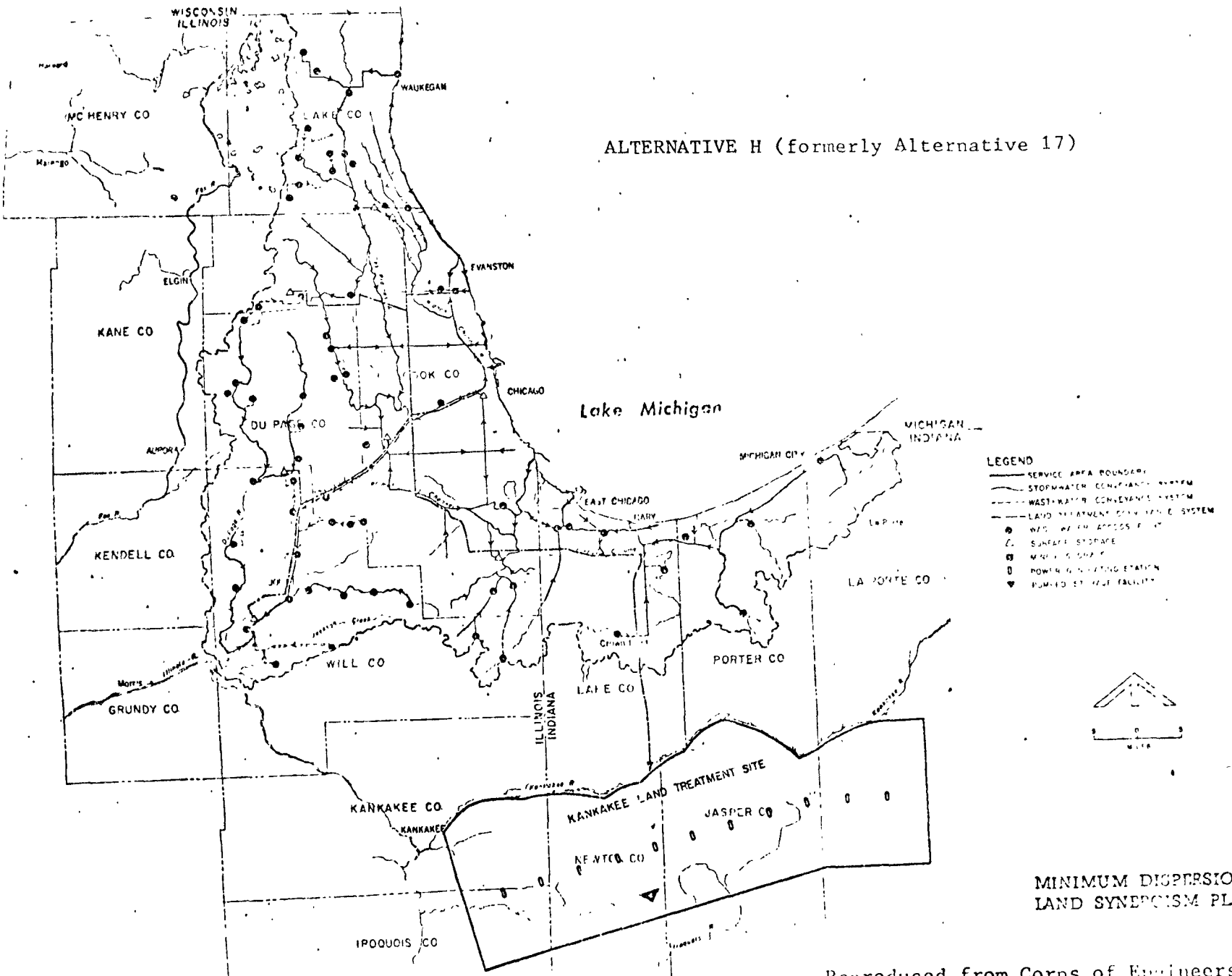
(a) Indiana

After the first screening of alternatives for the C-SELM Study, 11 alternatives were left, four of which involved land disposal. Since each of the four land disposal alternatives include a land treatment site in Indiana, it is evident that a land treatment site will be located in Indiana if the C-SELM Study culminates in the final selection of a land disposal alternative. The four alternative land treatment sites identified in Indiana are all in Newton and Jasper Counties bordering on the south side of the Kankakee River; neither of these two counties are within the boundaries of the C-SELM area.

The location of a land treatment site in Northwestern Indiana could have a significant impact upon land use in this region, depending upon the size of the land disposal plant. The alternative land disposal sites identified in the four land disposal alternatives of the C-SELM Study are proposed for the same general area but vary considerably in their space requirements. Graphic conceptualizations of these four alternatives are shown on the following pages.

Due to the fact that the land disposal alternative involving the largest land area in Indiana is considered to be the least costly of the eleven alternatives being considered in C-SELM Study, most of the concern in Indiana has revolved around the impact of effectuating this alternative. There is divided opinion, even among experts, on the land use impact which this alternative would have upon Northwestern Indiana. Depending upon whom you talk to, establishment of

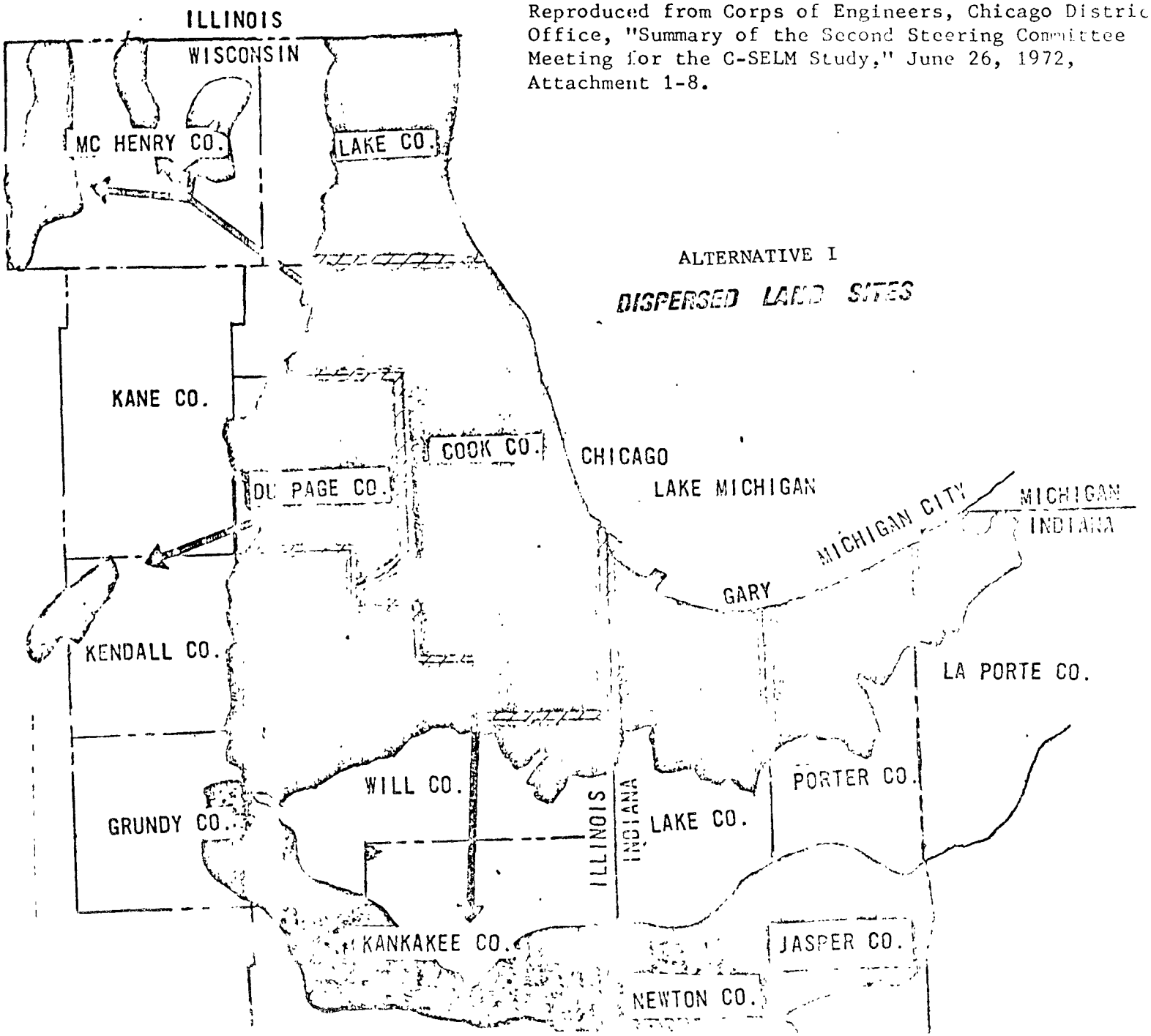
ALTERNATIVE H (formerly Alternative 17)



MINIMUM DISPERSION
LAND SYNEPCISM PLAN

Reproduced from Corps of Engineers, Chicago District Office, "C-SELM Progress Report Number 2," June 10, 1972

Reproduced from Corps of Engineers, Chicago District Office, "Summary of the Second Steering Committee Meeting for the C-SELM Study," June 26, 1972, Attachment 1-8.

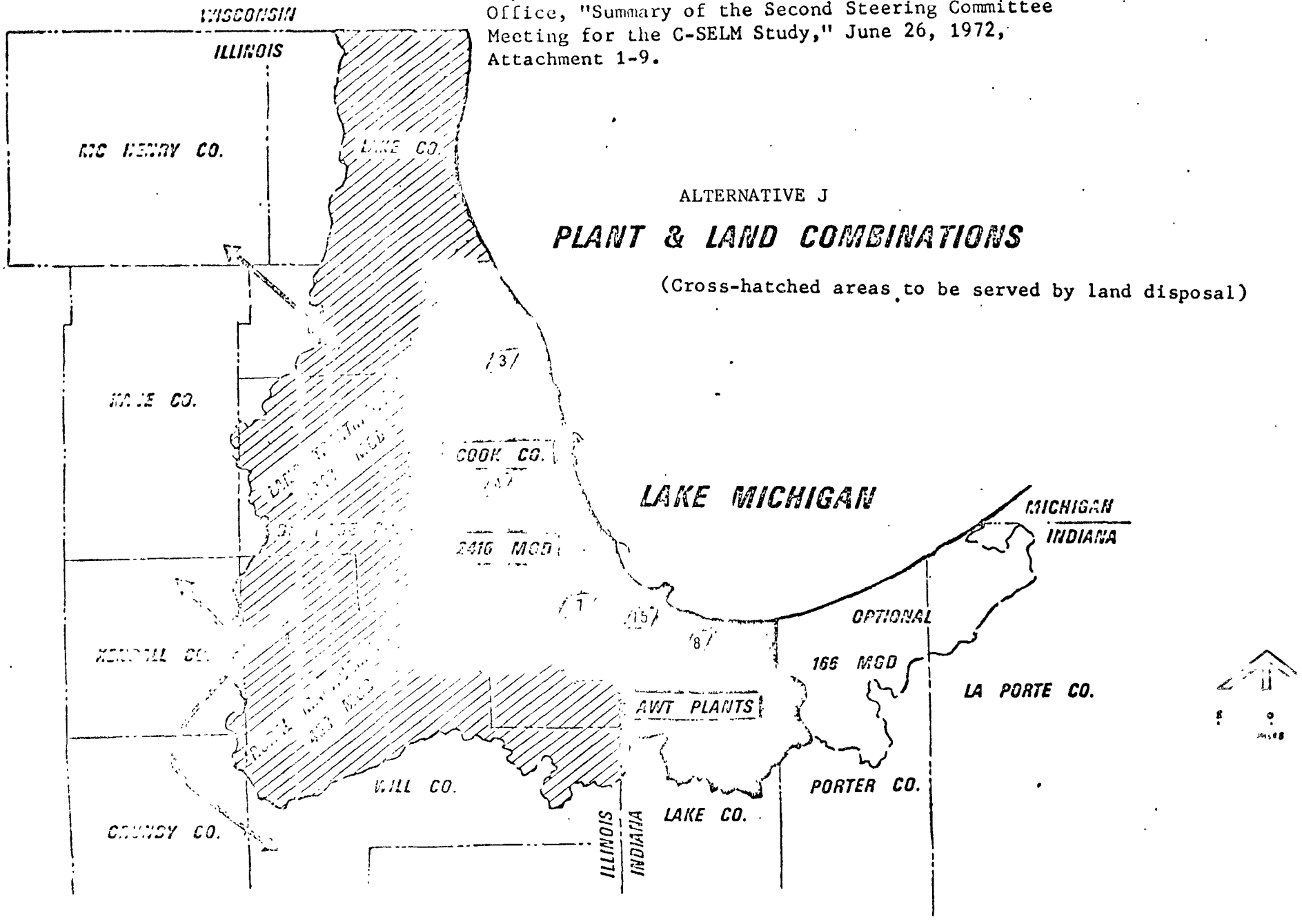


Reproduced from Corps of Engineers, Chicago District Office, "Summary of the Second Steering Committee Meeting for the C-SELM Study," June 26, 1972, Attachment 1-9.

ALTERNATIVE J

PLANT & LAND COMBINATIONS

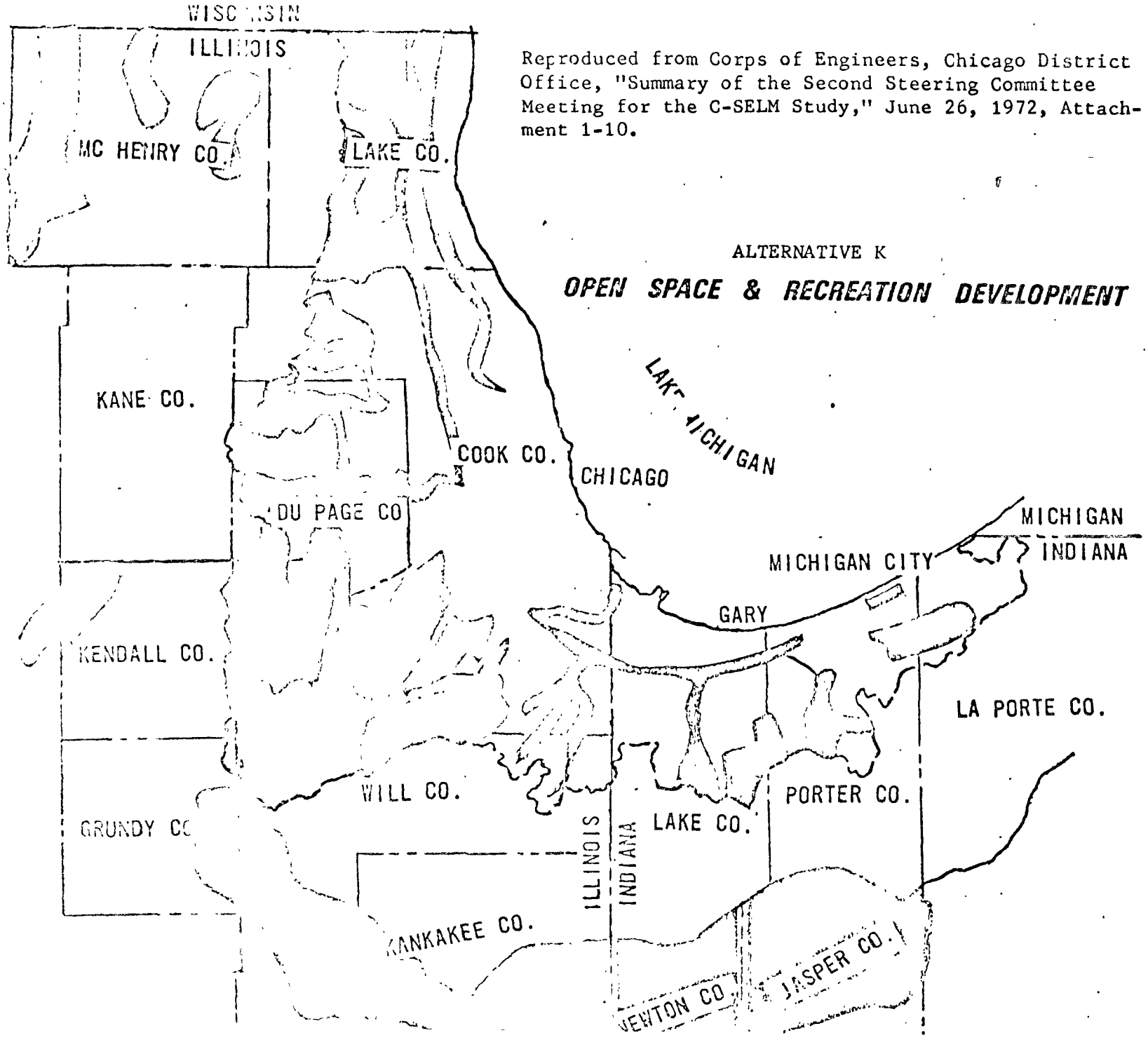
(Cross-hatched areas to be served by land disposal)



Reproduced from Corps of Engineers, Chicago District Office, "Summary of the Second Steering Committee Meeting for the C-SELM Study," June 26, 1972, Attachment 1-10.

ALTERNATIVE K

OPEN SPACE & RECREATION DEVELOPMENT



the large Kankakee Treatment Site envisioned in the Minimum Dispersion Plan would result in either a beneficial or a harmful barrier to growth. Whereas both of these points of view recognize that urbanization is headed southward into the Kankakee Valley from the built-up area along Lake Michigan, one viewpoint maintains that erection of a barrier to this growth would result in an overcrowding of population and human activity north of the proposed Kankakee Treatment Site; the other viewpoint stresses that existent land use in the area north of this proposed treatment site is characterized by urban sprawl and that erecting a barrier to this sprawl would prompt wiser and more efficient use of this land resource. The latter viewpoint is buoyed by the prospect that various synergistic "add-ons," such as recreational facilities for boating and small game hunting, could be attached to the development of a land treatment site. These opposing viewpoints are espoused by two associates of the Northwest Consortium, which is performing the socio-economic analysis for the Indiana portion of C-SELM. One of these men is a geologist at Indiana University, the other, a transplanted academician, is the Director of the Northwest Indiana Comprehensive Health Planning and Council.

The purpose in reviewing these opposing viewpoints on the land impact of the land disposal alternatives of the C-SELM Study is not to indicate that one is right and the other wrong. Rather, it is to indicate that honest difference of opinion exists, even among experts, as to the desirability of impeding the southward expansion of urbanization in Northwestern Indiana. The reasonableness of these differing opinions should be considered in the view that the C-SELM Study begs an ad hoc resolution of this disagreement in advance of

any comprehensive, or even land use, planning for this area of Northwest Indiana. Notwithstanding the existence of the Lake-Porter County Regional Transportation and Planning Commission, which plans for the two-county metropolitan area surrounding Gary and Hammond, Indiana, areawide planning for the recognized seven-county area of Northwest Indiana exists largely as an idea.

(b) Illinois

Each of the four land disposal alternatives for the C-SELM Study involves a land treatment site in Illinois. (See the graphic conceptualizations on preceding pages.) Two of these alternatives, J and K, are consistent with the Minimum Dispersion Plan calling for a single large Kankakee treatment site insofar as they involve disposal of most C-SELM wastewater in land areas which lie outside the C-SELM area. The originators of these land disposal alternatives have apparently construed that land disposal of wastewater in an area other than that in which it originates is nevertheless in keeping with the ecological precepts ascribed to the Muskegon Project. Those precepts held that "the environment is, for planning purposes, a closed system, in which wastes are potential resources out of place." It is conceivable, however, that residents in the outlying rural area that would receive C-SELM wastewater for land disposal might construe these precepts to mean that the wastewater from the C-SELM area should be contained for recycling within the ecosystem of C-SELM. Relatedly, the bias of the land disposal alternatives towards disposal of urban/suburban wastewater in rural locales evidences a judgement that the suitability of a land area for land disposal is inversely proportional to its scale of population and human activity, i.e., that low levels of population

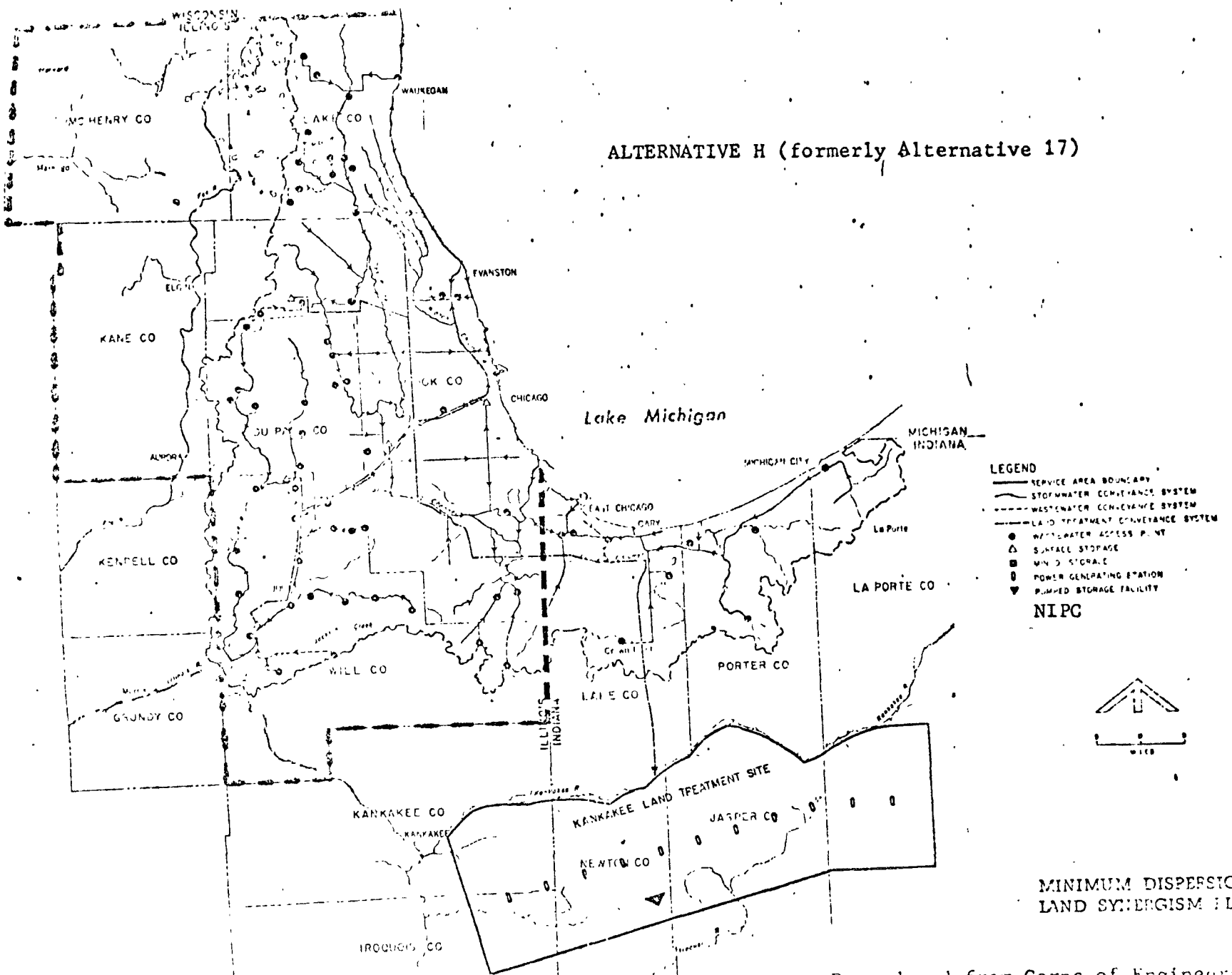
and human activity make a land area more suitable for the location of a land treatment site.

In the graphics on the following pages, the jurisdictional boundaries of the Northeastern Illinois Planning Commission (NIPC) have been superimposed upon the graphic conceptualizations of the land disposal alternatives in the C-SELM Study. The fact that, in Illinois, most of the proposed land treatment sites are situated outside the boundary for NIPC compounds the difficulty of determining the potential land impact of these rural-area land treatment sites, since areawide planning and supportive land use date is not well developed for these areas. Alternative K, on the other hand, is based upon the generalized land use planning which NIPC has performed for Northeastern Illinois; this alternative represents an attempt to support NIPC's planning by locating land treatment sites in a multiplicity of open areas which NIPC has identified for preservation. It is significant, however, that this is the only alternative out of 11 being considered for C-SELM which is based upon existent areawide land use planning as performed by a federally certified metropolitan planning agency. That the C-SELM Study is considering land disposal sites for so many areas lying outside NIPC's planning jurisdiction makes it more urgent that areawide planning be performed and effectuated for these areas.

3. Status of Land Use Policy and Planning for this Jurisdiction

(a) Indiana

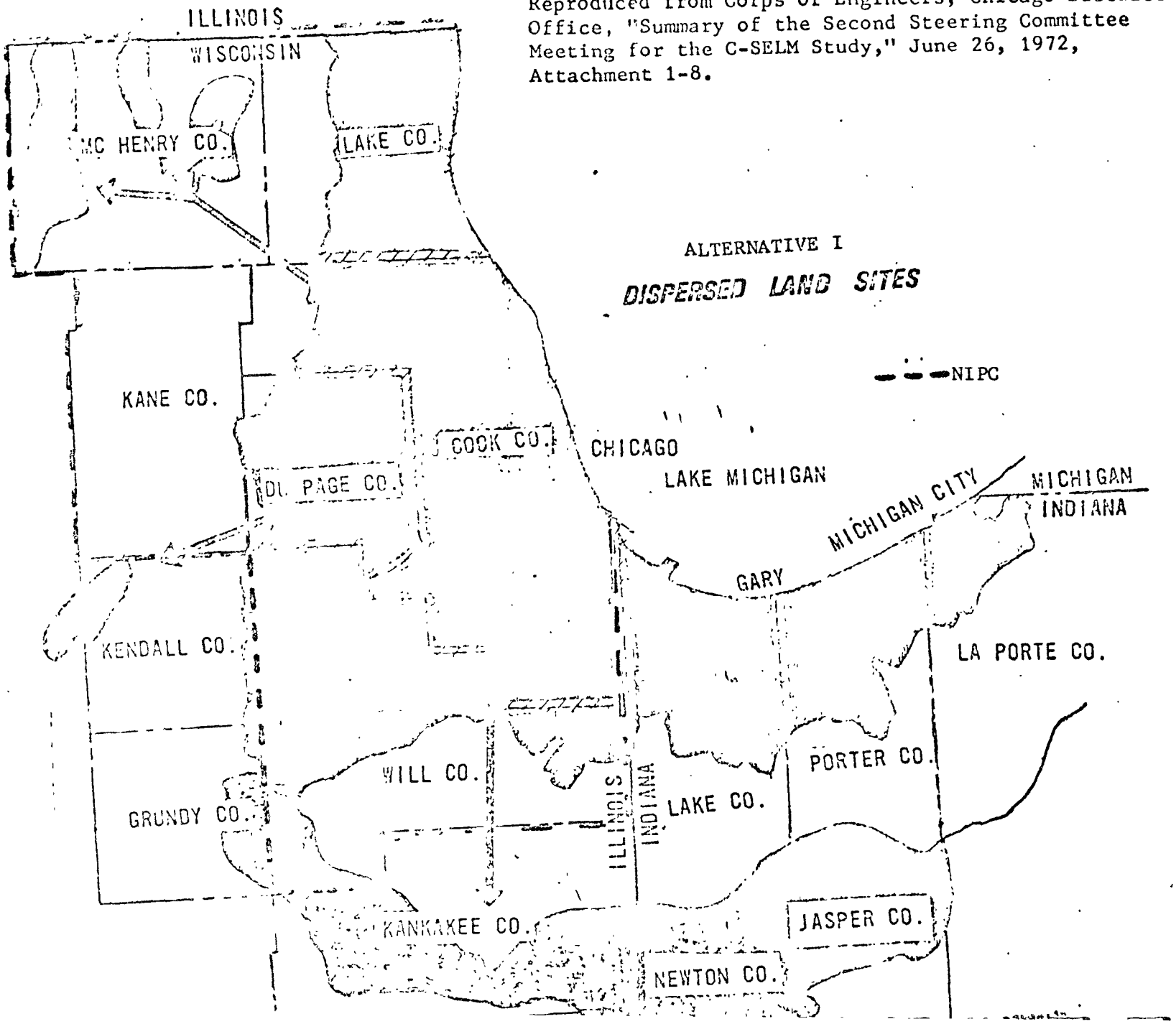
Statewide land use planning in Indiana, as in most states, is not yet a reality. As noted above, Indiana's land use planning responsibility rests with the Division of Planning of the State Department of Commerce. This department is directed by the Lieutenant Governor,



MINIMUM DISPERSION
LAND SYNERGISM PLAN

Reproduced from Corps of Engineers, Ch
District Office, "C-SELM Progress Rep
Number 2." June 10, 1972

Reproduced from Corps of Engineers, Chicago District Office, "Summary of the Second Steering Committee Meeting for the C-SELM Study," June 26, 1972, Attachment 1-8.

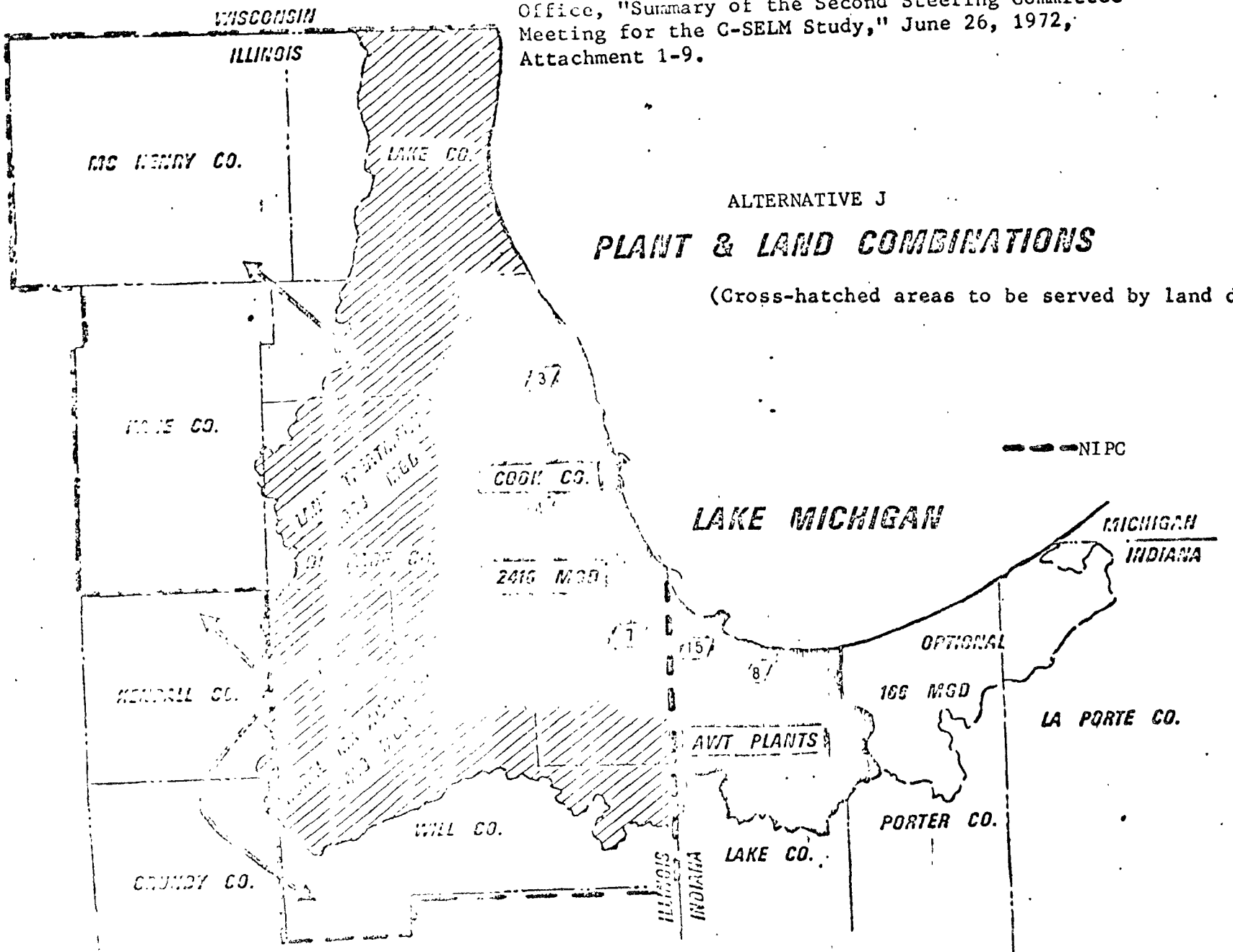


Reproduced from Corps of Engineers, Chicago District Office, "Summary of the Second Steering Committee Meeting for the C-SELM Study," June 26, 1972, Attachment 1-9.

ALTERNATIVE J

PLANT & LAND COMBINATIONS

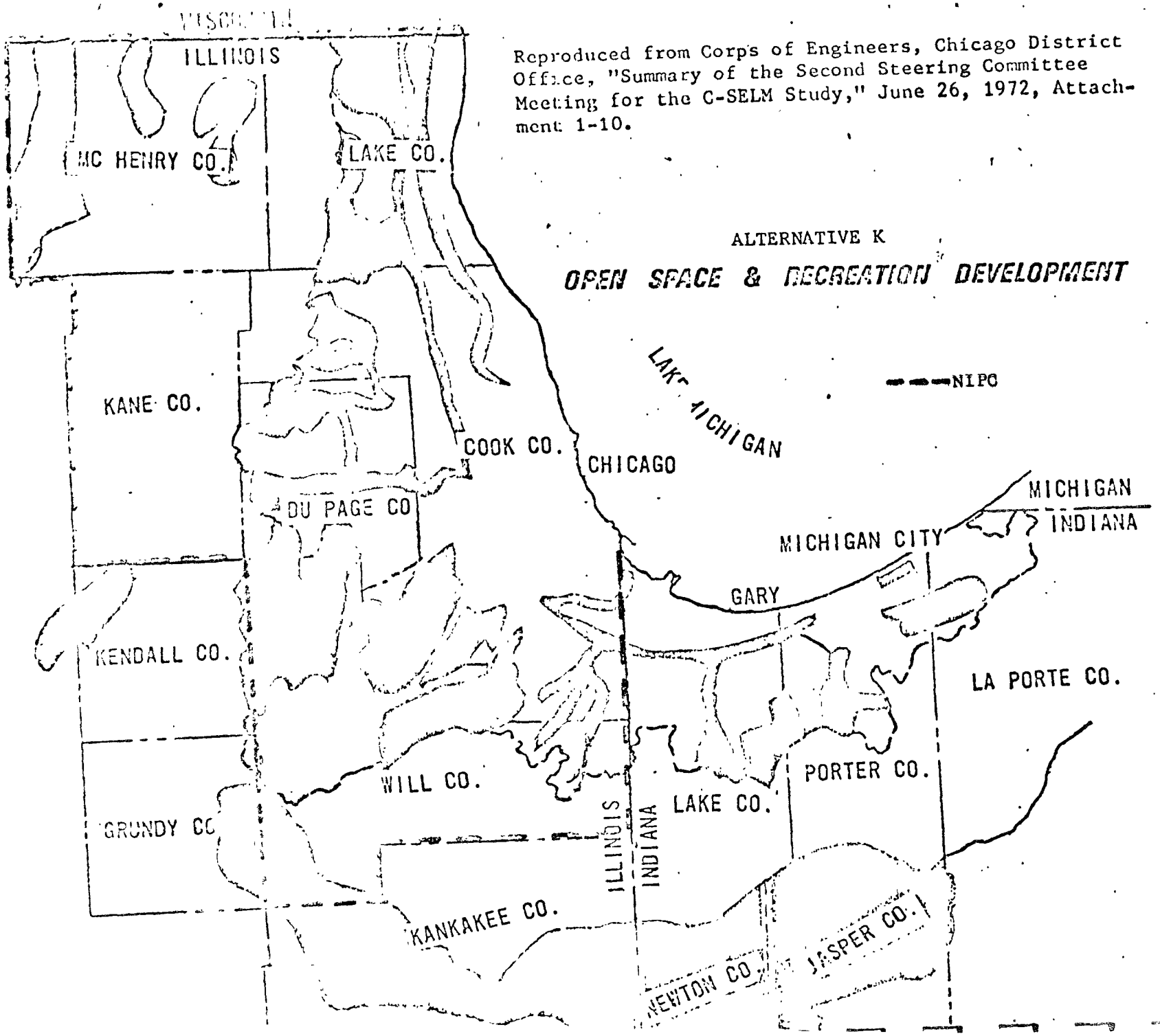
(Cross-hatched areas to be served by land disposal)

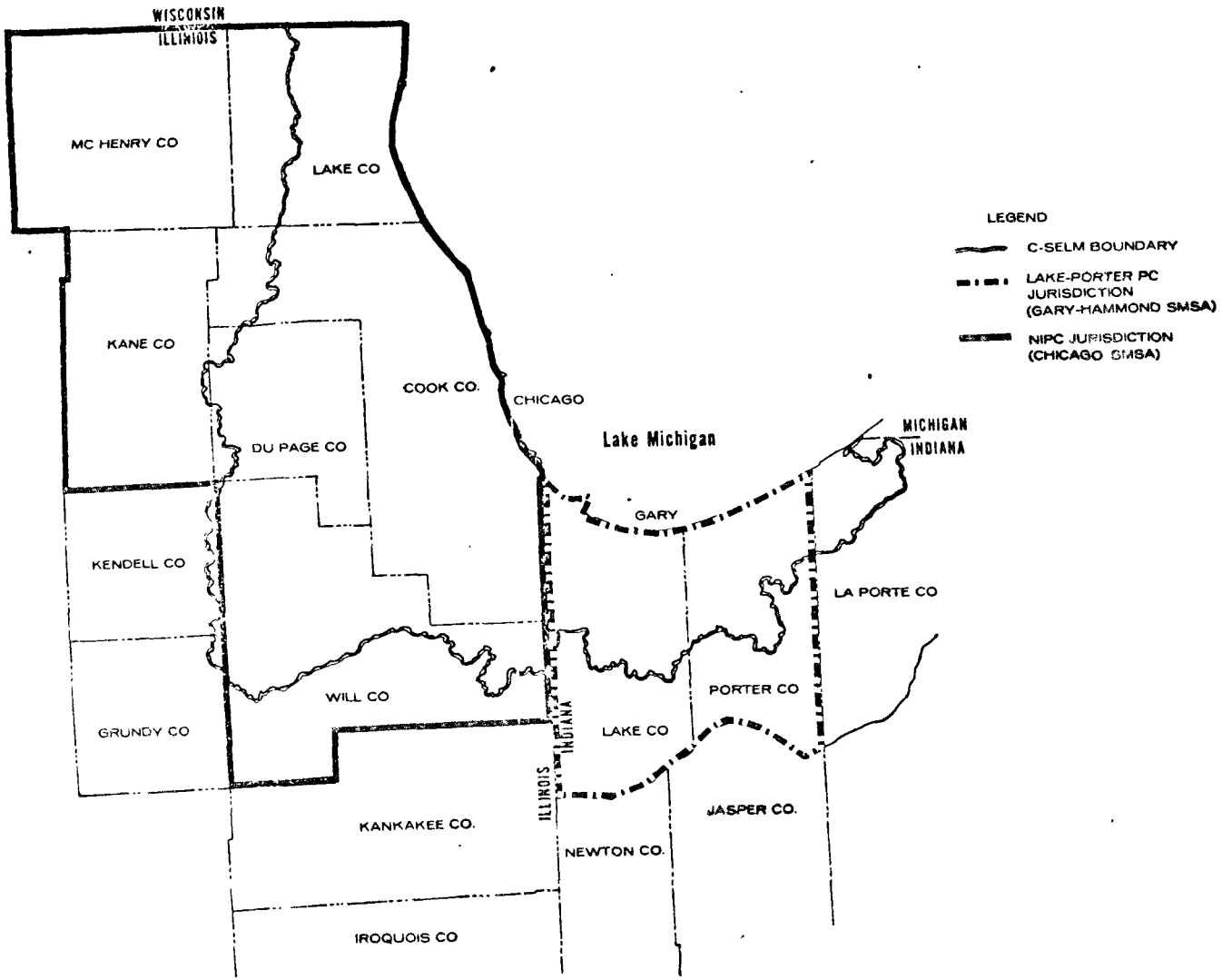


Reproduced from Corps of Engineers, Chicago District Office, "Summary of the Second Steering Committee Meeting for the C-SELM Study," June 26, 1972, Attachment 1-10.

ALTERNATIVE K

OPEN SPACE & RECREATION DEVELOPMENT




WISCONSIN
ILLINOIS
MC HENRY CO
LAKE CO
KANE CO
COOK CO.
CHICAGO
DU PAGE CO
Lake Michigan
MICHIGAN
INDIANA
GARY
KENDELL CO
LA PORTE CO
WILL CO
PORTER CO
GRUNDY CO
LAKE CO
INDIANA
ILLINOIS
JASPER CO.
KANKAKEE CO.
NEWTON CO.
IROQUOIS CO
LEGEND
C-SELM BOUNDARY
LAKE-PORTER PC JURISDICTION (GARY-HAMMOND SMSA)
NIPC JURISDICTION (CHICAGO SMSA)

whose tenuous relationship with the Indiana Governor causes a limited amount of communication between the Office of the Governor and the Department of Commerce and its Division of Planning. There is a planner attached to the Office of the Governor, however.

While land use planning in Indiana is limited to metropolitan areas at present, the State Division of Planning is attempting to stimulate land use planning statewide. Although the State will maintain overall responsibility for this statewide planning effort, they invision that the actual planning will be performed at a sub-state level by newly created planning and development regions. The State Division of Planning is carrying out a land use inventory of the State, which is scheduled for completion by October 1972. Thereafter, a four-year work program will commence for developing a statewide land use plan.

By Executive Order of Indiana Governor Branigin, fourteen Planning and Development Regions were established in 1970 to facilitate areawide development and planning. These regions, shown on the following page, were established at the recommendation of the State Division of Planning, which is the official administrator of the regions. The delineation of boundaries for these regions was accomplished in accordance with two related federal directives: President Johnson's special memorandum of September 2, 1966, which called for federal cooperation with State and local development agencies in establishing common planning bases; and the U. S. Bureau of the Budget Circular No. A-80, which provides general guidelines for securing common boundaries of planning and development regions by the Federal Government, consistent with established State planning districts and regions.

Indiana Planning and Development Regions

Indiana's multi-county planning and development regions have been adopted by some but not all State agencies. Agencies which have adopted the regions are the State Board of Health, which is using the regions for comprehensive health planning; the Department of Civil Defense, which is organizing its informational and instructional programs along the regional boundaries; the Department of Natural Resources, which is using the regions for recreational planning purposes; and the Department of Mental Health, which is adopting the regions for mental illness and mental retardation planning. Other State agencies are still using the regions that their departments delineated prior to the adoption of the State planning and development regions. The Department of Public Welfare is composed administratively of several separate divisions, all of which use different regional delineations to set up their field offices on a multi-county basis. Similarly, the Indiana State Highway Commission has established maintenance regions throughout the State for administrative purposes. Highway planning on a regional basis is handled by the urban areas (SMSA's) and is therefore conducted within the boundaries of the official regions, which maintain the integrity of the Standard Metropolitan Statistical Areas recognized by the Federal Office of Management and Budget (OMB). Under the provision of OMB Circular A-95, which incorporates and subsumes the above referenced Circular No. A-80, federal programs assisting planning and development are required to conform to State-delineated regions unless there is a clear justification for not doing so. (This right of a federal agency to vary from State regions, upon justification, has been invoked in the case of river basin planning as sponsored by the Federal EPA.)

The purpose of Indiana's newly created planning and development regions is not just to facilitate the ability of State agencies to carry out planning and program operations on a common regional basis. The larger purpose of these regions is to encourage the establishment of regional planning arrangements through the cooperative efforts of local governments within each of these regions. In relation to this objective, the Indiana Lieutenant Governor announced, in May 1972, that Rural-Urban Development Councils had been created in each of the State's 14 official regions to serve in lieu of official regional commissions until these are organized in each region.

The intended function of the Rural-Urban Development Councils was outlined in a July 1972, special supplement to "Indiana Planning Comment," the official newsletter of the Indiana Division of Planning:

> Members have been named to temporary Rural-Urban Development Councils in each of the state's fourteen planning and development regions. A council will serve in each region in an advisory capacity to the Division of Planning and other state agencies in the development of the several state planning programs now underway. It will serve in lieu of an official regional commission until one is organized for that region.
>
> State plans, as they relate to regional needs, or desires, are to be submitted to the council for evaluation, criticism and modification prior to finalization by the state. Current programs in transportation, economic development, environmental management, land use policy, health, justice and rural-urban development would be included in the review process.
>
> Each council will be composed of county commissioners, mayors and citizens, to be designated by the officials, from each county of the region. Also represented will be members of the state legislature, a member of the Regional Rural Development Committee, a member of the Advisory Committee on State Development, and representatives of existing council of governments, regional commissions and regional resource and conservation and development committees already active in the region.
>
> The councils will consider the best methods of establishing a region commission in each area. In most cases, an existing organization will be the logical group to undertake the regional planning and development assignment. Most of the fourteen regions have such an organization which

could serve in an expanded role, instead of being duplicated or replaced.

Regional planning organizations are proposed as an element of Indiana's rural-urban growth strategy to provide a vital link between local governments and state government. They would also provide a much-needed professional staff function for local planning and development activities--a capability presently beyond the financial resources of most local authorities.

Indiana Planning and Development Region #1 is comprised of seven counties in Northwest Indiana. This area is inclusive of the Indiana portion of C-SELM as well as the outlying alternative treatment sites. All of these seven counties are tied to Lake County, which has close ties with Chicago. Although Lake County is classified as relatively independent, in absolute terms it had, in 1959, the greatest number of resident workers commuting out of State - 12,000 to Cook County, Illinois. Jasper, Newton and Pulaski Counties are considered agricultural, but are nevertheless linked to Region #1 by commuting dependencies. The area contains 16.54% of the State's total population of 833,000 (1960 figures).

Lake and Porter Counties, which are part of the Chicago SMSA, have formed the Lake-Porter County Regional Transportation and Planning Commission, which obtained its present form in 1967. These two counties are cooperating in comprehensive planning with special consideration to transportation planning, their original emphasis. The Commission acts as the areawide review agency for its Indiana counties as well as serving as a bi-state areawide review agency in cooperation with the Northeastern Illinois Planning Commission.

The question of who will declare planning policy and actually plan for Indiana Region #1 is unresolved. Newton County has passed a resolution agreeing to join with Lake and Porter Counties. LaPorte

County is giving consideration to this matter and may follow suit along with Newton County. The Lake-Porter Planning Commission has expressed considerable interest in assuming the additional responsibility to plan for this whole seven-county area. However, the Chicago Regional Office of the U. S. Department of Housing and Urban Development (HUD) opposes such an increase in the Lake-Porter Planning Commission's responsibility. HUD is having a difficult enough time bringing the Lake-Porter Planning Commission together with Illinois' NIPC; officials at HUD understandably feel that a larger territorial responsibility for the Lake-Porter Commission would compound the difficulty of interfacing the two commissions to actually conduct areawide planning for the total metropolitan area. In conflict with HUD's stance is the feeling of many residents of Northwestern Indiana, who contend that recognition of a seven-county planning jurisdiction for the Lake-Porter Planning Commission would make the joining of the two metropolitan planning commissions more acceptable. They reason that there is less likelihood of NIPC subsuming the functions of the Lake-Porter Planning Commission if the latter is given a planning jurisdiction which is comparable in size to NIPC's six-county jurisdiction.

The State Division of Planning, in keeping with its policy of encouraging planning on a regional basis, would like to see a planning commission constituted for the non-metropolitan portion of Region #1. Such a planning commission, as envisioned by the State, would have its own policy-making body apart from the Lake-Porter Planning Commission--although it might not develop its own planning capability, in which case the planning staff of the Lake-Porter Planning Commission

would perform any planning for this non-metropolitan area. This type of tandem planning arrangement, as envisioned by the State Division of Planning, would involve a matrix relationship between the policy-making bodies for the metropolitan and non-metropolitan areas in Region #1. Within this matrix, the two policy-making bodies would determine who should decide what in relation to the region. This relationship would be the functional equivalent of the Interstate Planning Commission, through which NIPC and the Lake-Porter Planning Commission theoretically coordinate themselves.

The State Division of Planning has convened an initial meeting of local governments in Region #1 to discuss the creation of a non-metropolitan planning commission. A second meeting will be held in September 1972, at which time the non-metropolitan planning commission proposed for this region is expected to become a reality, according to the Director of the State Division of Planning.

Representation of State interest in any non-metropolitan planning commission in Region #1 is at the discretion of the individual planning commission. This is in accordance with Indiana's Multi-County Planning Act of 1972, which states that a staff member from the State Planning Division can sit on a regional planning commission at the request of the planning commission. The discretion of a planning commission to determine whether the State will be represented in its membership is a potential source of difficulty in view of the emerging Federal intent that States be capable of interposing their interest in the policy-making body of areawide planning organizations.

The effectuation of Statewide land use planning in Indiana is keyed, to a considerable extent, upon federal action. For one, the State Division of Planning has outlined a four-year work plan to

develop a Statewide land use plan through regional planning in each of the States planning development regions. Accomplishment of this work plan, according to the Director of the Division of Planning, will depend upon passage of Congressman Aspinall's version of the National Land Use Act of 1972, currently before Congress. The State is also hopeful that congressional passage of the Rural Development Act of 1972 will have the effect of encouraging non-metropolitan planning. Both of these bills elaborate upon a common aspect of HUD's 701 planning assistance program and EPA's Section 3(c) Water Quality Management Planning insofar as they are designed to stimulate the performance of areawide planning by States working in cooperation with inter-local areawide organizations. In contrast to the federal practice of encouraging State and local governments to perform areawide planning, the conduct of the C-SELM Study as an in-house project of the U. S. Army Corps of Engineers is a case of planning <u>for</u> State and local governments <u>by</u> an arm of the Federal Government. Whereas most federal programs encourage and, sometimes legally require, State and local government planning, the C-SELM Study and other regional wastewater management studies being carried out by the Army Corps of Engineers encourage State and local planning only to the extent that they actualize the threat that the Federal Government will plan if State and local governments do not. Admittedly, this is not the first time that an arm of the Federal Government has made a transparent threat to assume planning responsibility. However, this kind of implied threat has typically been couched in language to the effect that federal planning would only be realized if State and local governments forfeited their individual responsibility to plan. In this light, any argument that State and local governments have

forfeited this responsibility is premature; the federal deadline for final completion of metropolitan-area and river basin water quality management plans, for instance, is nearly one year away - July 1, 1973.

From the standpoint of on-going federal efforts to encourage State and local planning, there is a danger that these units of government might not react constructively to the threat of federal level planning as actualized by the C-SELM and other Corps of Engineers regional wastewater management studies. If these Corps of Engineers' studies are viewed by State and local governments as objects that will diminish the federal pressure upon them to develop and utilize their own planning capability, the cause of encouraging responsible in-house planning on the part of State and local governments may very well be severely retarded. If the federal funds in support of the C-SELM Study and others like it had gone to the States and to areawide organizations to achieve the same planning objectives, the resultant effect would assuredly have been to further the planning capability at these loci. The present conduct of the C-SELM Study does not achieve this result.

Furthermore, that the C-SELM Study and its counterparts obstruct the purposive attempts of federal programs to encourage State and local planning is especially critical to the performance of land use planning at the State, areawide and local levels. For one, the possible selection of a land disposal alternative for the C-SELM area would serve to broaden the already considerable impact upon land use of water quality management planning. To the extent that land disposal alternatives are being considered at all - and they are being cast in a favorable perspective - there is a prospect that large areas of land will be developed as land treatment sites for wastewater disposal - in most cases, without benefit of previous

areawide land use planning. Secondly, the C-SELM Study has the related effect of preempting comprehensive planning. In the absence of comprehensive, or even land use, planning for much of the area being considered for alternative land treatment sites, the possible selection of any of these land disposal alternatives in the C-SELM Study would mean that a functional water quality management, if effectuated, would become the incontrovertible basis for most subsequent functional or comprehensive planning.

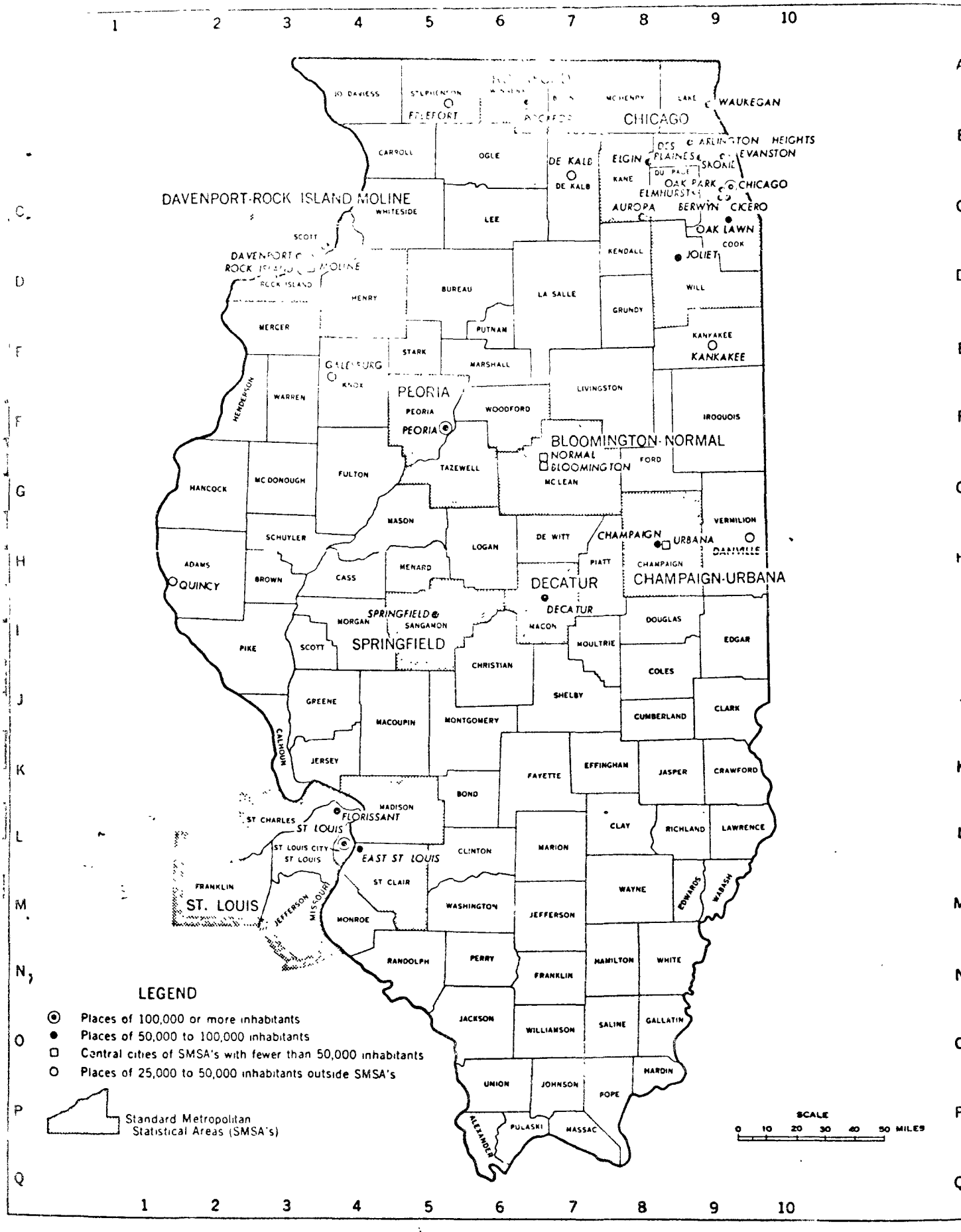
(b) Illinois

Statewide land use planning in Illinois, as in Indiana, is undeveloped. In 1970, Illinois created a State Office of Planning attached to the Office of the Governor. Because it is so new, the State Planning Office is still trying to determine what it should be doing. Accordingly, its contribution to statewide land use planning is still very much forthcoming. All of the land use planning currently being performed in Illinois is the work of local governments (including counties) and regional organizations.

Illinois, in 1971, divided the State into seven regions for the purpose of administering the State agencies. Unlike the planning and development regions in Indiana, Illinois' sub-districts are basically for administrative purposes--just as the U. S. Government's ten federal regions. The only apparent implication which Illinois' sub-districts have for planning is that regional planning jurisdictions cannot overlap district boundaries.

There are 13 areawide planning organizations in Illinois, all of which are chartered by the State. The boundaries of these areawide organizations are shown in the map on the following page. The largest of these areawide organizations (or AFOs in HUD/EPA parlance) is NIPC,

s, Standard Metropolitan Statistical Areas, and Selected Places



which is the only Illinois areawide organization that is affected by the C-SELM Study.

NIPC was established in 1957 by the Illinois Legislature with an area of operation limited to six counties: Cook, DuPage, Lake, Kane, Will and McHenry. This six-county area contains 3,714 square miles of land and 38 square miles of water. It is occupied by almost seven million people served by 1,200 units of government (1960 figures). The State Legislature of Illinois has assigned NIPC three major responsibilities:

-- to conduct research required for planning for the six-county area;

-- to advise units of government concerning the relationship among various plans and projects for the six-county area or parts thereof; and

-- to prepare and recommend generalized metropolitan comprehensive plans and policies. (Illinois Revised Statutes, 1967, Chapter 85)

In 1967, NIPC formally adopted a comprehensive plan which has been titled "A Generalized Armature for Growth." This generalized plan does not consist of a map in the traditional sense of a city plan. Its objective was to achieve comprehensiveness, not detail. As a generalized framework or armature for growth, the NIPC Plan envisions "fingers" of urbanization radiating outward from the core of the metropolitan area. In between these fingers, which are organized around present and anticipated transportation corridors, are wedges of open space which have been identified for preservation as parks, golf courses, cemetaries and other low intensity uses.

To complement and further the comprehensive plan for Northeastern Illinois, NIPC has thus far produced two functional plans. One of these is the Open Space Plan, which amplified the land use and, especially, the open space implications of the comprehensive plan. The other functional plan is the Regional Wastewater Management Plan. This plan is only tentative and qualifies as the interim water quality management plan required by EPA before release of construction grant monies for projects in the metropolitan area.

NIPC has enjoyed some success in encouraging local units of government to use the Commission's regional planning as a framework for more detailed planning for their respective local jurisdictions. There is a continuing need, however, for local units to "fill-in"--and, in that way, further--the generalized NIPC comprehensive plan. (The actions of local governments in this regard will be discussed in an examination below of the local government role in the C-SELM Study and land use planning.)

Insofar as State land use planning is concerned, NIPC's comprehensive plan--which covers land use--and its Open Space Plan represent the planning of the State of Illinois for the six counties of Northeastern Illinois, which includes the C-SELM area. These plans have the standing of State plans because they have been officially adopted by the State, which chartered NIPC and gave it a grant of specific authority to prepare comprehensive metropolitan plans for Northeastern Illinois.

The NIPC comprehensive plan has been accepted by the Federal Government as the basis for A-95 determinations for the Chicago Standard Metropolitan Statistical Area (SMSA). However, NIPC is actually not federally certified as an A-95 agency. This is because the Chicago SMSA is contiguous with the Gary-Hammond (Indiana) SMSA,

forming a Standard Consolidated Area as defined by the Bureau of the Census and recognized by OMB. Federal requirements, as promulgated in OMB Circular No. A-95, state that only one "metropolitan clearinghouse" can be certified in a single metropolitan area to review federal grant applications. For this reason, neither NIPC nor the Lake-Porter (Indiana) Planning Commission is officially certified as a metropolitan clearinghouse or A-95 agency. Instead, certification has been given to the Interstate Planning Commission (IPC), which does not have an independent planning capability and exists largely on paper; its practical function is to act as a nexus through which NIPC and the Lake-Porter Planning Commission can apprise one another of their respective grant review determinations. Therefore, both NIPC and the Lake-Porter Planning Commission function in a practical sense as A-95 agencies -- despite EPA and HUD wishes to the contrary. In any case, whether NIPC or the IPC is regarded as the A-95 agency for Northeastern Illinois, NIPC's comprehensive planning does have standing as the official base against which federal grant applications are compared for project conformance.

4. Opportunity to Affect Implementation of a C-SELM Plan

(a) Indiana

Indiana, like any other State, has recourse to the legal authority to affect land use through whatever policies, practices or programs the State might choose, provided that federally guaranteed rights, privileges and immunities are not abridged. Whether the State advantages itself of these powers depends upon the action of the State Legislature. Accordingly, the State, in 1957, passed enabling legislation for the establishment of regional planning commissions. This

legislation, the Indiana Inter-Local Cooperation Act of 1957, enables regional planning organizations to "write their own ticket" with respect to membership and financing, according to the Director of the State Division of Planning. As previously mentioned, one effect of this largely unconstrained authority for regional commissions is that the State can appoint a member of a planning commission to represent State interest only at the invitation of the commission itself.

For that portion of Indiana Planning and Development Region #1 lying outside Lake and Porter Counties, the State maintains the land use authority which has not been delegated to the individual counties. However, this State authority will effectively be lost if it successfully installs a non-metropolitan planning commission for the remaining five non-metropolitan counties in this seven-county region.

One important area in which the State of Indiana does have authority to significantly impact the C-SELM Study is through its federally-defined authority to designate the organization responsible for preparing river basin plans for water quality management. Under the authority of the Federal Water Pollution Control Act of 1965 as amended in 1970, federal requirements have been promulgated to the effect that river basin plans must be completed prior to July 1, 1973, as a condition for release of EPA and HUD construction grants. In Indiana, the Water Pollution Control Board, an adjunct of the State Board of Health, is presently preparing a river basin plan for the Calumet River Basin. This basin and the plan which is being prepared for it are inclusive of the Indiana portion of C-SELM as well as those areas in Newton and Jasper Counties which have been identified as land treatment sites for the land disposal alternatives in the C-SELM Study. Under present law (the Water Pollution Control Act of 1965 as amended in 1970), the use of

federal funds to construct any wastewater management system is contingent upon the conformance of that project with an EPA/HUD-certified metropolitan-area and/or river basin water quality management plan. The EPA/HUD interim guidelines for water quality management planning require inter-coordination between basin planning and metropolitan-area planning in cases where both are being carried out concurrently for a common area; in such cases, the metropolitan-area plans are expected to be more detailed than basin plans. The pertinence of these requirements to the C-SELM study is that, under present law, the Indiana Water Pollution Control Board and the Lake-Porter Planning Commission have the ability to significantly influence whether EPA or HUD can release construction grant funding for whatever wastewater system is chosen in the C-SELM Study. By failing to reflect the plan for that system in their metropolitan-area and river basin water quality plans, these two organizations can obstruct federal funding of a C-SELM plan under present construction grant programs.

Nevertheless, there are pragmatic considerations which argue for expeditious adoption of the eventual C-SELM system in Indiana's areawide and basin plans. The State effort to prepare a water quality plan for the Calumet River Basin appears to be lacking in resolve. To demonstrate, the practice in Indiana is for local jurisdictions to prepare plans justifying the projects for which they need EPA and/or HUD funding; these sundry "spot plans" are collected by the State and sent to EPA for certification as an interim plan. These plans are being certified under the interim guidelines for water quality planning, which require yearly certification of tentative plans until July 1, 1973, when final plans are to be submitted. The Lake-Porter Planning Commission, on the other hand, has been making a serious attempt to produce

an acceptable water quality management plan for its planning jurisdiction. However, it is questionable whether the State or the Lake-Porter Planning Commission will be able to complete acceptable water quality management plans by the, thus far unextended, deadline of July 1, 1973. In the face of not being able to quality for EPA and HUD construction grants, the State Water Pollution Control Board and even the Lake-Porter Planning Commission might wholly adopt the alternative chosen in the C-SELM Study merely for the sake of expediency in meeting the deadline for final water quality plans.

(b) Illinois

Illinois has the same inherent powers as Indiana to affect land use in the State. Variation in the land use authority of the two States is wholely dependent upon the actions of their respective legislative bodies. One such variation is State legislation or administrative regulations with respect to the nature and amount of State representation on the policy-making bodies of regional commissions. Illinois, unlike Indiana, specifically avails itself of the right to appoint a portion of the membership of a regional planning commission.

The Northeastern Illinois Planning Commission is governed by a board of nineteen commissioners. Pursuant to State law, eight commissioners are appointed by the Governor, five are appointed by the Mayor of Chicago, and the County Board Chairmen for each of the six counties in the NIPC jurisdiction appoint one member apiece to the Commission. Thus, the State is indirectly capable of affecting land use decisions in Northeastern Illinois through its power to appoint eight of the nineteen NIPC Commissioners.

The State can also affect NIPC in two other ways. Through its power of the purse as one source of funding for NIPC it is capable of influencing the Commission. However, this potential source of influence is impaired by the fact that State funding of NIPC has been parsimonious. Limited financing from the State has lessened the effectiveness of the Commission and has been a source of contention between HUD and the State. In 1969, the State appropriated $23,000 for NIPC. This amount was less than half the contribution of the City of Chicago and represented slightly less than ten percent of NIPC's total intergovernmental funding for that year. Therefore, State funding of NIPC is already negligible. An increase in State funding of NIPC, rather than a decrease, would probably be needed in order to effectuate any State influence upon NIPC through the State's power of the purse.

The other means by which the State can affect NIPC is through its federally-defined power to certify--and, therefore, to decertify--the plans of areawide planning commissions. This means would only be resorted to in an exceptional circumstance -- with great caution, even then.

NIPC's power to affect the results of the C-SELM Study insofar as Northeastern Illinois is concerned derives from the Commission's capacity as the practicing A-95 review agency for Northeastern Illinois or the Chicago SMSA. To receive federal funding, the alternative selected in the C-SELM Study for the Chicago SMSA, or parts thereof, must be reviewed by NIPC to determine whether such a system conforms with existent regional planning. Although federal agencies retain the right to override the decision of an A-95 agency

as to whether a particular project should be federally funded, the OMB frowns upon such practice; federal agencies decisions to ignore A-95 review recommendations are becoming progressively fewer in number since the A-95 requirement was effectuated in 1967. The resultant power of NIPC to affect federal funding for construction of the Northeastern Illinois portion of any C-SELM wastewater management system represents the opportunity which the State of Illinois has to indirectly affect what becomes of the C-SELM Study. Differently stated, the power of the State of Illinois to influence implementation of the C-SELM Study, insofar as that study relates to Northeastern Illinois, is hinged upon the influence which the State is able to bring to bear upon the grant review determinations of the NIPC Board of Commissioners.

5. Opportunity for Citizen Input

(a) Indiana

It has been discussed that the State of Indiana has the inherent power, under existing federal law, to influence implementation of any C-SELM plan by two basic means. For one, it can choose whether to incorporate such a plan in the basin plan which the State Water Pollution Control Board is preparing for the Calumet River Basin. This choice will affect whether federal funding is released for development of the Indiana portion of any C-SELM plan. Secondly, the State is capable of similarly affecting federal construction funding of any C-SELM plan through the actions of the Lake-Porter Planning Commission, which is chartered, partially funded, and certified to the Federal Government by the State. The Lake-Porter Planning Commission, as a practicing A-95 agency, would have to pass A-95

review judgement upon any federal grant application to fund construction of a C-SELM wastewater management system affecting the Gary-Hammond (Indiana) SMSA. (If the State eventually delegates A-95 authority to the non-metropolitan regional planning commission which it hopes to establish in Northwest Indiana to complement the Lake-Porter Planning Commission, this body would be able to affect the result of the C-SELM study in the same manner as the Lake-Porter Planning Commission.) The reader will recall from previous discussion above that, because of Indiana's lack of apparent resolve to finalize water quality management planning on schedule, there is a prospect that the State might wholly adopt relevant portions of any C-SELM plan merely for the sake of expediency in meeting federal deadlines for final completion of water quality plans. This prospect increases the importance of citizen input to the planning process for water quality management.

Citizen input in the preparation of basin plans for water quality management is not legally required by the State until after the plan has been prepared. At that time, a single formal public hearing is required by State law before a plan is officially ratified by the State and submitted to EPA and HUD for certification. However, there is considerable involvement of public officials--both elected and appointed--in the preparation of such a plan, and these persons are accountable to the public through the normal political process.

Citizen input to the decisions of the Lake-Porter Planning Commission is in accordance with HUD guidelines with respect to the composition of federally-certified areawide organizations (APOs). These guidelines for HUD certification basically require that two-thirds of the policy-making body for an areawide organization be comprised of elected officials; that the balance of membership on this

body include representation from undefined "minority groups"; and that all units of government in the area have some form of representation on the policy-making body. The ostensible logic of these guidelines is that bringing the right people together will make an areawide organization both equitable and effective.

(b) Illinois

Through the actions of NIPC, residents of the five-county Chicago SMSA are capable of reflecting their desires with respect to the disposition of the final alternative chosen by the Corps of Engineers in the C-SELM Study. As previously discussed, NIPC has the power to deny EPA construction grant funding of the Illinois portion of a C-SELM wastewater management system by failing to adopt the Corps of Engineers' plan for such a system as the basis for A-95 grant review decisions in the Chicago SMSA. In accordance with HUD guidelines, the commissioners of NIPC are supposed to be representative of the citizenry in the planning jurisdiction. Therefore, the will of these citizens should be carried out in the decision of the NIPC commissioners to adopt or fail to adopt a C-SELM plan as developed by the Corps of Engineers.

Should NIPC decide to adopt the C-SELM plan as developed by the Corps of Engineers, the State of Illinois would have to certify that plan to EPA. Although State certification of a metropolitan area plan is essentially a pro forma arrangement, it is nevertheless the only juncture in the procedure for adopting such a plan where there is an occasion to represent the interests of non-metropolitan areas. Thus, for all practical purposes, Illinois residents of those areas which have been identified for the location of alternative land treatment sites but which lie outside the planning jurisdiction of

NIPC would have no voice in the adoption of a C-SELM plan. If the State of Illinois were preparing a basin plan which was inclusive of the Illinois portion of C-SELM, then, as in Indiana, the residents of non-metropolitan areas would have the opportunity to nominally effect the adoption of a C-SELM wastewater management plan. However, because Illinois is not presently preparing a basin plan covering the Illinois portion of C-SELM, this opportunity to effect the adoption of a C-SELM plan is effectively lost insofar as non-metropolitan Illinois residents are concerned.

The preceding discussion of the ability of the States of Indiana and Illinois to affect the disposition of the C-SELM Study has revolved around the provisions of the Federal Water Pollution Control Act of 1965 Amended, which states that grant applications for EPA funds to construct waste treatment facilities must conform to a water quality management plan. This requirement gives the States and federally certified areawide planning organizations the leverage to incrementally effectuate water quality management plans for their respective jurisdictions. Notwithstanding the statutory provisions which provide for this kind of leverage, it is entirely possible that Congress could unilaterally decide to appropriate special project funding for construction of the wastewater management system envisioned by the Corps of Engineers for the C-SELM area. The Corps of Engineers has typically turned to the Congress for the authority and funding to construct reservoirs and other sundry projects. However, such an act by Congress (normally in the form of a rider to a major bill) would require supportive "log-rolling" on the part of the congresional delegation(s) from the State(s) in which the project would be located.

Congress could also affect the disposition of the C-SELM Study by legislating more restrictive water quality standards than those presently in force. Legislation of this sort, which is proposed in the House and Senate versions of the 1972 Amendments to the Water Pollution Control Bill of 1965, would disrupt current water quality management planning aimed at the achievement of currently enforceable standards. Depending upon the calendar deadlines established by Congress for achieving higher standards and for completing water quality plans based upon those higher standards, local and State officials might be impelled to scrap their ongoing metropolitan-area and basin planning and to adopt the planning which the Corps of Engineers has carried out on the basis of the No Discharge of Critical Pollutants (NDCP) standard.

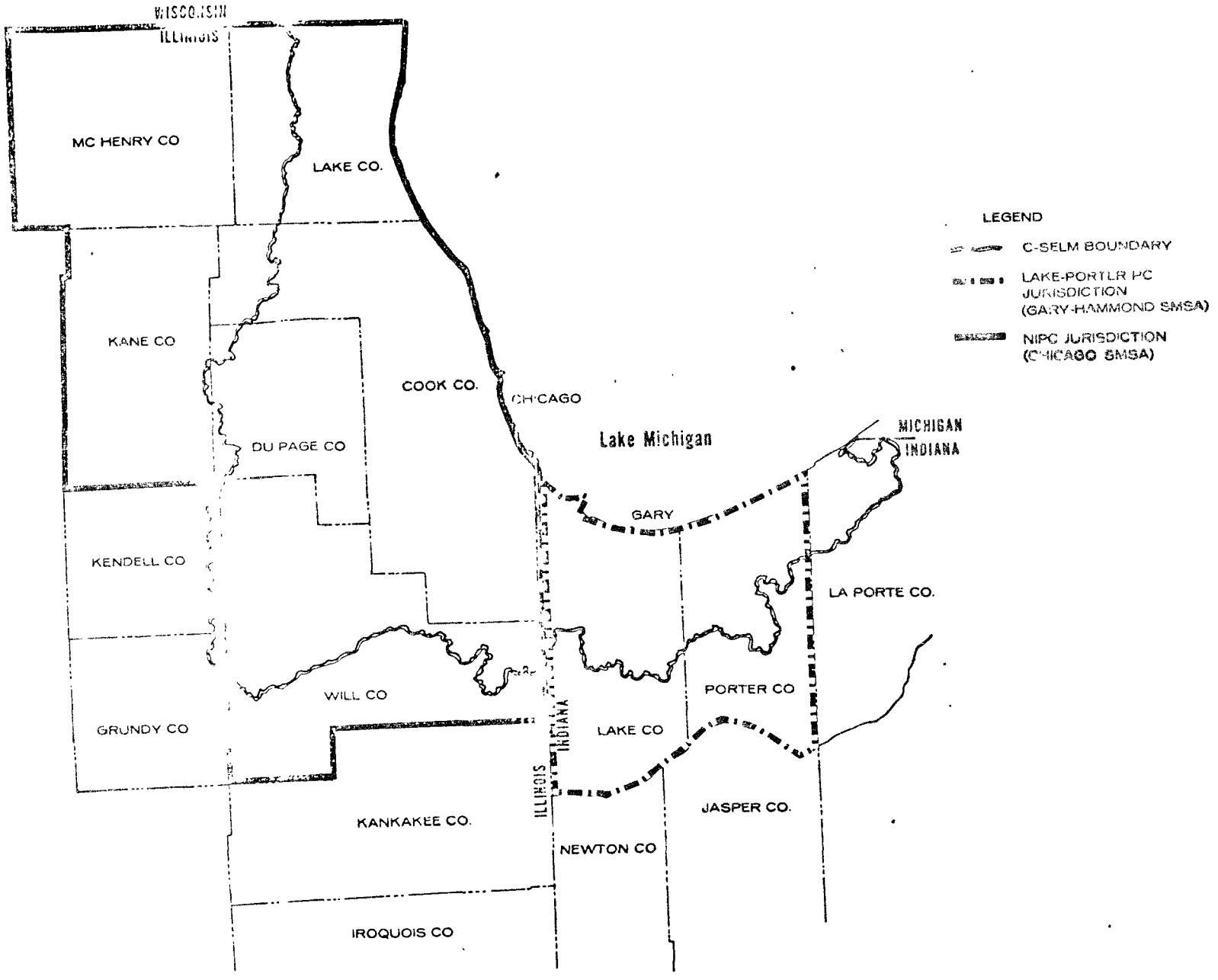
B. Counties

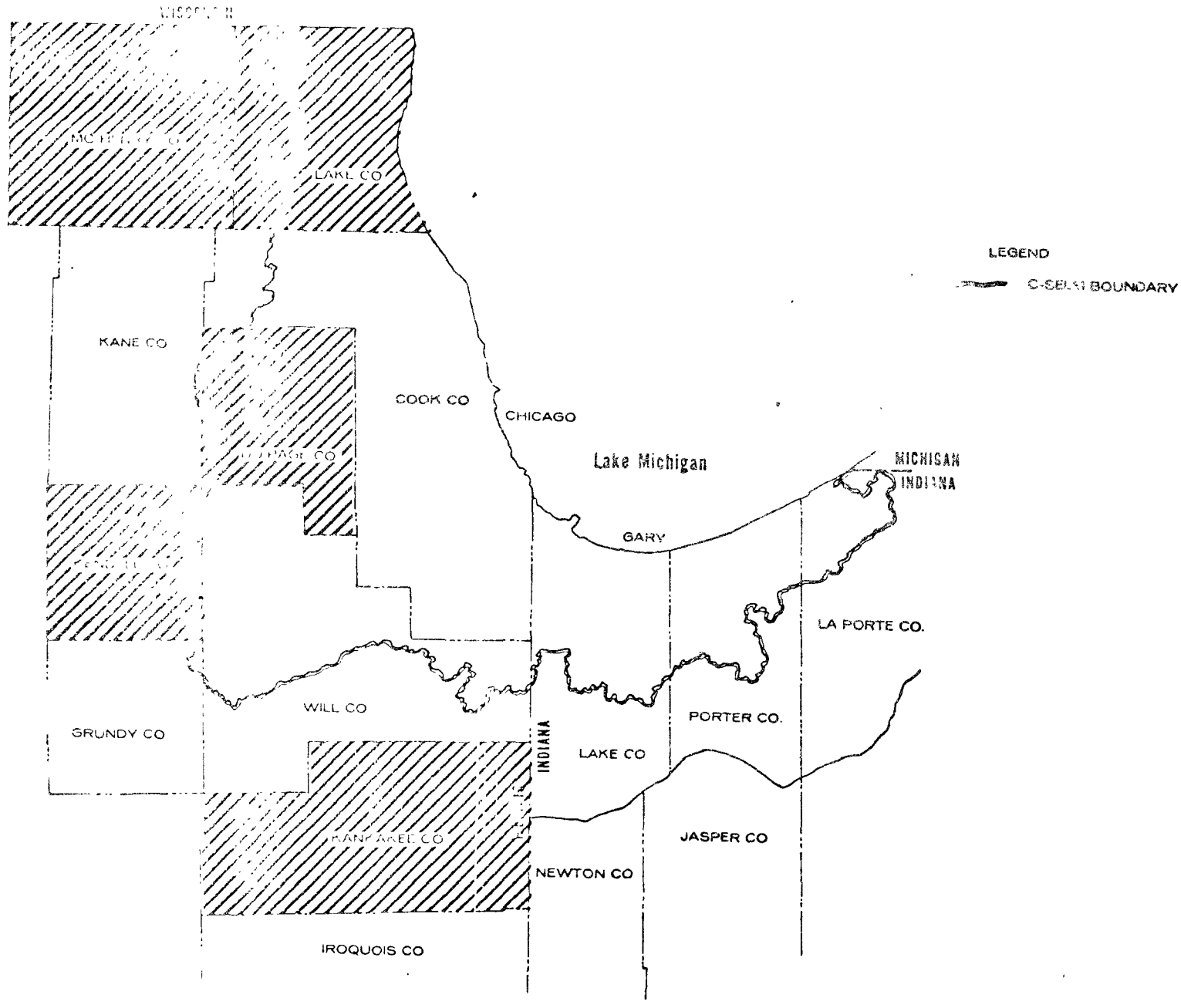
1. Knowledge of C-SELM Study

Five counties in Illinois will be considered from the standpoint of their interface with the Corps of Engineers' C-SELM Study. Two of these counties, DuPage and Lake, lie wholly or partly within the boundaries of C-SELM. The other three, McHenry, Kendall and Kankakee Counties, are wholly outside C-SELM but contain land areas which have been identified in the C-SELM Study as alternative land treatment sites. The map on the following page shows the location of these counties in relation to the C-SELM area.

Both Lake and DuPage Counties, which are within C-SELM, have had some involvement in the C-SELM Study. A representative from the Lake County Planning Commission sits on the C-SELM Steering Committee and has received the numerous documents which have been generated by the C-SELM Study to date. Contrarily, the Director of the DuPage County Planning Commission became aware of the C-SELM Study only when he was contacted to solicit his reaction to the fact that large land areas in DuPage County have been identified as possible land treatment sites in the land disposal alternatives of the C-SELM Study. It was subsequently learned that a representative from the DuPage County Department of Public Works is a member of the C-SELM Steering Committee; this department had evidently not informed the County's two year-old Planning Commission of the existence and nature of the C-SELM Study.

Persons involved in planning in Lake County appear to be favorably disposed to a spray irrigation system for wastewater treatment. The Lake County Planning Commission has prepared a natural resource study which considered the use of land disposal as a method of wastewater treatment.


WISCONSIN
ILLINOIS
MC HENRY CO
LAKE CO.
KANE CO
COOK CO.
CHICAGO
DU PAGE CO
Lake Michigan
MICHIGAN
INDIANA
GARY
KENDELL CO
LA PORTE CO.
WILL CO
PORTER CO
GRUNDY CO
INDIANA
LAKE CO
ILLINOIS
JASPER CO.
KANKAKEE CO.
NEWTON CO
IROQUOIS CO
LEGEND
C-SELM BOUNDARY
LAKE-PORTER PC JURISDICTION (GARY-HAMMOND SMSA)
NIPC JURISDICTION (CHICAGO SMSA)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WILL CO
GRUNDY CO
INDIANA
LAKE CO
PORTER CO.
JASPER CO
NEWTON CO
IROQUOIS CO

This study also identified land areas in the county which would be suitable for land disposal. The County Planning Director presumed that similar land areas were identified for land disposal in the C-SELM Study due to the fact that Bauer Engineering, the principal consultant to the Corps of Engineers for the C-SELM Study, also assisted Lake County in carrying out the natural resource study which recognized the land areas in Lake County suitable for land disposal.

Because of other demands on the Lake County Planning Commission and the fact that the C-SELM map depicting land disposal alternatives is highly generalized, the Lake County Planning Commission has not compared the land disposal sites recognized in the C-SELM Study against those identified in the county's natural resource study to see if the areas are identical. Moreover, because of NIPC's involvement in the C-SELM Study, the Lake County Planning Commission is not concerned about the consideration which the Corps of Engineers is giving to land disposal in Lake County. The Director of the Lake County Planning Commission stated that "we're riding with NIPC on this." That statement is also indicative of the feeling of the Planning Director for DuPage County, who has not participated in the C-SELM Steering Committee.

The faith which both Lake and DuPage Counties have placed in NIPC to sheperd their best interests in the C-SELM Study illustrates that NIPC's active participation in the C-SELM Study is of utmost importance. The responsibility to protect county interests which has been entrusted to NIPC also illustrates the degree of success in Northeastern Illinois of federal policy to encourage the establishment of metropolitan planning commissions to safeguard local governments from unsavory and unwise development.

In contrast to Lake and DuPage Counties, which are within the boundaries of C-SELM, Kankakee, Kendall and McHenry Counties have been excluded altogether from the C-SELM Steering Committee, even though considerable land in these three counties has been identified for possible land disposal. The apparent reason for excluding these counties from representation on the C-SELM Steering Committee is that they are outside the boundaries of C-SELM, indicating that the wastewater management system which the Corps of Engineers is planning for C-SELM would not service these counties.

Although McHenry County has not participated in the C-SELM Study, the County Planning Director has been apprised of the existence of the study and of the fact that it identifies land in McHenry County for land disposal. McHenry County has developed a county-wide wastewater management plan which envisions the construction of a land disposal system. However, this plan has not been formally adopted by the County Board since the County does not have a Department of Public Works to implement such a plan. The apparent link between this county plan and the C-SELM alternatives for land disposal sites in McHenry County is that the Corps of Engineers principal consultant for the C-SELM Study, Bauer Engineering, also prepared the wastewater management plan for McHenry County which called for a land disposal system.

McHenry County, unlike the other Illinois counties outside C-SELM which have been identified for the location of alternative land disposal sites, is part of the Chicago SMSA and is therefore within the jurisdiction of NIPC. For this reason, McHenry County is able to rely upon NIPC's involvement in the C-SELM Study as the nexus for protection of the county's interest insofar as a C-SELM wastewater management system is concerned.

The Kankakee County Regional Planning Commission was unaware that the C-SELM Study had identified a large tract of that county for land disposal -- or that the C-SELM Study existed -- until contacted in connection with the preparation of this report to solicit their reaction to the Kankakee Treatment Site as identified in the C-SELM Study. That the County was unaware of the C-SELM Study and of its possible impact upon Kankakee County is evidently related to the fact that the County is neither within the boundaries of C-SELM nor within the jurisdiction of NIPC. The fact that neither the Corps of Engineers nor their principal consultant, Bauer Engineering, has consulted or communicated with the Kankakee County Planning Commission in regard to the C-SELM Study is all the more surprising in light of the fact that a large corner of Kankakee County is included in the single treatment site alternative, which is considered to be the least costly of the eleven alternative plans being considered in the C-SELM Study.

Kendall County has not participated in the C-SELM Study. When the County had a Planning Director, that individual learned of the C-SELM Study through the grapevine of government officials. The former Planning Director was particularly concerned by the fact that the land disposal site identified for the C-SELM Study in Kendall County includes Silver Spring State Park. The plan alternative involving this site calls for a large lagoon to be placed where this state park is now located. Upon investigation, the Kendall County Planning Director learned that the C-SELM Study identified the land treatment site in that county on the basis of University of Illinois soil maps.

These maps apparently do not show present land uses. Because the land treatment site in Kendall County includes a state park, the County's former Planning Director feels that this proposed treatment will have to be scrapped from the planning study and should therefore not be taken seriously. However, the Corps of Engineers is still carrying forward this proposal in Phase II of the C-SELM Study and has not indicated thus far that the treatment site in Kendall County is being considered any less seriously than any other plan alternative.

2. Foreseeable Land Use Impact of a Land Disposal System

Knowledge of the potential land use impact of the alternative land treatment sites in the counties of Northeastern Illinois is largely dependent upon the extent to which the County Planning Commissions in these counties have been involved in the C-SELM Study. In those counties where there has been some degree of participation in the C-SELM Study, persons engaged in the planning function of county government are inclined to think that land treatment sites in their county, if properly located, could be a useful means of preserving unstable land from improper development.

Because a land treatment site would have the effect of governing the long-term use of that land, it is essential that sites for land disposal be chosen with a clear and appreciative view towards the long-term impact of land disposal upon the affected land area. Those who are responsible for a planning process which considers land disposal as a method of wastewater treatment have a public obligation to consider whether land disposal would be the most beneficial use of that particular tract of land. They are also obligated to consider whether the impact

of a land treatment site on adjoining land is justifiable in light of the alternative uses of such land.

The Planning Director in Lake County considers the prime attribute of land disposal to be its secondary usefulness as an instrument for protecting the open spaces in the county which are incapable of supporting residential and commercial uses. A different situation obtains in Lake County, where the County Planning Director has not been involved in the C-SELM Study and is not knowledgeable of its land disposal alternatives. He is not aware of any feelings for or against land disposal in DuPage County, and the County is not considering land disposal in the comprehensive planning process currently being performed. It is therefore difficult to assess the potential land use impact of the land disposal alternatives for DuPage County. However, one unmistakable conclusion can be drawn on the basis of the highly generalized maps which the Corps of Engineers has furnished thus far: the large land areas in DuPage County which would be used for land disposal in two of the C-SELM alternatives would necessitate advance land use planning on the part of the County. The urgency of performing such planning to guide the implementation of any C- SELM land disposal alternative is emphasized by the fact that DuPage County is more urbanized than any county in Northeastern Illinois except for Chicago's Cook County.

In McHenry County, the County Planning Director feels that land disposal sites such as those conceptualized in the C-SELM Study for that county could have a beneficial impact upon land use. If the areas which have been identified for land disposal in McHenry County are not used for that purpose, the County will have to resort to some other means of protecting these lands since they are incapable

of supporting urbanization.

As previously discussed, DuPage, Lake and McHenry Counties are parts of the jurisdiction of NIPC and have therefore entrusted responsibility to NIPC to watch over their interests in projects such as the C-SELM Study. In furtherance of that responsibility, NIPC has prepared a comprehensive and a functional open space plan for Northeastern Illinois. However, these plans have been incorporated into only one of the eleven alternative plans for the C-SELM Study. Presumably, NIPC's involvement in the C-SELM Study as a highly interested member of the Steering Committee will enable it to determine the potential impact of land disposal in Northeastern Illinois and to make input to the study accordingly.

Due in part to Kendall County's lack of involvement in the C-SELM Study, county officials have not had the opportunity to assess the impact of the land treatment site which has been identified in the county in two of the C-SELM alternatives. The only comment which they are able to make at present is that spray irrigation of secondary treatment effluent would jeopardize present use of the state park located in the center of the land treatment site identified in that county.

The Regional Planning Commission of Kankakee County is unaware of the foreseeable land use impact of a massive land treatment site in that county since the Corps of Engineers has not informed them that such a proposal is being considered in the C-SELM Study.

3. Status of Land Use Policy and Planning for this Jurisdiction

In addition to the need to consider the long-term land use impact of the land disposal alternatives in the planning process for the C-SELM Study, there is a concomitant need to conduct land use planning at the local and regional level which takes account of the anticipated impact of any land disposal system. This need for land use planning to complement and influence the wastewater management planning for C-SELM is no less severe in those local and county areas where the placement of a land treatment site is expected to have a beneficial impact upon land use. These anticipated benefits stand to be squandered if a planning framework for land use is not developed to influence development or the lack thereof in a manner which is compatible with the anticipated impact of a land disposal system.

Moreover, there is a visible spector that a land disposal system, because of the large amount of land it would consume and its unsure effect upon that resource, could incur a net reduction of existent and potential land use benefits. This effect is in contrast to the possibility that local and regional planning processes might not be able to take advantage of the opportunity to stimulate net land use benefits resultant of a land disposal system. However, the possibility of both effects is largely dependent upon the extent and nature of land use planning performed to complement and to influence the eventual implementation of any land disposal system.

The Northeastern Illinois Planning Commission (NIPC) has prepared an areawide comprehensive plan, including a land use and natural resource element, which is inclusive of DuPage, Lake, McHenry, Cook and Kane Counties. That plan is certified by the Federal Government and by the State of Illinois as the official basis for A-95 comments on federal grant applications in the Chicago SMSA. However, county and local planning are also used as basis for A-95 comments, although planning at these levels is not officially recognized by the Federal Government as the basis for grant application review by A-95 clearinghouses.

In spite of the fact that county level planning has no status insofar as most federal funding is concerned, there is a practical need for county planning in Northeastern Illinois to provide the detail lacking in NIPC's comprehensive plan for the area. As previously discussed, the Finger Plan which NIPC has adopted as the comprehensive plan for Northeastern Illinois is highly generalized and achieves comprehensiveness at the expense of detail. Accordingly, the existence and federal certification of NIPC's comprehensive plan does not alone assure that there is sufficient land use planning on which to base the planning and implementation of any wastewater management plan for C-SELM. If local governments have not furthered NIPC's regional planning with their own more specific planning, then A-95 comments with respect to federal funding of a wastewater management system for C-SELM will necessarily be based upon apriori"best judgements" as to whether implementation of a C-SELM Plan will effect desirable results.

, which is being considered for the location
in three C-SILM alternatives, is regarded as
planning capability within NIPC's planning
Lake County Planning Commission was established
it a headstart on other counties in Northeastern Illinois.
, the County adopted a land use plan, which is
process of revision. The County has also prepared
ree study which considered the development of a land
and identified areas which would be suitable for land
nt sites.

Because of the aggressiveness and prominence of the planning
in Lake County, the County has enjoyed significant success
the course of private development. Although the sanctions
unty can legally impase upon privately funded development
are restricted, an informal procedure has developed in Lake County
by private loan institutions request a judgement from the
Planning Commission before making loans to fund private develop-
ts.

The planning which Lake County has accomplished varies
from the Finger Plan which NIPC has adopted as the comprehensive
plan for Northeastern Illinois. This variation derives from the fact
that the path of development in Lake County runs in a north-south
direction, whereas the NIPC regional plan anticipates an east-west
path of development organized around the railroad lines and transportation
routes which radiates westward from the core of the metropolitan
area. Development in Lake County has not followed the path of railroad
lines exclusively and the considerable wetlands in the County impede

the maturation of the "fingers" which the NIPC Plan prescribes.

In the instances where Lake County planning conforms to NIPC's regional plan, the County has actively sought to support and further the NIPC Plan. Local governments have worked to preserve the open space areas recognized by NIPC through their decisions with respect to the extension of sewer lines.

Although planning in Lake County is more advanced than in any other county in Northeastern Illinois, it is nevertheless questionable whether existent plans for the County are sufficient to meet the demands placed upon local level planning by the land disposal alternatives in the C-SELM Study. The potential impact of these land diposal alternatives necessitates that those impacts be considered in the course of the on-going revision of the County's comprehensive plan and that the revised plan be formally adopted by the County. A further requirement is that the revised comprehensive plan for Lake County be used as a decisional basis in the selection and implementation of any wastewater management plan for C-SELM. This requirement is especially crucial due to the generality of the NIPC comprehensive plan and the concomitant fact that the NIPC plan varies from actual planning and development in Lake County.

Planning for DuPage County is in its early stages. The County's Planning Commission is only two years old; it is now engaged in the preparation of a comprehensive plan which is scheduled for completion in 1974. A very generalized comprehensive plan was prepared for the County by a consultant firm in 1957, but that plan was never adopted by the County Board. In conjunction with NIPC, the County has put

together a coded description of existing land use in the county. Because the Director of the County Planning Commission has not been apprised of the C-SELM Study, he could only presume that this land use description is being utilized in the C-SELM Study.

The DuPage County Planning Commission is presently working on the natural resource and open space elements of its county-wide comprehensive plan. At this point in their work program, the Director of the County Planning Commission is unsure whether the comprehensive plan being prepared will serve to detail NIPC's generalized comprehensive plan for Northeastern Illinois. The County Board of DuPage County has previously endorsed NIPC's Finger Plan as well as its tentative functional plans for wastewater and open space -- with the understanding that the County might want to "refine" these plans when it prepared its own.

McHenry County, which includes land area identified for alternative land treatment sites although the county is wholly outside the boundaries of C-SELM, has an adopted land use plan. That plan furthers NIPC's Finger Plan "somewhat", according to the County Planning Director. The reason for lack of complete conformance between the two plans derives from their differing recognition of the Fox River's influence upon development and urbanization. The NIPC Finger Plan largely ignores such an influence of the Fox River, which runs in a southerly direction perpendicular to the "fingers" of development prescribed in the NIPC plan. McHenry County planning, on the other hand, recognizes the Fox River as a major determinant of development in that county.

Those counties affected by C-SELM land disposal alternatives which are not part of NIPC are reliant upon the planning which they are able to perform themselves. The A-95 grant review process for these non-metropolitan counties is performed through the state, which is behooved to rely upon local level planning in the absence of any statewide land use planning. This situation is widely recognized, and is an apparent source of concern to state and federal policy-makers. However, the recognized danger that these non-metropolitan counties, in the absence of state and/or regional planning, are ill-prepared for eventual development and urbanization becomes more acute in light of the alternatives being considered in the C-SELM Study for land disposal of metropolitan wastewater in these non-metropolitan areas. The ingrained bias of these land disposal alternatives towards disposal of wastewater outside C-SELM places a greater demand upon planning for these largely rural areas than it does upon the urban/suburban areas which would be serviced by such a wastewater system.

Kendall County, which includes a land area identified as a land treatment site in two C-SELM alternatives, adopted a land use plan in 1964. That plan is now out-of-date, however. An attempt has been made to revise the county's land use plan, but this effort has apparently become dormant as result of the recent departure of the County Planner. The County has made considerable progress towards the adoption of permanent agricultural zoning. This measure has been unanimously endorsed by the local Farm Bureau, which is especially significant since most farmers are able to make a lucrative profit from selling farm land for private development. Although the County Board is

prepared to adopt an instrument for permanent agricultural zoning, that action has not yet been taken. One sure accomplishment of the county is the completion of a soils map for the entire county.

Three of the four C-SELM land disposal alternatives involve a land treatment site in Kankakee County. The three alternatives which involve land treatment sites in Kankakee County are the three consecutive least costly alternatives of the eleven alternatives currently being considered in the C-SELM Study. However, Kankakee County has not been officially apprised of the C-SELM Study and has prepared only a rough land use plan. This plan has been submitted to HUD for certification but has not been adopted by the County Planning Commission pending certification from HUD. In conjunction with the preparation of this rough land use plan, the County Planning Commission has collaborated with the Soil Conservation Service in putting together soils maps of the urbanized areas of the county. By the middle of 1973, the County hopes to have soils maps of the entire county completed.

4. Opportunity to Affect the Implementation of a Land Disposal System

The Illinois counties which are within the planning jurisdiction of NIPC are capable of affecting the implementation of a land disposal system through NIPC's service as the "metropolitan clearinghouse" for A-95 grant review as required by the Federal Office of Management and Budget. To receive federal funding in accordance with the A-95 grant review requirement, a C-SELM wastewater management plan would have to be adopted by NIPC as an official basis for A-95 comments.

The procedure which NIPC would have to follow in adopting such a plan would work as follows. Having received a petition to adopt a C-SELM wastewater management plan, NIPC would forward notice of that petition to the five county planning commissions in Northeastern Illinois along with a detailed copy of the C-SELM plan. At the discretion of these planning commissions, their individual staffs would review and evaluate such a plan from the standpoint of its probably impact upon the county and the County Planning Commissions would decide whether to endorse the plan and inform NIPC of their action. If the plan were thereafter adopted by NIPC on the basis of its internal review and the comments received from county planning commissions and all other affected units of government, the plan would then become the basis for A-95 determinations with respect to the awarding of federal program grants for wastewater treatment facilities. In that way, the plan would be imposed upon the counties, since a county plan for the purpose of federal program grants is that county's portion of a federally certified metropolitan or areawide plan.

C. CONCLUDING ASSESSMENTS OF THE C-SELM STUDY

Based upon the foregoing analysis of the conduct to date of the C-SELM Study and the preceding examination of the Muskegon Project, we submit the following conclusions:

That the land disposal alternatives being proposed for the C-SELM area by the Corps of Engineers would have, and are presently having, a harmful effect upon land use and land use planning;

That the Corps of Engineers has exhibited a parsimonious concern for the land use effects of the land disposal alternatives proposed in the C-SELM Study;

That the Muskegon Project, as it has matured to date, fails to provide mitigating evidence that a large scale land disposal system is otherwise desirable; and

That the C-SELM Study should therefore be terminated.

The underlying reasons for each of the above conclusions are presented below.

CONCLUSION: That the land disposal alternatives being proposed for the C-SELM area by the Corps of Engineers would have, and are presently having, a harmful effect upon land use and land use planning.

BASES:

1. Concern for the water resource at the expense of the land resource.

A guiding precept of the C-SELM Study is that wastewater constituents are resources out of place which possess potentially beneficial uses. The allegiance which the Corps of Engineers has paid to this

[illegible] have given rise to concern that their consequent attempt to make [illegible] use of wastewater constituents is being accomplished at the [illegible] of concern for the land resource and for related land use planning.

The Corps' conduct of functional water quality management planning on the basis of the "No Discharge of Critical Pollutants" (NDCP) goal illustrates the ecological imbalance which can be caused by a narrow-visioned attempt to manipulate the environment. That imbalance is due to the stress placed upon the land resource by planning which is exclusively devoted to improving the quality of the water resource. In the absence of land use controls comparable to the NDCP for wastewater treatment--and land use controls in the area impacted by the proposed C-SELM land disposal system are demonstratively not comparable to the NDCP goal--it is unavoidable that attempts to enhance water quality should place stress upon the land resource.

It is observable that the attempt to achieve the goal of NDCP represents an attempt to turn-the-clock-back on the growth and aggregation of human population and accompanying land-based development insofar as these occurrences have adversely affected water quality. However, the land disposal technology for wastewater treatment which the Corps of Engineers has embraced does not remove the adverse environmental effects wrought by the growth and aggregation of population; instead, that technology cleanses the water resource of these effects by transferring them to the land resource.

The answer to the dilemma of how to enhance one natural resource without harming others is not that environmental enhancement should not be attempted. Rather, the answer is that efforts to improve the

quality of one natural resource should only be attempted in the framework of total natural resource planning which is comprehensive of the water, the land, and the air. Achievement of this kind of comprehensive planning is made difficult by Federal program requirements, such as the EPA requirement for water quality management planning, which promote planning for a single natural resource. Regrettably, the impetus for comprehensive planning provided by the A-95 requirement and the companion HUD 701 Program is relatively weak as compared to the impetus for functional planning provided by separate Federal program requirements. However, in spite of the impediments to comprehensive planning which are built-in to functional planning requirements, programs requiring functional resource planning (such as EPA's Section 3(c) planning program) are more conducive to the achievement of comprehensive planning than the conduct of water quality management planning by the Corps of Engineers. Although EPA programs encourage functional planning with both a carrot and a stick, at least they encourage that such planning be performed by agencies which are also responsible for comprehensive planning (APOs). In contrast, the Corps of Engineers is presently carrying out water quality management planning as an in-house activity, organizationally apart from agencies responsible for comprehensive planning.

2. Imposed need for land use planning to support a land disposal System.

The conceivable impact of effectuating any of the land disposal alternatives being considered by the Corps of Engineers for the C-SELM area imposes the necessity that local and areawide planning bodies conduct planning for a myriad of incidental factors.

Among these are the following:

-- for the use of land vacated by existing conventional treatment plants and for land which is being held for future construction of conventional treatment plants;

-- for the selection and wise use of land treatment sites as functional "green belts";

-- for determining whether wastewater treatment and related agricultural production is the most beneficial use of a given land area;

-- for the provision of adequate economic opportunity, housing and public and private services for persons displaced by the purchase of land for a land treatment site;

-- for the provision of adequate housing and public and private services for the personnel who would be needed to construct, operate and maintain a land disposal wastewater system (the Corps has acknowledged that a land disposal system would require more manpower than an AWT system); and

-- for the effect of a land treatment site upon the value and use of adjoining land.

Because these planning considerations involve fundamental questions of how people want to live, they deserve to be addressed by local and areawide planning agencies which are directly responsible to the people who would be most affected by a land disposal system. The U. S. Army Corps of Engineers does not meet the criterion of being democratically responsible to the people who are directly impacted by Corps' projects.

Yet most of the local agencies which do meet this criterion do not as yet have the capability to assume the additional responsibility which the C-SELM Study represents for them.

3. Exploitation of planning controversies.

The existence and nature of the C-SELM Study as carried out by the Corps of Engineers exploits previously existent planning controversies. Two such controversies which the C-SELM Study has accentuated are (1) the tenuous relationship between the Northeastern Illinois Planning Commission and the Lake-Porter (Indiana) Planning Commission and (2) the question of who will plan for the non-metropolitan area of Northwestern Indiana.

The conduct of the C-SELM Study by the Corps of Engineers abuses the relationship between NIPC and the Lake-Porter Planning Commission in two ways. For one, the existence of the C-SELM Study as an initiative of the Federal Government decreases the need for NIPC and the Lake-Porter Planning Commission to conduct cooperative wastewater management planning for the consolidated Chicago-Gary metropolitan area. In this way, Federal pressure to encourage the development of such a oooperative metropolitan-wide planning process is under-cut, since the Corps of Engineers has voluntarily assumed the unfulfilled responsibility of the two metropolitan planning commissions to carry out unified planning for the bi-state area. The Chicago-Gary consolidated metropolitan area thus becomes an appropriate setting wherein the Corps of Engineers can demonstrate to the Congress that it is singularly capable of carrying out wastewater management planning that will facilitate the achievement of cost-effective regional wastewater systems.

The second way in which the tenuous relationship between NIPC and the Lake-Porter Planning Commission is abused by the conduct of the C-SELM Study relates to the question of who would manage a regional wastewater system for the C-SELM area. Because there is no existing government authority having a territorial jurisdiction of sufficient size to manage a C-SELM wastewater system, there is a likely prospect that the Corps of Engineers will end up having the responsibility to construct, operate and maintain such a system - provided that it can successfully demonstrate that the "national interest" clearly warrants its involvement. Leaving aside the question of whether C-SELM area residents would be amenable to a regional wastewater system managed by the Corps of Engineers or to a bi-state regional wastewater management authority in general, should the Corps of Engineers assume construction and/or managerial responsibility for a C-SELM system it would destroy the checks and balances which are normally thought to obtain from dividing planning and management responsibilities between separate organizational entities.

A second controversy which is exploited by the C-SELM Study is the question of who will plan for the non-metropolitan area of Northwestern Indiana. The relationship between this controversy and the C-SELM Study arise from the fact that the least costly wastewater treatment alternative proposed by the Corps of Engineers for the C-SELM area would involve a large land treatment site in Northwest Indiana, creating a functional barrier to the path of urbanization running southward from the Gary-Hammond (Indiana) area. Whether such a barrier would have a desirable effect upon land use

and human opportunity is arguable on both sides - yet the crucial fact is that there is currently no planning function for the area which would receive this large treatment site which is capable of resolving this argument. Because this area lies outside the Gary-Hammond SMSA, the proposal for this treatment site would have to be incorporated in the basin plan for the Calumet River which the State of Indiana is preparing as a condition for receiving Federal funds for construction of waste treatment and sewerage facilities. However, the basin planning process, because of its negligible opportunity for citizen participation, is an inappropriate instrument for adopting a wastewater management plan having such a significant impact upon land use and human opportunities. Should the Lake-Porter Planning Commission be allowed to extend its planning jurisdiction to this non-metropolitan area, there would be greater assurances of citizen participation in the adoption of a wastewater plan since HUD requires that an areawide planning organization take certain specific steps to ensure citizen participation before it is Federally certified. However, empowering the Lake-Porter Planning Commission to plan for non-metropolitan Northwestern Indiana would only make it more difficult to resolve the larger problem of how to draw together NIPC and the Lake-Porter Planning Commission. For this reason, HUD's Chicago Regional Office is predisposed against extending the Lake-Porter Planning Commission's planning jurisdiction to any non-metropolitan area.

4. Counteracts Federal policy to encourage development of State-Local areawide planning functions.

The thrust of Federal policy with respect to functional and comprehensive planning, as represented by the EPA/HUD agreement for water

quality management planning, is to encourage the formation of areawide planning organizations. These areawide organizations, which are given an umbrella-type jurisdiction over balkanized local governments, are expected to carry out the various kinds of planning which are necessary for judicious administration of Federal programs. Unlike the EPA and HUD programs which contain financial incentives and punitive sanctions to encourage areawide planning, the conduct of the C-SELM Study by the Corps of Engineers does not encourage State and local governments to assume conjunctive responsibility for areawide planning. In fact, Federal encouragement for State-local planning inheres so strongly in Federal program requirements that the absence of any such encouragement in the conduct of the C-SELM Study constitutes a discouragement for State-local planning by comparison. Furthermore, the fact that the Corps of Engineers is carrying out a planning process intended to produce a wastewater management plan for eventual adoption by areawide planning organizations serves to reduce the specific Federal pressure upon these organizations to produce a wastewater management plan.

In its zest to provide a long-range wastewater management plan for the C-SELM area, the Corps of Engineers has demonstrated its indifference to the need for a viable planning capability at the areawide level. The creation of a viable planning function capable of developing areawide comprehensive plans represents a revolutionary, long-range accomplishment of considerable more importance than the development of any long-range plan, as obliquely recognized in the A-95 requirement and concomitant EPA and HUD policy. Moreover, the need for developing a competent in-house planning function at the State, areawide and local levels has

assumed even greater importance due to the increasing recognition that planning is a continual process, not a one-shot affair.

It is observable that the funds which Congress appropriated at the request of the Corps of Engineers to fund the C-SELM Study could alternatively have gone to NIPC and the Lake-Porter Planning Commission. Had this occurred, these funds would have served the tandem purpose of supporting the development of a regional wastewater management plan while, at the same time, supporting the development of a stronger metropolitan-level planning capability. For example, the Corps of Engineers has received congressional funding for the C-SELM Study totaling just over $1 million, while NIPC's total fundings from government sources in 1971 amounted to only $850,000. Against the claim of those who would argue that the Corps of Engineers is better qualified than a metropolitan planning commission to conduct regional wastewater management planning, it is noteworthy that the Corps has contracted a private engineering firm to carry out the actual planning for the C-SELM Study. This realization flies in the face of any argument that the Corps of Engineers is singularly well-equipped to conduct regional wastewater management planning.

5. Pre-emption of comprehensive planning.

In the absence of comprehensive, or even land use, planning for much of the area being considered for alternative land treatment sites, the possible selection of any of these land disposal alternatives in the C-SELM Study would mean that a functional water quality management plan, if effectuated, would become the incontrovertible basis for most subsequent functional or comprehensive planning.

CONCLUSION: That the Corps of Engineers has exhibited a parsimonious concern for the land use effects of land disposal alternatives.

BASES:

1. Choice of wastewater system on the basis of costs.

The willingness of the Corps of Engineers to select a wastewater management system for the C-SELM area on the basis of economic costs indicates their parsimonious concern for the land use effects of the various plan alternatives. In the absence of economic controls to stimulate wise land use in the areas identified for land treatment sites, the market price of that land will not reflect the social cost of its various uses -- especially where land use planning has not been performed to determine the most beneficial use of that land based upon areawide needs. Accordingly, the plan alternatives which the Corps of Engineers have costed do not reflect the true social costs of the proposed use of that land.

The justification which the Corps uses for not making an attempt to assess the social costs of their land disposal alternatives is that the benericial effects of a land disposal system, i.e., the synergistic add-ons ascribed to the system, such as open space preservation and power plant siting, would outweigh any conceivable adverse impacts, thereby [illegible] net benefits. It is observable that this argument against assessing the social costs of the Corps' land disposal alternatives is based upon three oblique assumptions: that the benefits ascribed to a land disposal system exist; that they could and would be realized; and that their economic costs exceeds the cost of [illegible] adverse effects. Only the first of these

three assumptions has been addressed, and it was addressed from a conceptual standpoint since, until the Muskegon Project is in full operation, there is no empirical evidence that a land disposal system is capable of sustaining multiple benefits.

A related feature of the C-SELM Study is that it tends to externalize the possible adverse effects of its land disposal alternatives. Because the land disposal alternatives for C-SELM are biased towards disposal of wastewater outside the wastewater management service area (C-SELM), the possible adverse costs of land treatment sites would be externalized from the C-SELM area. It is noteworthy in this connection that the primary thrust of the 1972 Annual Report of the Council on Environmental Quality was that environmental degradation has occurred in the United States because of the ability of individuals and organizations within our market structure to externalize the adverse socio-environmental costs of their activity.

- Exclusiveness of participation in the S-SELM Study.

Participation in the C-SELM Study on the part of the government jurisdictions which would be most directly affected by the location of land sites is significant by its absence. At the county level, participation in the C-SELM Study has been limited to the government units which would be serviced by the wastewater management system proposed for C-SELM. The counties which lie outside the C-SELM area but [illegible] in land areas identified for alternative land treatment sites have not been invited to participate in the Steering Committee for the C-SELM Study [illegible], in most cases, they have been unaware that

the planning study exists. It is apparent, therefore, that the Corps of Engineers has made participation in the C-SELM Study dependent upon whether a governmental jurisdiction would be serviced by the proposed C-SELM wastewater management system. The fact that a governmental jurisdiction might be impacted by the location of a land treatment site is demonstrably irrelevant to the Corps' consideration of who should participate in its planning process, indicating that the Corps' concern for regional wastewater management occurs at the expense of concern for land use and land use planning.

3. Failure of the Corps to address the land impact of land disposal alternatives.

As previously discussed, local and areawide planning agencies are best suited to address those planning contingencies requiring local action to manipulate the impact of a land disposal system in accordance with public choice, e.g., the need to use land treatment sites, if possible, as instruments for achieving desired growth patterns. The public accessibility of these local institutions uniquely qualifies them to address such questions. Although there is considerable question that they have the present capability to fulfill the responsibility forced upon them by the C-SELM Study. In contradistinction to these local [illegible] responsibilities, the responsibility for determining the potential [illegible] environmental [illegible] treatment components, including their impact upon the [illegible] and the responsibility for clearly identifying what potential impact is a requisite function of the planning process wherein a land disposal system is proposed. The following areas in which the components of a land disposal system

might impact the land resource are among the considerations which should be explicitly addressed within the framework of the planning process for such a system:

-- the environmental impact of the increased power generation required to run a land disposal system and the land impact of establishing additional power generation facilities;

-- the impact of a land treatment site upon natural plants and wildlife;

-- the land use and human impact of the odors produced by springtime thawing of effluent storage lagoons;

-- the land use, recreational and water quality impact of the flow depletion which a land disposal system would occasion (roughly 700 square miles of the Kankakee River would be removed by the establishment of the Kankakee Land Treatment Site);

-- the land impact of possible migration of groundwaters from a land treatment site; and

-- the effect of the aerosol from spray irrigation upon the usability of a land treatment site and adjacent land.

The potential impact which a land disposal system for the C-SELM area would have in the above areas has thus far not been determined in the C-SELM Study, which has focused almost exclusively upon the water resources

CONCLUSION: That the Muskegon Project, as it has matured to date, fails to provide mitigating evidence that a large scale land disposal system is desirable.

BASES:

In view of the observations underlying the preceding conclusions with respect to the conduct of the C-SELM Study, the only justification for carrying forward the land disposal alternatives proposed by the Corps of Engineers for the C-SELM area is the prospect that a land disposal system would otherwise be desirable -- notwithstanding the conditions created by the planning process wherein the land disposal alternatives were conceived. Based upon this report's examination of the Muskegon Project as it has matured to date, assumption that a land disposal system for the C-SELM area would be desirable is without foundation. The reasons for discarding this assumption, on the basis of our examination of the Muskegon experience, are reviewed below.

1. Absent indication of public acceptability.

The history of the Muskegon Project offers proof to the contrary that the public would accept a land disposal system requiring the establishment of a new government authority having an umbrella jurisdiction over local governments. The residents of Muskegon routinely refused a succession of attempts to provide for improved wastewater management by altering government arrangements. The fact that Muskegon County has maintained continuous overall responsibility for the county wide land disposal system was largely responsible for the passivity of county residents towards the implementation of that system.

In stark contrast to the Muskegon experience, the establishment of a regional wastewater management system for the C-SELM area would necessarily require the establishment--or intervention--of some authority having jurisdiction over thirteen counties and untold local governments in parts of two States. Included in that jurisdiction would be such powerfully guarded institutions as the Cities of Chicago and Gary, Indiana and the Metropolitan Sanitary District of Greater Chicago -- in addition to many of the 1400 local governments which quilt the Chicago SMSA. That the residents of the C-SELM area are not unlike Muskegon County residents in their psychic and historical attachment to existing institutions has been manifested by their reluctance to support metropolitan-wide planning, which is a relatively innocuous government function as compared to a regional wastewater management authority. NIPC, as an agency without real operating responsibility making it largely dependent upon its advisory powers, has taken 15 years and considerable Federal backing to establish an institutional toe-hold as the areawide planning agency for the five-county Chicago SMSA; and the combined efforts of numerous Federal agencies to establish a bridge over the Indiana-Illinois State line by integrating NIPC and the Lake-Porter (Indiana) Planning Commission have still not brought success, all of which augurs unfavorably for the prospect of establishing a regional wastewater management authority for the C-SELM area.

In the face of public opposition to the implementation of new technologies requiring an alteration of existing social patterns or political or governmental arrangements, indignant proponents of such projects are often wont to contend that the public does not

always know what is best and that a higher level of government should, therefore, be summoned to encourage or require implementation of the proposed action. Upon examination it is apparent that this type of response to public opposition bears a certain sense of elitism and repugnance to the concept of democratic government. A case in point is the statement of the Corps of Engineers that it is interested in construction and operation a regional wastewater management system only if such action could be justified on the basis of a "clear compelling national interest." Upon examination, it is observable that the phrase "clear compelling national interest" is merely a euphemism for the rationale that a certain action is justified if a governmental jurisdiction larger than the jurisdiction directly affected by that action says so.

Those who prescribe technological solutions appear to be at least cognizant of the need to develop technological solutions which do not incur technological problems of a difference sort -- yet they often ignore or fail to realize that a viable technological solution may have a deleterious effect upon the social, economic or political well-being of people. That kind of indifference, which is typified in the conduct of the C-SELM Study, manifests a judgement that the well-being of the physical environment is more important than human well-being or that human well-being is directly dependent upon the well-being of their physical environment. In reference to the C-SELM Study, the felt-need to implement a technology for regional wastewater management would unavoidably require the institution of a regional wastewater management authority, removing the citizenry by a giant

step from the locus of authority for an essential public service. In addition to rendering the public less able to participate in the governance of wastewater management, the upward removal of local government authority for wastewater management would serve to dull the will of citizens to participate in the affairs of local government by lessening the importance and responsibility of those units of government. Hence, the foreseeable public opposition to the erection of a regional wastewater management authority for the C-SELM area should not be characterized as an obstruction to real progress, for such public defiance may be a response to a longer vision than that of the proponents of a C-SELM system; the public may feel that the achievement of a regional wastewater management system would be a step forward for technology transfer and two steps backward for representative government.

It is acknowledge that the implementation of any wastewater management system for the combined C-SELM area, regardless of the treatment method employed, would encounter the difficulty of winning public acceptance of the regional authority required to manage any such system. However, this difficulty is likely to be more stifling for a land disposal system. The need for some kind of regional wastewater management authority is common to all three treatment methods--biological, physical-chemical, and land disposal--but the land disposal method is relatively unique from the standpoint of its space requirements and consequent impact upon land use and human activity. For this reason, the incidental land use and human effects of the land disposal method may be burdensome enough to

hinder it from scaling public opposition to the creation of a regional wastewater management authority.

Notwithstanding the difficulty of creating a regional wastewater management authority for any type of treatment system, the particular difficulty of winning public support for implementation of a land disposal system is footnoted by the experience of Muskegon County. Active citizen support for that County's land disposal system was significant by its absence. As previously discussed, the Muskegon Project achieved a "broad base" of support among various influential decision-makers who had a "vested interest" in the success of the project. This "broad base" of support is distinguishable from the active support of lay citizens, which was never a characteristic of the Muskegon Project. In fact, the proponents of the Muskegon Project realized that there was no need for active citizen support if they could achieve a broad base of support among "influentials." Accordingly, their implementation strategy was to concentrate upon winning the support of "influentials" and to hastily neutralize any active citizen opposition to the project. When active citizen opposition did raise its head, it was quashed by court action.

The lacking citizen support for the land disposal system in Muskegon County fails to provide evidence that a C-SELM land disposal system would receive the kind of citizen support needed to counteract public resistance to the establishment of a regional wastewater management authority.

2. Absent evidence of system performance.

The performance of Muskegon County's land disposal system has not yet been tested in operation. There is therefore no evidence of the

performance of such a large scale system in critical areas such as the following: impact upon the quality of surface and groundwaters; performance of various system components, e.g., waste removal efficiencies and the physical performance and operating and maintenance costs of irrigation and drainage facilities; agricultural productivity, soils effects and economic benefits of wastewater irrigation; and the social, environmental and economic impact of the project upon the surrounding community.

The fact that the design for the Muskegon Project was deemed "feasible" indicates a technological judgement on the part of EPA, among other governmental bodies, that any anticipated problems could be resolved through the application of existing technology without a major restructuring of the project concept. To determine the actual operational effectiveness of the system--as opposed to its design feasibility--EPA has required as a condition of its research and demonstration grant to Muskegon County that evaluation studies be performed over three- to five-year periods in the four critical areas of project performance enumerated above. (The effect of the Muskegon system upon land use is largely excluded from these studies.) Once these evaluative studies have generated performance data on the impact of the system upon water, crops and soils, there will then be an opportunity to observe whether the management of the system, an independently important variable, is capable of resolving any problems revealed by this particular accumulation of performance data. It is presumed, therefore, that, when the Muskegon land disposal system becomes fully operational and the required evaluative studies have been performed, it will be possible to determine whether the adjudged

"feasibility" of the design for the system is borne out by the performance of that system. However, the practical validity of the adjudged feasibility of the system design is largely dependent upon two factors: (1) whether EPA has successfully anticipated all of the conceivable problems which might befall the system; and (2) whether the management of the system is effectively and demonstratively able to resolve any uncovered problems without a major restructuring of the project concept, without inflating the operational or capital cost of the system beyond the fiscal ability of the county, or without otherwise creating an unreasonable adverse impact upon the surrounding community.

Aside from determining whether EPA's financial and organizational commitment to the Muskegon Project was a sound investment, the larger purpose of the evaluative studies which EPA has required for the Muskegon Project is to develop procedures and information which may be applied in the consideration of a similar system for other communities. However, an important caveat should be attached to the applicability of performance data on the Muskegon system to proposals for land disposal systems elsewhere: depending upon the insights offered by that data, it may not provide evidence which is applicable to the consideration of a land disposal system having a different design or larger scale. Because the land disposal alternatives proposed for a C-SELM system represent a quantum leap from the scale of the Muskegon Project, it is highly questionable that performance data on the Muskegon system will be applicable to a C-SELM system. In any case, performance data on the full scale operation of the Muskegon system will not be forthcoming for several

years. It is, therefore, premature to force consideration of proposals for a land disposal system on the scale of the C-SELM area, which would serve an estimated waste treatment demand in the year 2020 for 4,000 million gallons per day (mgd), requiring 900,000 acres of land, as compared with the 43.4 mgd design flow capacity and 10,000 acre requirement of the Muskegon system.

3. Absent evidence of ability and will to achieve supportive land use planning.

Without evidence on the performance of the Muskegon Project it becomes particularly striking that neither is their evidence of Muskegon's ability and will to plan for the land use and other secondary effects of the County's land disposal system. The amount of deliberate planned consideration which the Muskegon Plan gives to land use and other factors besides those dealing with water resource management is quite limited. More importantly, the County has thus far not conducted planning in conjunction with the land disposal project to provide beneficial uses for the land which has been, or will be, vacated or altered in use by the implementation of the Muskegon Plan. In fact, the County has not carried out any real comprehensive or land use planning to prepare for the land impact of the land disposal system. This failure has occurred in spite of the strong recommendation of the Environmental Impact Statement for the Muskegon Project that the County consider the inclusion of recreational and open space areas in planning uses for all land embraced by the project. (An Environmental Impact Statement, in accordance with the Environmental Policy Act of 1969, can only recommend that a proposed action be "considered.") Thus,

the experience of Muskegon County in implementing the largest scale land disposal system in the United States is significant by its failure to demonstrate the ability and will of a community to carry out comprehensive or land use planning in conjunction with a land disposal system in order to prepare for, and not squander, the land use benefits, such as functional "green belts," which have been ascribed to the system and in order to prepare against the potential adverse land use impact of such a system.

CONCLUSION: That the C-SELM Study should, therefore, be terminated.

BASIS:

The conclusion that the C-SELM Study should be terminated is drawn on the basis of the conclusions and supportive statements articulated above. To recapitulate those assessments, our first conclusion was that the *C-SELM Study as conducted by the Corps of Engineers to encourage the establishment of a land disposal system is having a harmful effect upon land use and land use planning.* In support of that conclusion, we have observed that the C-SELM Study:

> has maintained a concern for the water resource at the expense of the land resource;
>
> that it imposes a need for supportive land use planning which is beyond the present capability of local and areawide planning functions;
>
> that it has exploited existing planning controversies; and
>
> that it constitutes a pre-emption of comprehensive planning.

Secondly, we concluded that the *Corps of Engineers has demonstrated a parsimonious concern for the land use effects of the land disposal alternatives proposed in the C-SELM Study.* This conclusion was derived from three aspects of the conduct of the C-SELM Study:

the intention to choose a wastewater management plan on the basis of market costs, which do not account for the social utility of the land resource;

the limiting of participation in the C-SELM Study to government jurisdictions which would be served by a C-SELM wastewater management system, thereby excluding from participation numerous jurisdictions whose land would be impacted by a land disposal system; and

the failure of the Corps of Engineers to address the land impact of a land disposal system.

Thirdly, we concluded that the *Muskegon Project, as it has matured to date, fails to provide evidence that a larger scale land disposal system is desirable.* This conclusion derives jointly from our assessments of the Muskegon Project and of the conduct of the C-SELM Study. In the face of the harmful effect of the C-SELM Study and its land disposal alternatives upon land use and land use planning, the Muskegon experience provides a conspicuous absence of mitigating evidence that a C-SELM land disposal system would otherwise be desirable. This conclusion is grounded in three aspects of the Muskegon experience:

its absent indication of the public acceptability of a land disposal system;

its absent evidence of the performance of a larger scale land disposal system; and

its absent evidence of the ability and will of a community to achieve supportive land use planning for a land disposal system.

Therefore, on the basis of these conclusions with respect to the conduct of the C-SELM Study and the experience of the Muskegon Project, we submit that the C-SELM Study should be terminated.

RECOMMENDATIONS

On the basis of the preceding analysis and examination, we hereby recommend the following:

That EPA employ its "good offices" to encourage the termination of the C-SELM Study;

That EPA adopt and make known to the public a definitive official position on the land disposal method of wastewater treatment, once a complete performance evaluation of the Muskegon Project has been made, including a full evaluation of the Muskegon County system's land impact;

That EPA increase staff allocation in the Region V Office to provide for a full-time monitor of the Muskegon Project and to provide for more extensive involvement in wastewater management projects being carried out by the Army Corps of Engineers;

That EPA establish requirements jointly with the Department of Housing and Urban Development stipulating that land use planning shall be carried out prior to or concurrent with <u>*all*</u> *wastewater management projects, especially those involving land disposal alternatives, and that the Agency strictly abide by such requirements;*

That EPA extend the citizen participation requirements administratively established for A-95 "clearinghouses" by requiring demonstration of citizen involvement from all segments of a community in all planning processes connected with EPA functions and responsibilities, in metropolitan as well as non-metropolitan areas, as a condition for release of EPA-administered funds;

That EPA articulate a firm and sincere land resource policy as a first step towards developing program responsibility for the protection and enhancement of the land resource;

That EPA expand the scope and depth of its land use comments on Environmental Impact Statements and that project monitors for EPA-funded projects, among whom land use specialists should be included, follow-up impact statement comments to determine whether those projects are following impact statement recommendations and to encourage that such recommendations be carried out;

That EPA continue in its support for local and areawide planning;

That, in furtherance of the above recommendations, EPA Regional Offices expand staff allocations for Offices of Planning within the Air and Water Programs Division and that positions be created specifically for land use specialists or planners in these Planning Offices and that positions also be created for land use planners or specialists to engage in the drafting of Environmental Impact Statements; and

That the EPA Youth Advisory Board explore means of furthering the above recommendations and that they take affirmative action with respect to the same.

NOTES

[1] James Glasgow, Muskegon, Michigan: The Evolution of a Lake Port (Chicago: The University of Chicago, 1939).

[2] Muskegon County Metropolitan Planning Commission, Existing Land Use and Development Factors (December, 1969).

[3] Ibid.

[4] George Davis and Allison Dunham, An Analysis of the Muskegon County, Michigan Wastewater Management Project (Chicago: The University of Chicago, 1972).

[5] Ibid.

[6] Ibid.

[7] John R. Schaeffer and Associates, Water Resources Policy Study Program for Muskegon County, Michigan (Wheaton, Illinois: November 1968).

[8] Davis and Dunham, op. cit.

[9] Ibid.

[10] Ibid.

[11] Ibid.

[12] Ibid.

[13] Ibid.