

CITIZENS LEAGUE REPORT

No. 181

**Twin Cities Metropolitan Area
Sewage Needs**

April 1965

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CITIZENS LEAGUE
REPORT AND RECOMMENDATIONS
ON
TWIN CITIES
METROPOLITAN AREA
SEWERAGE NEEDS

Approved by
Board of Directors
April 29, 1965

Citizens League of Minneapolis and Hennepin County
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Citizens League
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TO: Board of Directors

FROM: Metropolitan Area Sewerage Committee

SUBJECT: Findings and recommendations on how best to meet the future sewerage requirements of the Twin Cities metropolitan area

RECOMMENDATIONS

1. We recommend a single downstream sewage treatment plant at Pig's Eye Island to serve Minneapolis, St. Paul and the vast majority of their suburbs, not a series of upstream regional plants. We reject use of the proposed upstream regional plants because:

- A. The total combined cost of construction and operation of these upstream regional plants will not be cheaper. In fact, in the long run, upstream regional plants will be more expensive than a single downstream plant.
- B. These upstream regional plants would create the threat of pollution to portions of the Mississippi and Minnesota Rivers as they flow through the Twin Cities area. This threat can be avoided entirely by a single downstream plant.

2. We recommend that the Legislature, at the 1965 session, enlarge the boundaries of the Minneapolis-St. Paul Sanitary District to include all municipalities which can feasibly be served by a single downstream treatment plant at Pig's Eye Island.

3. We recommend that the legislation establishing an enlarged Minneapolis-St. Paul Sanitary District apply the following guiding principles:

- A. The initial boundaries of the district should include all municipalities indicated for inclusion in the comprehensive report of the Minneapolis-St. Paul Sanitary District. The general criteria used in the comprehensive report was to include all municipalities which feasibly could be served by the treatment plant at Pig's Eye Island.
- B. The legislation should provide a specific procedure for the future enlargement of the district to include a greater portion of the Twin Cities metropolitan area. We find considerable merit in having a single overall administrative and operating district for the entire Twin Cities area, even though some of the municipalities which are included would never be served by the Pig's Eye plant.
- C. Representation on the Sanitary District's governing board, as between the central cities and the suburban municipalities, should generally be based on population, including a provision for automatic reapportionment after each federal census.

- D. It would be preferable if neither the central cities nor the suburban municipalities have an absolute voting majority on the governing board. This balance can best be accomplished by providing for additional members to be appointed by an independent source, such as the Governor.
- E. The designation of members of the Sanitary District governing board can be accomplished in a number of acceptable ways, no one of which is clearly preferable. In general, we believe:
 - (1) The size of the governing board should not be unduly large, preferably not in excess of 11 members.
 - (2) It is impractical to have the voters elect the members of the Sanitary District board.
 - (3) The suburban part of the Sanitary District should be divided into separate appointing districts, rather than appointing suburban members at large over the entire suburban area.
 - (4) The governing bodies of the component municipalities should appoint the members of the Sanitary District board.
 - (5) Members of the Sanitary District board should not be employees of an elected governmental body.
- F. The legislation should limit the authority of the Metropolitan Sanitary District to the construction and operation of jointly-used facilities. Sewerage works to be used solely by a single municipality should be constructed and maintained by the municipality.
- G. The legislation should require the development of a detailed engineering design plan and the referral of this plan to the Metropolitan Planning Commission prior to undertaking actual construction of new facilities. The recommendations of the Metropolitan Planning Commission would be advisory only.
- H. The present requirement that construction of sewerage facilities must have the prior approval of the Water Pollution Control Commission should be retained.

4. We recommend that the apportionment of costs among the component municipalities be prescribed in the legislation establishing the new sanitary district, rather than being left to the discretion of the governing board of that district. We further recommend that these apportionment formulas adhere to the following guiding principles:

- A. The district should acquire all treatment plants and all jointly-used interceptors in use at the time the district is established. These facilities should be acquired promptly, and in no event later than five years after establishment of the district.
- B. Municipalities operating sewerage works which would be acquired by the district should be compensated for the reasonable value of

these facilities at the time of acquisition. Specifically, we propose:

- (1) "Present worth" should be used as the basis in determining the reasonable value of the facilities. Present worth would represent the replacement cost at the time of acquisition, less depreciation.
 - (2) In calculating depreciation, we urge that 80 years be the basis of useful life for sewers and 40 years for treatment works. The fact that the district might not continue to use the facilities for the entire remaining useful life should not be a factor in calculating depreciation, provided the facilities are in use at the time of acquisition.
 - (3) Repayment of equity for existing facilities, including interest at an annual rate of not to exceed 3%, should be made in equal annual instalments over a period of 30 years.
 - (4) There are persuasive arguments both for and against deducting the amount of federal financial grants obtained by a municipality in constructing existing facilities. We find considerable merit in deducting some proportion, not to exceed half, of the amount of these federal grants.
 - (5) The initial determination of the extent of a municipality's ownership interest in existing facilities should be made by the district. Final determination, in the event the district's determination is disputed, should be made by the courts.
- C. The construction cost of interceptor sewers should be apportioned among component municipalities on the basis of the average annual dry weather flow contributed by each during the year of ultimate design capacity. Under the comprehensive plan, this would be the year 2000. No effort would be made to assign capacity to specific interceptors. Thus, for example, if Minneapolis contributed 19% of the district's average annual dry weather flow in the year 2000, as is projected under the comprehensive plan, Minneapolis would pay 19% of the total cumulative cost of interceptor construction. Charges prior to the year 2000 would be based on the estimates of the year 2000 flows. These estimates would be revised to reflect experience with appropriate credit being given.

We believe that the formula of apportioning interceptor construction costs on the basis of ultimate design year flows is the most equitable of the many formulas which have been proposed because:

- (1) Charging each municipality on the basis of its proportion of flow contributed in the ultimate design year is fair to municipalities having existing sewerage works. They will have been fully compensated for them by the district on the basis of their present worth. Therefore, these municipalities should be placed in the same position as those municipalities having no existing facilities.

- (2) Charging each municipality on the basis of its proportion of flow contributed in the ultimate design year, which are the flows used to arrive at the design capacity of the interceptor system, would assure that each municipality is paying for its own share. Since the district would be comprised of independent governmental units, each generally financing its own governmental services, some municipalities should not be compelled to subsidize others.
 - (3) Charging each municipality on the basis of its proportion of flow contributed in the ultimate design year would eliminate the factor of distance from the treatment plant in apportioning the cost of interceptor construction. The whole purpose of transporting effluent to a single downstream plant is to assure preservation of the Mississippi and Minnesota Rivers, as they flow through the metropolitan area, for the broadest possible future uses. Uses, such as fishing, boating, water skiing, etc., benefit the entire metropolitan area and particularly those municipalities adjacent to and near these waterways. Under these circumstances, we would consider it grossly inequitable to apportion the cost of interceptor construction on the basis of distance from the treatment plant.
 - (4) Charging each municipality on the basis of its proportion of flow contributed in the ultimate design year has the advantage of simplicity. This formula would avoid the necessity of apportioning the use of each section of each interceptor to specific municipalities. It is relatively simple to compute the total interceptor construction costs to be paid in any given year and to apportion these costs among the component municipalities on the basis of their proportionate flows in the ultimate design year.
- D. Charges for repayment of equity for existing interceptors to be acquired by the district should be apportioned among component municipalities on the same basis as is used for apportioning the cost of construction of new interceptors.
 - E. The construction cost of treatment works should be apportioned on the basis of use as measured by the average annual dry weather flow contributed by each component municipality. This is the formula suggested by the comprehensive plan developed by the Minneapolis-St. Paul Sanitary District. Since treatment works are constructed in stages as additional capacity is required, the use formula is advantageous, both from the standpoint of equity and simplicity.
 - F. Charges for repayment of equity for existing treatment plants acquired by the district should be apportioned on the same basis as is used for apportioning the cost of construction of new treatment works.
 - G. Municipalities should be granted the right to deferment of payment of any or all interceptor construction costs apportioned to them until such time as the district makes sewerage service available

to the municipality. However, municipalities not yet receiving sewerage service should be required to pay annually the amount of interest accrued on the principal then owing. The interest should be at the rate then prevailing for the district.

- H. To the extent that unsewered municipalities exercise their right to defer payments on interceptor construction costs, district revenues during early years will be inadequate to meet required payments. An ad valorem tax should be levied on all real and personal property within the district, including those municipalities for which payment is deferred, in an amount sufficient to meet this deficiency. Records should be kept of the amount levied for this purpose and each municipality should be fully repaid as those municipalities which have exercised the right to defer payments make these payments.
- I. The costs of operation and maintenance should be apportioned on the basis of use, as measured by the annual average dry weather flow contributed by each component municipality.

5. We recommend that the method or methods to be used by each municipality in financing the cost apportioned to them by the district should be left to the discretion of the municipality itself. In other words, the legislation establishing the sanitary district should not prescribe the method of cost apportionment within each municipality.

6. We recommend that the Legislature not enact provisions contained in proposed legislation which would have the effect of:

- A. Fragmenting the Twin Cities area into several separate and autonomous sanitary districts, each having the authority to construct its own treatment plant or plants at upstream locations on the Minnesota and Mississippi Rivers.
- B. Authorizing construction of treatment plants on rivers within the Twin Cities metropolitan area without the prior approval of the state regulatory agency charged with the responsibility for developing and enforcing water quality standards for rivers within the state.

FINDINGS AND CONCLUSIONS

Cost Differentials - Single Downstream Plant vs. 4 Upstream Regional Plants

One of the two vitally important factors in deciding whether the Twin Cities area sewerage needs can best be served by a single downstream treatment plant or several upstream regional plants is the relative cost of each. This issue has been the subject of much controversy. Those who advocate upstream regional plants contend that the construction cost of a single downstream plant system would be much higher than the construction cost of an upstream regional plant system, with the amount of the excess cost ranging as high as \$25 million. Advocates of the single downstream plant approach, while conceding that the initial construction costs would be somewhat higher for the downstream plant system, argue that these extra construction costs will be offset in the long run by savings resulting from lower costs of operation and maintenance.

The committee has spent more than 30 hours listening to the advocates of both approaches. We have questioned them at length. We have asked for and received additional cost data in writing. We have referred to the other financial data submitted by the advocates of one approach to advocates of the other, in order to obtain rebuttal criticism. We received rebuttal arguments. On the basis of all these data we developed preliminary financial projections. These were submitted to the advocates of both approaches. Suggestions and criticisms were received. We revised our financial projections, based on these suggestions and criticisms, and resubmitted them again to the advocates of both approaches. Certain additional criticisms were received. Final adjustments again have been made. Out of this laborious process have come the cost projections which appear in this report. Our findings and conclusions about the relative cost of the single downstream plant system at Pig's Eye Island and the proposed system of four upstream regional plants on the Mississippi and Minnesota Rivers are as follows:

1. The total combined cost of construction and operation of the four proposed upstream treatment plants will not be cheaper. On the contrary, in the long run, these regional plants will be more expensive than a single downstream plant at Pig's Eye Island. The somewhat higher construction costs of the single downstream plant system will be fully offset by lower costs of operation and maintenance at the single downstream plant. Over the lifetime of the facilities, savings in operation and maintenance costs will make the single downstream plant system substantially more economical. We base this conclusion on the following specific findings:

- A. In order to provide for projected year 2000 sewerage needs for the Northwest and Southwest Regions, construction costs totalling \$100.3 million will be required under a system of four upstream treatment plants. The total construction cost of providing the necessary sewage works for these two regions under the single downstream plant system would be \$116.9 million. Thus, the excess construction costs under the single downstream plant system would total \$16.6 million.
- B. Cumulative operation and maintenance costs to the year 2000 under the upstream plant system will total \$49.3 million. Comparable operation and maintenance costs to the year 2000 under the single downstream plant system would total \$31.6 million. The net savings under the single downstream plant system would amount to \$17.7 million.

- C. In the year 2000 the annual operation and maintenance costs of the upstream plant system would exceed those of the downstream plant system by \$513,000. Excess operation and maintenance costs of this magnitude would in all probability continue each year over the remaining useful life of the facilities.
- D. Therefore, the excess construction costs of \$16.6 million under the single downstream plant system are more than fully offset by the \$17.7 million savings in operation and maintenance costs to the year 2000. After the year 2000, these savings in costs of operation and maintenance under the single downstream plant system would widen the cost differential in favor of the single downstream plant system.

2. In making the comparative cost projections presented in No. 1 above, it has been necessary for us to reach judgments on a number of cost items which were not agreed upon by the financial advisors representing the two alternative systems. Following are the major areas involving these judgments and the conclusion reached:

- A. We accepted the regional plant advocates' contention that the treatment plant at Pig's Eye Island eventually will have to raise the degree of its treatment to 90%. Accepting this contention had the effect of adding \$5.1 million to the construction costs of the single downstream plant system. The Water Pollution Control Commission's water quality standards for the Mississippi River below the Pig's Eye plant can be maintained by 75% treatment at the Pig's Eye plant. This will be the case for quite a number of years. It is unlikely that 90% treatment will be required at the Pig's Eye plant until equal requirements are imposed on the South St. Paul plant. The practicalities of the South St. Paul plant situation are such that attaining 90% treatment will be most difficult. Nevertheless, we have accepted the contention of the upstream regional plant advocates on the basis that 90% treatment at the Pig's Eye plant is desirable and should be attained.
- B. We have revised upward the operation and maintenance costs for the downstream plant system to reflect 90% treatment at the Pig's Eye plant. We have assumed that this objective will be obtained by the year 1980. This decision has the effect of adding a total of \$2 million to the cumulative operation and maintenance cost for the single downstream plant system.
- C. We have declined to include in our cost projections the construction cost of the so-called Minneapolis relief interceptor. The estimated cost of constructing this relief interceptor is \$3.4 million. This decision was based on the fact that this relief interceptor almost certainly will not be needed before the year 2000. Since we have not included any costs of providing for post-2000 year requirements under the upstream regional plant system, it would be unfair to include the cost of the relief interceptor in our cost projections.
- D. We have not included in our cost projections any operation and maintenance savings which will accrue under the single downstream plant system in years after the year 2000. These savings should

accrue at the rate of over \$500,000 each year. These savings were not included in our figures for the same reason that we did not include the \$3.4 million for the construction of the Minneapolis relief interceptor. In both cases, the costs apply to years after the year 2000.

- E. It has not been possible to reach agreement on comparable interceptor construction costs within the Southwest Region. Downstream plant advocates contend that the regional plant figures for interceptors serving areas south of the Minnesota River are too low. Upstream regional plant advocates contend that the comprehensive plan figures for interceptor construction costs serving the area north of the Minnesota River are too low. Based on the figures provided us, each of these contentions involves \$1 million. We have been unable to resolve these counter-contentions and, since they are offsetting in dollar amounts, neither side has benefited in our cost projections.
- F. Advocates of the single plant system contend that any valid relative cost comparison between the two systems must give consideration to the fact that a substantially greater proportion of the construction cost under the single plant system is for interceptor sewers. They further contend that interceptors have a longer useful life than treatment works. Therefore, they reason that facilities constructed under the single plant system will last much longer and will require less capital costs after the year 2000. Although we agree with this contention, we have not included any dollar amount in our cost projections. We find it all but impossible to assign a specific dollar amount to reflect this factor. In addition, any savings would be attributable to years after the year 2000 and, therefore, should not be included.
- G. There were a few other relatively small cost items which were in dispute. However, they tended to balance out and would not have altered in any significant way the basic cost comparison between the two systems.

3. We found it necessary to evaluate and reach judgments in three additional areas of conflict having a potential impact on comparative costs between the two systems. These areas of conflict and our conclusions are as follows:

- A. Interest costs - Advocates of the upstream plant system contend that the higher construction costs under the single plant system will result in the payment of substantially greater interest on the bonds issued to finance construction. They state that these excess interest costs must be considered in any cost comparison between the two systems. We have analyzed this contention and find that the total interest costs under the single downstream plant system will not exceed the interest costs under the upstream regional plant system. On the contrary, total interest costs on the bonds which would be issued for construction under the single downstream plant system would be slightly less than that paid under the upstream plant system. This conclusion is based on the following factors:

- (1) The rate of interest on bonds issued under the single downstream plant system will be less than the rate of interest on bonds issued under the upstream plant system. This results from the inclusion of the two central cities within the boundaries of the district under the single downstream plant system. From information obtained from experienced financial consultants we have learned that current interest rate differentials for comparable bond issues are a minimum of 6/10 of 1% lower. These financial consultants believe this margin will continue indefinitely if interest rates continue generally at current levels.
- (2) The total construction costs for the upstream regional plant system would amount to \$100.3 million. Total construction costs for the downstream plant system would total \$116.9 million. If 30-year bonds were issued in each instance at an interest rate of 3.8% for the upstream plant system and at 3.2% interest for the single downstream plant system, and if the average maturity of these bonds was 18 years, the total interest paid under the single downstream plant system would be \$1.3 million less than that paid under the upstream plant system. In other words, an interest rate differential of 6/10 of 1% under the above example would mean that \$116.9 million in bonds could be issued at a lower total interest cost than for \$100 million of bonds issued under the regional plant system.
- (3) We did not include this \$1.3 million interest cost differential in favor of the single downstream plant system in our comparative cost projections.

B. Staging of construction - Advocates of the upstream regional plant system contend that any valid comparison of relative costs of the two systems must give consideration to the fact that construction costs would be incurred earlier in point of time under the downstream plant system. They maintain that the later construction and interest cost schedules will produce dollar savings which should be credited to the regional plant system. Our analysis of this contention leads us to conclude that no actual dollar savings will accrue because of the different construction schedules under the two systems. We base this conclusion on the following reasons:

- (1) The contention that staging of construction will be earlier under the single downstream plant system is factually correct. This results from the more extensive network of interceptors required under the single downstream plant system. These interceptors must be constructed before treatment of effluent can begin and they must be sufficiently large to handle projected flows through the year 2000. Expansion of treatment plants, on the other hand, can be staged as increased flow develops. This will require earlier principal and interest payments on bonds issued for construction under the single downstream plant system.

- (2) However, a later construction timetable will not inevitably produce dollar savings under the upstream regional plant system. This will occur only if construction costs remain stable. Based on what has happened in the past, there is no justification for the conclusion that the construction costs will continue at current levels. Construction costs, for example, have been rising at the rate of nearly 5% per year for the past several decades. Most persons familiar with engineering and construction costs expect that this trend will continue. The general cost of living has not risen at this rate. If these trends continue, dollar savings from later construction schedules will doubtless be offset by the higher costs of later construction.
- (3) Because of the highly speculative nature of this contention, and because there is no assurance that cost savings will result, we have not included this factor in our comparative cost projections.

- C. Operation and maintenance costs - Advocates of the upstream regional plant system have, within the past few weeks, raised questions about the validity of the conclusion that substantially lower per unit operation and maintenance costs will be experienced under the single downstream plant system. Until the past few weeks, we had every reason to believe that advocates of the upstream regional plant system concurred with these projected operation and maintenance cost savings under the single downstream plant system.

Cumulative operation and maintenance costs to the year 2000 under the single downstream plant system would total \$31,575,453, and under the upstream regional plant system \$49,255,900. This would produce savings of \$17.7 million under the single downstream plant system. In the year 2000, when both systems would be operating under capacity conditions, operation and maintenance savings under the single downstream plant system would amount to 16% for the Northwest Region and 24% for the Southwest Region.

We are convinced, based on an analysis of all the data which has been made available to us, that operation and maintenance costs will actually be lower under the single downstream plant system and that the magnitude of these savings will approximate those projected in this report. We base this conclusion on the following reasons:

- (1) The projected operation and maintenance costs for the Southwest Region were made by the advocates of the upstream regional plant system. They were not made by TKDA. These advocates have provided no detailed information on why they apparently are now beginning to doubt their own previous estimates.
- (2) Advocates of the upstream regional plant system for the Northwest Region have never, to our knowledge, projected operation and maintenance costs for their own region. TKDA projected these costs on the basis of an exceptionally

comprehensive operation and maintenance cost comparison of sewerage systems throughout the country. Advocates of the upstream regional plant system for the Northwest Region have disputed many of TKDA's financial projections. However, until the past few weeks, TKDA's projected operation and maintenance costs for the Northwest Region were not placed in dispute. Even today, no information has been provided indicating what these projected costs should or would be under the upstream regional plant system.

- (3) The TKDA study of operation and maintenance cost differentials among a great number of sewerage systems throughout the country produced the clear conclusion that operation and maintenance costs per unit of effluent treated are in direct proportion to the size of the treatment plant. Differentials in operation and maintenance costs are dramatically higher for small plants. It should be noted, however, that the four proposed upstream regional plants will not be small plants, except by comparison with the size of the Pig's Eye plant.
- (4) The studies on which these operation and maintenance cost differentials are based were made at a time when the consultants for the Minneapolis-St. Paul Sanitary District were themselves proposing the possibility of upstream regional plants as an alternative to the single downstream plant system. Therefore, the consultants had no reason to favor one approach over the other.
- (5) We have contacted a number of engineers who have no stake in this dispute and, without exception, they are of the opinion that a treatment plant with a 400,000,000 gallon capacity will have lower per unit operation and maintenance costs than plants of the size envisioned under the upstream regional plant system.
- (6) Under the single downstream plant system all effluent would be treated at the same location and there would be a single administrative and operating agency. Under the upstream regional plant system there would be four separate treatment plants with each being far smaller than the single downstream plant, and four separate independent administrative and operating agencies. The conclusion that operating and maintenance cost savings will be achieved seems inescapable.

4. The advocates of a regional plant on the upper Mississippi to serve the Northwest Region contend that construction costs under the regional plant system will be substantially less than those under the downstream plant system. We have reviewed the comparative total costs, including costs of operation and maintenance, of these two alternative systems and are convinced that no cost savings can be realized by construction and operation of the proposed regional plant on the upper Mississippi. Specifically, we find:

- A. Construction costs for the upstream plant system to serve the Northwest Region will total \$59 million. Construction costs for the Northwest Region for the single downstream plant system will total \$64.5 million. Thus, total construction costs to handle projected year 2000 flows will be \$5.5 million less under the upstream plant system.

B. The lower per unit operation and maintenance cost of the single downstream plant system would more than offset these additional construction costs by the year 2000. Specifically, we find:

- (1) Cumulative operation and maintenance cost savings under the single downstream plant system to the year 2000 would total \$7.1 million. These savings would be somewhat greater if our assumption that 90% treatment will be required at the Pig's Eye plant not later than the year 1980 proves to be wrong.
- (2) In the year 2000 the annual savings in operation and maintenance costs under the single downstream plant system would amount to \$276,000. Annual savings of this magnitude should continue over the remaining useful life of the facilities.
- (3) These figures mean that per unit operation and maintenance costs under the single downstream plant system would be 16% less in the year 2000, when both treatment plants would be handling capacity flows. This differential does not seem at all unreasonable.

5. Advocates of a series of regional plants on the Minnesota River to serve the Southwest Region contend that the construction costs under the regional plant system will be substantially less than those under the single downstream plant system. We have reviewed the comparative total costs, including the cost of operation and maintenance, of these two alternative systems and are convinced that no cost savings can be realized by construction and operation of regional plants on the Minnesota River. Specifically, we find:

- A. Construction costs for the series of regional plants on the Minnesota River, to handle projected year 2000 flows, will total \$41.4 million. Comparable construction costs for the single downstream plant system would amount to \$52.4 million. Thus, the upstream regional plant system construction costs would be \$11 million less than construction costs for the single downstream plant system.
- B. The lower per unit operation and maintenance costs of the single downstream plant system would provide a complete offset to these additional construction costs. For example:
 - (1) Cumulative operation and maintenance costs for the upstream regional plants to the year 2000 would total \$29 million. These costs for the single downstream plant system would total \$18.3 million. The net savings under the single downstream system would amount to \$10.7 million. The savings would be somewhat greater if our assumption that 90% treatment will be required at the Pig's Eye plant not later than 1980 proves to be overly optimistic.
 - (2) The annual savings in the year 2000 under the single downstream plant system would amount to \$237,000. Annual savings of this magnitude should continue over the remaining useful life of the facilities.

- (3) The year 2000 savings would mean that when all plants are handling capacity flows the operation and maintenance costs of the single downstream plant system would be 24% less than those for the three regional plants on the Minnesota River. Based on our evaluation of all the factors involved, savings in this proportion would not appear to be at all unreasonable.

Water Pollution Control

The controlling consideration in determining how best to meet the future sewerage needs of the Twin Cities metropolitan area must be selecting that system which most effectively protects our major waterways from pollution. This is particularly true since the two engineering approaches being advocated are substantially equal in their total cost. We have, therefore, concentrated our attention on trying to determine which of the two major engineering approaches being advocated involves the least risk of polluting our major waterways as they flow through the Twin Cities metropolitan area.

We have used the same in depth approach in resolving this basic question as we used in determining the comparative costs of the two basic approaches being advocated. Out of these many hours of listening, interrogating, reading, evaluating and discussing have come the following findings and conclusions:

1. The Twin Cities area is fortunate indeed in having two major waterways--the Mississippi and the Minnesota--running through its most heavily populated areas. Failure to make the broadest possible use of these splendid natural resources would be grossly shortsighted. As we look ahead, for example, we see:

- A. The Mississippi River is a primary source of water supply for Minneapolis, St. Paul, and a growing number of suburban municipalities. This dependence on the Mississippi River as a basic source of water supply is expected to increase substantially in the future.
- B. The Mississippi, and to a lesser extent the Minnesota, River is currently used for recreational boating, limited fishing, esthetic enjoyment, industrial process and cooling water supply, hydroelectric power, navigation, sanitary sewer overflows, storm water discharge, waste disposal, and a small amount of agricultural use for irrigation and stock watering. Most of these present uses, except agricultural and hydroelectric, may be expected to increase with the general increase in population in the area and the continuing rise in the standard of living. Pleasure boating in particular has shown a rapid rate of increase and is expected to increase materially in future years. Fisheries surveys have shown a good game fish population, particularly in the Mississippi. Industrial use, particularly for cooling and condensing water and disposal of the heated effluent, can be expected to increase substantially as use of electric power increases. Commercial traffic is considerable and is expected to increase.
- C. In planning for the year 2000 uses to be made of these two major natural waterways flowing through the Twin Cities area, we cannot think in terms of today's conditions. We must think in terms of conditions as they undoubtedly will exist in the year 2000. By that time the Twin Cities metropolitan area population will be double what it is today. The people in the year 2000 will doubtless have greater affluence and more leisure time. If we try to picture twice as many people trying to use more intensively than today essentially the same natural waterways for such recreational

activities as fishing, boating, water skiing, etc., we can better appreciate why it is so vitally important to preserve these two major rivers from any threat of pollution. The pressures for use of all of the area's natural resources will be so great by the year 2000 that we must not do things today which might impede the broadest possible future uses for these two major rivers.

2. The existing topographical and geological conditions of the Twin Cities area limit the basic alternatives in providing for area sewerage needs to two general approaches. These are:

- A. Utilization of a single downstream treatment plant at Pig's Eye Island to serve the vast majority of the metropolitan area. Excluded from service by the Pig's Eye Plant would be the Lake Minnetonka area, the St. Croix Valley, and the southeast region which includes South St. Paul. Under this single downstream plant approach, three out of every four people living in the Twin Cities metropolitan area in the year 2000 would be served by the Pig's Eye Plant.
- B. The system generally called the regional approach involving a number of upstream treatment plants on the Mississippi and Minnesota Rivers. Under this approach Minneapolis, St. Paul, and most communities presently contracting with these two cities would continue to be served by the treatment plant at Pig's Eye Island. A regional treatment plant would be constructed on the upper Mississippi River at Fridley to serve the region north and west of Minneapolis. Regional treatment plants, probably three, would be constructed on the Minnesota River to serve the area generally south and west of Minneapolis. The area generally south of St. Paul would be served by a treatment plant on the Mississippi River, a slight distance below the Pig's Eye Plant. The Lake Minnetonka area and the St. Croix Valley would each be served by separate systems.

3. The approach generally outlined in 2A above, commonly known as the single downstream plant system, clearly eliminates the pollution threat to the Mississippi and Minnesota Rivers as they flow through the Twin Cities metropolitan area. In view of the fact that the single downstream plant system will be less expensive in the long run, we can see no justification for choosing the approach involving upstream regional treatment plants.

4. Adoption of the approach involving construction of a series of upstream regional treatment plants would mark a major departure from the approach which has been in use in this area since the early 1930's. Back in the early 1930's what then was the built-up Twin Cities metropolitan area was confronted with essentially the same basic decision we now face, with the alternatives then being a single downstream plant or several upstream regional plants. The upstream regional plant approach was rejected in favor of the single downstream treatment plant system. There appears to be universal agreement today that the decision made during the early 1930's to adopt the single downstream plant approach was the proper decision in every respect.

5. Even today, the principal reasons given in support of the upstream regional plant system are not based on which approach will be the most effective in controlling pollution within the Twin Cities metropolitan area. The argument most frequently voiced is that the upstream plant system will be less costly. Another important reason given in support of the upstream regional plant system is that this approach provides the greatest assurance that the facilities needed will be constructed at the earliest possible date. Most of the arguments made in favor of the upstream regional plant system involving the issue of pollution tend to be somewhat negative. The tendency is to contend that the risk of pollution under the upstream regional plant system is remote and that the standards adopted for these two major rivers will not be violated. In fact, the major criticism of the downstream plant approach is that the greater protection it affords against pollution within the Twin Cities area will be at the expense of the people downstream from the Pig's Eye Plant.

6. We have reviewed the water quality standards adopted by the Water Pollution Control Commission for the Mississippi River between Anoka and the Hastings Dam, and the standards proposed but not yet adopted for the Minnesota River. We have attempted to determine whether the Mississippi and Minnesota Rivers, as they flow through the Twin Cities area, can be preserved for the broadest possible recreational and other uses in the future under standards less stringent than those adopted and proposed by the Water Pollution Control Commission. We have found that not even the advocates of upstream plants have seriously questioned the reasonableness of these standards. Their principal objection has been the Water Pollution Control Commission's absolute prohibition on the introduction of any effluent, no matter how highly treated, into the Mississippi River upstream from its confluence with the Minnesota. It is our considered judgment that the water quality standards which have been adopted for the Mississippi River and which have been proposed for the Minnesota River are not excessively stringent when measured in terms of the expected and desired future uses of these two major waterways.

7. The Water Pollution Control Commission has held steadfastly to its conviction that operation of the proposed upstream plants on the Mississippi and Minnesota Rivers are a threat to maintenance of the Commission's water quality standards. We have reviewed in great depth the arguments and the counter-arguments on this point. We find:

- A. Whether the established standards can be maintained under a system of upstream treatment plants gives rise to questions of a highly technical nature and involves assumptions of continuation of past events and somewhat speculative projections of future occurrences. The Water Pollution Control Commission has been designated by the Legislature as the expert and the agency charged with the responsibility for establishing and enforcing water quality standards. Therefore, all reasonable doubts must be resolved in favor of the conclusions and decisions reached by the Water Pollution Control Commission. In other words, those who contest the standards or decisions must demonstrate convincingly that these standards or decisions are arbitrary and unreasonable before they should be disregarded or superseded.
- B. We have been considerably impressed by the detail, the clarity and the documentation of the arguments made by those advocating upstream plants on the Mississippi and Minnesota Rivers. In fact, the issues

are such that it is not difficult for us to understand why there has been such disagreement among experts and why advocates of each approach have become convinced that their viewpoint is eminently sound.

- C. The data provided by the Water Pollution Control Commission in support of its position has not been as detailed nor as precise as we would have preferred. However, we are convinced that inadequacies in this area result, at least in part, from insufficient financial resources with which to develop and publish this detailed type of documentation. The absence of greater documentation of the Water Pollution Control Commission's position has been exceedingly unfortunate, since it has tended to undermine confidence in the Commission and has contributed to a reluctance on the part of those affected to accept the Commission's findings and recommendations.
- D. The advocates of the upstream plant approach have failed to demonstrate convincingly that the position taken by the Water Pollution Control Commission is clearly arbitrary and unreasonable. They have failed, for example, to establish beyond a reasonable doubt that no pollution threat will exist under the upstream plant approach.
- E. It is possible that we might have been willing to give more sympathetic consideration to upstream plants were it not for the fact that there is an acceptable alternative approach involving no risk of pollution for the Twin Cities area at no additional total cost. With the alternative of a single downstream treatment plant so feasible for our area, we believe it would be exceedingly poor judgment to intentionally assume the greater risks which appear inevitable under the upstream plant approach.

8. The advocates of upstream treatment plants are not proposing a unified regional governmental entity which would construct and operate the upstream plants. The advocates of the upstream plant on the Mississippi River already have a separate regional sanitary district comprised of five municipalities, and the district is constructing interceptors of sufficient size to serve about 10 municipalities east of the Mississippi River and north of the city of Minneapolis. These municipalities comprise approximately half of what is commonly referred to as the Northwest Region. The advocates of upstream plants on the Minnesota River propose to establish three separate autonomous sanitary districts, each with authority to construct a treatment plant on that river. These three treatment plants would serve municipalities south and west of the city of Minneapolis, with this area commonly being referred to as the Southwest Region. We have considered the proposals presented by advocates of each of these two regions completely separately and on their own individual merits.

We are convinced that it would be more advantageous to service both the Northwest Region and the Southwest Region by the single downstream plant at Pig's Eye Island than to adopt the alternative system of constructing upstream treatment plants on the two rivers. Our specific findings and conclusions for each of these two regions are as follows:

- A. With respect to the proposed location of a treatment plant on the upper Mississippi at Fridley to serve the Northwest Region, we find:

- (1) It would appear, based on the information provided thus far, that the established water quality standards could be maintained the vast majority of the time by the proposed upstream plant.
 - (2) However, we are concerned at the relatively narrow margin by which these standards could be met during periods of critical low flow. We are particularly concerned by the adverse effects which could result from any serious mechanical or biological breakdown of these facilities during periods of critical low flow.
 - (3) We regard protection of the Minneapolis water intake, located about 1.1 miles upstream from the proposed discharge point for effluent from the treatment plant, as of paramount importance. Although the evidence appears convincing that any risk to this drinking water source is at best remote, we are not persuaded that there is no risk whatsoever. We must resolve all doubts against even remote risk of endangering this important source of drinking water.
 - (4) The controversy thus far has been concerned primarily with the oxygen count in the river. We should not discount completely the possible dangers from certain other factors, such as virus content, persistent chemicals, and toxic chemicals from industrial discharge.
 - (5) We foresee a substantial intensification in the use of the Mississippi River below the proposed upstream plant for broad recreational purposes, including fishing, boating, water skiing, etc. We can see no advantage in locating a treatment plant upstream from these sections of the Mississippi River, when the sewerage needs of the Northwest Region can be serviced by a downstream plant at less total cost.
- B. With respect to the proposed regional plants on the Minnesota River to serve the Southwest Region, we find:
- (1) It would appear, based on the facts developed and made public to date, that the proposed regional plants on the Minnesota River could meet the proposed water quality standards the vast majority of the time.
 - (2) However, we are apprehensive about the relatively narrow margin by which the proposed standards would be met during the periods of critical low flow. Undesirable conditions could result if any mechanical or biological breakdown occurred during these periods of critical low flow.
 - (3) It is our understanding that the proposed standards can be maintained only if the quality of the water, as it reaches the regional treatment plants, is in substantially better condition than would be required by the proposed standards.

It is likely that a significant proportion of the population which will be living further upstream along the Minnesota River will have to use the Minnesota for treatment of its effluent. If and to the extent this occurs, the quality of the water at the time it reaches the proposed Southwest Region treatment plants could be lower than that assumed.

- (4) It is our understanding that although fish will not be killed unless the oxygen count falls below the standards proposed for the Minnesota River, they are adversely affected in a number of significant ways at oxygen count somewhat above the proposed standards. Adversely affected, for example, might be the number of fish, the type of fish, the size, the rate of reproduction, etc.
- (5) We expressed apprehension about possible contamination of drinking water resulting from an upstream plant on the Mississippi. This danger would not be present on the Minnesota, since this section of the Minnesota River is not used as a source of drinking water supply.
- (6) The controversy thus far has been concerned primarily with the oxygen count in the river. We must not ignore completely possible dangers from such other factors as virus content, persistent chemicals and toxic chemicals from industrial discharge.
- (7) The situation on the Minnesota River is not one of preserving a relatively clean river in its present state. The river, we are led to believe, is in rather deplorable condition at times during each year. The Water Pollution Control Commission will have to take more aggressive action than it has thus far if this section of the Minnesota River is to be used extensively for broad recreational purposes. Plans are emerging involving use of the Minnesota for these extensive recreational purposes, particularly those relating to the development of the Fort Snelling State Park, a short distance downstream from the proposed regional plants.
- (8) In view of these plans for intensive recreational use of this section of the Minnesota River, and in view of the fact that this region can be serviced by a single downstream plant at no additional total cost, we can see no advantage in locating the proposed upstream plants on this section of the Minnesota River.

9. It has been suggested that the rejection of upstream regional plants in favor of a single downstream plant at Pig's Eye Island will result in sacrificing the interests of the people below the Pig's Eye Plant. Since we would be most reluctant to support an approach which would produce such a result, we have reviewed this contention in considerable depth. We are convinced that the condition of the Mississippi River below the Pig's Eye Plant would not be materially improved by operation of the proposed upstream regional plants. Specifically, we find:

- A. Presently, the Pig's Eye plant is only one of eight treatment plants located on the Mississippi River between the Pig's Eye plant and the Hastings Dam. Among them is the South St. Paul plant. There is no practical alternative to the continuance of most, if not all, of these plants. The amount of effluent which could be diverted from the Pig's Eye plant to upstream regional plants would not be of sufficient quantity to materially change the condition of this section of the Mississippi River.
- B. The present and projected primary future uses of land along the section of the Mississippi River between the Pig's Eye plant and the Hastings Dam is industrial and, to a large degree, heavy industrial. The Water Pollution Control Commission has recognized this fact by adopting standards for this section of the Mississippi River which are lower than the standards for upstream sections of the river.
- C. It would appear that water quality standards which have been established for the section of the Mississippi River between the Pig's Eye plant and the Hastings Dam can be maintained the vast majority of the time with 75% treatment at the Pig's Eye plant and all of the time with 90% treatment. Maintaining these standards would not require operation of upstream regional plants.
- D. It is not feasible to use this section of the Mississippi River for the broadest possible recreational purposes. However, if the standards which have been established are enforced, it will be possible to use this section of the river for limited recreational purposes. Under these standards, for example, there would be no odors. Fishing for certain rough fish would be possible. Boating would not be impaired. The diversion of a portion of the effluent by construction of upstream regional plants would not materially affect this conclusion.
- E. It appears certain that under the downstream single plant system the quality of the water below the Hastings Dam would be sufficiently high to permit the broadest possible recreational uses.

In summary then, it would appear that there is no feasible way to attain use of the Mississippi River between the Pig's Eye plant and the Hastings Dam for the broadest recreational uses. It would likewise appear that diversion of effluent to the proposed upstream regional plants would not materially enlarge the types of uses possible for this portion of the Mississippi River. There is no reason why this section of the Mississippi River cannot be used for a variety of purposes, including limited recreational uses, if the standards established are maintained. We conclude, therefore, that rejection of the proposed upstream regional plants in favor of a single downstream plant at Pig's Eys Island will in no way result in sacrificing the interests of the people downstream from the Pig's Eye plant.

10. We have reviewed in considerable depth the pollution danger resulting from the extensive system of combined storm and sanitary sewers maintained by the

cities of Minneapolis and St. Paul. We have also reviewed the proposed programs of the two cities to separate storm and sanitary sewers. We find:

- A. Minneapolis has made substantial progress, particularly in recent years, in constructing separate storm sewers. In fact, only about 40% of the city is presently served by combined sewers.
- B. St. Paul appears to have made little progress thus far in its separation program. At least 90% of St. Paul continues to be served by combined sewers.
- C. The comprehensive plan developed by the Minneapolis-St. Paul Sanitary District and by the two central cities contemplates a substantially increased storm separation program during future years. This is particularly true for Minneapolis.
- D. The combined storm and sanitary sewers in Minneapolis and St. Paul result in considerable amounts of raw sewage entering the Mississippi River. Steps must be taken to reduce and ultimately eliminate these overflows if we are to use the Mississippi River between Anoka and the Pig's Eye Plant for the broadest forms of recreational use.
- E. The Water Pollution Control Commission has not, to our knowledge, insisted on the establishment of specific timetables by the two central cities in carrying out their storm water separation programs. We believe that specific timetables should be developed and complied with.

Governmental Structure

1. Existing legislative authority is inadequate to enable the construction and operation of sewerage facilities necessary to meet the future requirements of the Twin Cities metropolitan area. An essential part of the additional legislative authority which will be required is a determination by the Legislature of the number and type of operating agencies which are to serve the metropolitan area.

2. It is of critical importance to the residents of the metropolitan area that the basic decisions which must be made by the Legislature not again be postponed for another session. We find, for example:

- A. The present interceptor network is totally inadequate to provide for future area sewerage requirements. In fact, substantial portions of the Minneapolis-St. Paul interceptor sewers are not even adequate to handle the requirements under existing contractual commitments.
- B. The undertaking of an extensive interceptor construction program is an immediate necessity. Some municipalities already are adversely affected. Others are about to be. A sizable portion of the Southwest Region, with the village of Minnetonka being perhaps the best example, cannot wait for another two years.

- C. The engineering design specifications for each interceptor are dependent upon knowing which municipalities are to be served by the interceptor. If construction proceeds without first resolving the basic decision of which municipalities are to be served by which interceptor, serious miscalculations and excessive costs are all but inevitable.
- D. Only the Legislature can make these basic decisions. Postponing them until another session of the Legislature should not and must not happen again.

3. The Legislature must determine which one of the three basic approaches presently being advocated is to be used in meeting the future sewerage requirements of the Twin Cities metropolitan area. These three basic approaches are:

- A. Extension of the present contract system. The Minneapolis-St. Paul Sanitary District and the two central cities are advocating a continuation of the contract system. Under this system, the central cities would provide treatment at the Pig's Eye Plant for any municipality manifesting a desire to contract for this service. In order to reduce the number and the complexity of the contracts, the advocates of this approach urge the establishment of regional districts for the purpose of contracting with the central cities. These advocates have also proposed an engineering plan under which the necessary sewerage facilities would be constructed and formulas under which costs would be charged to the contracting municipalities.
- B. Establishment of a metropolitan sanitary district. In effect, this would be an enlargement of the existing Minneapolis-St. Paul Sanitary District to include those municipalities which best could be served by a single downstream treatment plant at Pig's Eye Island and providing for representation of these component municipalities on the operating agency. Most of those who advocate this approach strongly favor the single downstream treatment plant system. Others, however, advocate a single operating district with the possibility of multiple plants. Which approach is selected is an engineering decision best left to the district board and subject to approval of the Water Pollution Control Commission.
- C. Establishment of a number of regional operating sanitary districts. Under this approach, municipalities comprising the Northwest Region would be part of an independent sanitary district served by a treatment plant located on the Mississippi River just north of the Minneapolis city limits. Municipalities comprising the Southwest Region would form several independent autonomous sanitary districts and would be served by three or more treatment plants located on the Minnesota River. Under this approach, the cities of Minneapolis and St. Paul would continue to be served by the treatment plant at Pig's Eye Island. Presumably, most of those municipalities now contracting with the two central cities for service by the Pig's Eye Plant would continue to be served by this plant,

either under the contract system or through formation of an independent sanitary district.

4. We have reviewed in great depth the arguments advanced for and against each of these three basic approaches. We have examined each approach on the basis of how well it will accomplish certain important objectives. These objectives and our evaluation are as follows:

- A. Which approach best lends itself to the single downstream plant system? The metropolitan district approach is ideally suited to the system involving a single downstream plant. An extension of the existing contract system would likewise be adaptable to the downstream plant approach. However, the contract system has the serious limitation of not being able to know for certain at the time interceptor construction begins which municipalities will eventually be using the facilities. The approach involving independent regional districts with upstream plants would be incompatible. The metropolitan district approach is the only one of the three which lends itself to both the downstream and upstream alternatives.
- B. Which approach best provides for the right of representation of the people whose interests are involved? The basic right of representation on the governing board becomes of crucial importance in this situation. By the year 2000 the population of suburban municipalities within the likely service area will be at least three times the population of the two central cities. The contract system is much more adaptable to a situation where central cities comprise the vast majority of the total area population.

The metropolitan district approach guarantees to the entire population within the service area the fundamental right to participate in making the policy decisions through representation on the governing board. The approach involving independent regional districts similarly would guarantee this right of representation within the boundaries of each regional district. However, the overall metropolitan district would provide greater representation in the sense that each region would be represented on decisions involving another region which could well have an adverse impact on some other region. The approach involving an extension of the contract system is fatally defective in this respect.

- C. Which approach best lends itself to producing the most coordinated long-range design plan and the plan most likely to prove adequate to meet future requirements? The extension of the contract system approach clearly is the weakest of the three approaches in this respect. Under the contract system, it is all but impossible to know at the time construction begins precisely which municipalities will be certain to use capacity designed for them. The tendency under this system is to design capacity for those municipalities which, at the time construction begins, voluntarily seek capacity. Past experience indicates that under a voluntary system under-designing is inevitable. This weakness does not exist under

either of the other two approaches. The metropolitan district approach probably is somewhat superior to the other two, in that the design plan covers a broader area.

- D. Which approach is likely to be the most economical in cost? The answer to this question is highly speculative and controversial and depends to an important degree on the caliber of the governing board and of the staff. Whatever savings might accrue under any of the three alternative approaches would be relatively small in terms of the total dollars which will be spent; probably less than 2% of total expenditures. Our own view is that a metropolitan district, with a single downstream plant, should prove to be slightly more economical over the long run than a number of separate regional districts, each with its own treatment plant or plants.

We know of no way to project with any degree of certainty likely cost differentials between the metropolitan district and the contract system approaches. However, the approach which best assures the most coordinated and adequate long-range design engineering plan is likely to produce economy in cost. If this holds true, then the metropolitan district approach would be superior to the contract system.

The approach involving independent regional districts with upstream plants has a higher proportion of its construction costs allocated to treatment plants than do the other two approaches. Since treatment plants can readily be expanded in stages as needs develop, whereas interceptors must be designed for many years ahead, there would appear to be less risk of miscalculation under the upstream plant approach. On the other hand, most of the cost of an interceptor is not related to the size of the pipe itself. Substantially greater capacity can be provided with relatively little additional cost.

On balance, it is not possible to demonstrate that any one of the three approaches will be clearly or substantially more or less costly than another.

- E. Which approach best enables the development of cost apportionment formulas which reflect the benefits which will accrue to the entire area from water quality standards which place a high priority on broad recreational uses on the Mississippi and Minnesota Rivers? The metropolitan district approach is the only one of the three which would allow implementation of this basic objective. The benefits, for example, which would accrue to the two central cities by restoring and preserving the Mississippi and Minnesota Rivers for the broadest possible recreational uses could not be allocated to the two cities under either the contract system or the approach involving independent regional districts. These broad recreational uses require higher water quality standards than other uses, which in turn require a higher degree of treatment of sewage effluent. This means a greater cost,

irrespective of whether there is a single downstream treatment plant or a series of upstream plants. This extra cost should not be borne entirely by those farthest from the rivers and farthest from the treatment plant.

- F. Which approach is likely to assure the promptest construction schedule and thereby the earliest sewerage service? The approach involving independent regional districts with upstream plants would likely provide the earliest service to outlying areas, particularly within the Southwest Region. Construction schedules would be somewhat shorter for the Southwest Region, although this would not hold true for other parts of the area needing service. Since most, if not all, of the municipalities which would be included in independent regional districts would benefit by the new construction which is needed, it is reasonable to guess that a greater sense of urgency would exist under the independent regional district approach. The contract system approach seems likely to produce the least incentive for prompt construction, since all members of the governing body responsible for making these decisions would be from the two central cities. Since the two central cities are not in need of additional capacity and would benefit only indirectly by the new construction, and since there might be some tendency to think in terms of competition for tax-producing enterprises, there would be less assurance that prompt construction schedules would be developed and adhered to.
- G. Which approach best promotes improved intergovernmental relations among municipalities? The contract system appears most likely to produce unending irritation and bickering among municipalities. The necessity to negotiate and periodically renegotiate contracts for sewerage service under the "non-profit" provisions in the state law invite misunderstanding, distrust and controversy. It is unrealistic to believe that any court can satisfactorily resolve these disputes. To the extent that cost allocation formulas are fixed in the legislation initially establishing a metropolitan district or independent regional districts, this controversy would be minimized. Neither of the latter two approaches is clearly superior to the other in this respect.
- H. Which approach best lends itself to strict compliance with the water quality standards established by the Water Pollution Control Commission? The factors involved in answering this question are highly speculative and controversial. It has been argued that a single overall metropolitan sanitary district would lend itself to stricter compliance with water quality standards, since the Water Pollution Control Commission would have to police and deal with only one agency. This is the belief expressed by the staff of the Water Pollution Control Commission. The advocates of independent regional districts counter this argument by stating that a single metropolitan district would have greater political influence than several smaller independent districts and therefore would be in a better position to resist the orders of the Water Pollution Control Commission. Although we are inclined to believe

that a single unified sanitary district for the metropolitan area would better adapt itself to compliance with water quality standards, there is no way to predict with any degree of certainty which approach would clearly provide the most effective compliance with the standards.

- I. Which approach best lends itself to obtaining and allocating any federal financial grants which might be forthcoming for construction of sewerage facilities? No categorical answer can be given to this question. However, the federal government has shown an increasing preference for overall planning for metropolitan areas, as contrasted with more fragmented planning for parts of a metropolitan area. It might also be significant that the allocation decisions for these federal grants for construction of sewerage facilities are made at the state level, and that the state agency which makes these decisions is unequivocally in favor of the metropolitan district approach. It would also appear that the metropolitan district approach would better lend itself to the equitable allocation of any federal construction grants.
- J. Which approach is the most politically attainable? The contract system is clearly superior in this respect, because it least disturbs the status quo. It also has the advantage of being supported by the two central cities, which is a powerful factor in terms of what can be enacted by the Legislature. The contract system also avoids the difficult questions, such as methods of representation on a metropolitan district governing board and the allocation of costs among the component municipalities.

As between the metropolitan district and the independent regional district approaches, neither would appear clearly the more advantageous in terms of political attainability. The practicalities of the legislative practices being what they are, however, would tend to give some slight advantage to the regional district approach.

5. When measured by the above basic objectives, it appears abundantly clear that the great weight of evidence supports the metropolitan district approach. If the Legislature chooses either of the other approaches; its decision would not, we are convinced, be based on selecting the soundest and most economical way to provide for the future sewerage needs of the Twin Cities area.

SCOPE OF REPORT

The Metropolitan Area Sewerage Committee was assigned by the Citizens League Board of Directors to review a comprehensive plan prepared by the Minneapolis-St. Paul Sanitary District in 1964 for meeting sewage disposal needs to the year 2000. The Board of Directors asked the committee to evaluate whether the plan is both adequate and equitable in meeting future sewerage needs in this area.

This report represents an evaluation not only of the plan of the Minneapolis-St. Paul Sanitary District, but of counter-plans prepared by groups of suburbs in the Twin Cities area.

In effect, this report presents the committee's answers to three major questions about meeting sewage disposal needs: (1) Should regional treatment plants be constructed upstream in the metropolitan area? (2) Should there be a series of regional sanitary districts, a continuation of the present contract system or one overall sanitary district? (3) What is the most equitable method of apportioning costs among the various communities?

COMMITTEE MEMBERSHIP

A total of 20 Citizens League members actively participated in the work of the committee. They are Charles Clay, chairman, Russell Baumgardner, Reynold Boezi, Fred Cady, Robert Crabb, Harold Field, Jr., Richard FitzGerald, Fred Goff, Fred H. Hafner, Paul H. Hauge, William Hempel, Zane Mann, Wallace Neal, Jr., Harold J. Nelson, Roger Newstrum, C. Harold Peterson, Mrs. Stanley J. Peterson, J. Henry Schipke, Douglas Thornsjo and Kenneth Wolfe. The committee was assisted by Verne C. Johnson, Citizens League Executive Director, and Paul A. Gilje, Citizens League Research Director.

Four members of the Committee -- William Hempel, Zane Mann, Paul Hauge, and J. Henry Schipke -- dissented from the findings and recommendations contained in this report, and presented their views in the minority report which is attached to the end of this report.

COMMITTEE PROCEDURE

Because of the tremendous diversity of opinion among various interested parties in the metropolitan area as to what is the best solution to the sewerage problem and because of the complexity of the issue, we were extremely careful to obtain as much information as possible from all these parties.

Detailed minutes of each meeting, often running five or six pages, single spaced, were mailed to persons who had appeared before the committee. Frequently, they made corrections or additions, which were duly noted by the committee. In addition, we tried to keep representatives of various groups informed, even if they had not appeared, by mailing minutes of the meetings to them.

When it came to making cost comparisons of alternative solutions, we were especially careful to solicit reaction from the various interested parties. Representatives of divergent viewpoints were given every opportunity to suggest changes in costs and to argue for such changes. We regarded this phase of our work as crucial, because of the need for the State Legislature to have as factually accurate a picture

as possible from a group such as the Citizens League which is not directly affected by any of the alternatives.

Our committee held a total of 13 meetings between January 18, 1965, and April 27, 1965. All of the meetings were lengthy evening sessions, usually lasting for three hours. In addition, League staff members were in almost daily contact with sewerage officials checking and re-checking facts and figures.

In obtaining testimony the committee first heard from Frank Woodward, director of the Division of Environmental Sanitation of the Minnesota Health Department; Wayne Olson, State Commissioner of Conservation and a member of the Minnesota Water Pollution Control Commission, and Donald Thimsen, public health engineer with the Health Department. They explained the Water Pollution Control Commission's viewpoint on solving the sewerage problem.

Next the committee heard from representatives of different groups which have made proposals for solving the problem. They were: Kerwin Mick, chief engineer for the Minneapolis-St. Paul Sanitary District, and his chief assistant, Scott Linsley; John A. Des Lauriers, St. Paul sewer engineer; Sam Hobbs, city engineer for Bloomington, who presented the southwest suburban region's viewpoint; Richard Sha, consulting engineer for the North Suburban Sanitary Sewer District (NSSSD); Melford Christensen, member of the governing board of NSSSD, who presented the northwest suburban region's viewpoint, and Orvil Johnson, village manager, North St. Paul, who presented the northeast suburban region's viewpoint.

J. Thomas Kirk, engineer with Toltz, King, Duvall, Anderson and Associates, Inc., the consulting engineering firm for the Minneapolis-St. Paul Sanitary District, appeared before the committee at several meetings to explain and respond to questions on the cost estimates prepared by his firm for the Sanitary District.

After a proposed draft of conclusions and recommendations had been circulated to various interested parties the committee heard further testimony from Lyle H. Smith, executive engineer of the Water Pollution Control Commission and chief of the section of water pollution control of the State Department of Health; William D. Schoell, consulting engineer with the village of Minnetonka, and Robert Rosene, consulting engineer for some communities south of the Minnesota River. Schoell and Rosene gave further information on the viewpoint of the southwest suburban region.

The committee received exceptional cooperation from all engineers and other officials concerned with sewerage plans. Without their cooperation we would not have been able to present a meaningful analysis.

BACKGROUND

History

Before June 1, 1938, when the first sewage treatment plant was placed in operation for Minneapolis and St. Paul, both cities had dumped raw sewage into the Mississippi River. The history of the St. Paul sewage system dates to 1873, and in Minneapolis to 1881.

A history of Hennepin County, written in 1881, contains the following account:

"The system of sewerage is extending rapidly, and already forms a network draining a large portion of the city; this is an herculean task in a climate where pipes are laid nine feet below the surface to avoid the action of the frost. A general tax is levied for that portion of the sewerage which benefits the city at large, and special taxes are assessed on the abutting property to provide for this expensive improvement.

"At the session of the legislature of 1881, a bill was passed authorizing the city to issue bonds to the amount of \$50,000 to carry out extensive plans for sewerage."

For several years the cities of Minneapolis and St. Paul were allowed uncontrolled discharge of raw sewage and industrial waste into the Mississippi River. The result was that uses of the river were limited for cities downstream because of the extensive pollution.

Finally in 1923 after having heard complaints for several years the State Board of Health wrote to the city councils of Minneapolis and St. Paul asking that the matter of sewage disposal be given consideration. When no action was taken, the Board of Health again in 1925 communicated with the city councils.

Partly as a result of these communications and partly because of growing interest among civic organizations, the 1925 Minnesota and Wisconsin Legislatures created a joint interim committee to explore ways and means of improving the condition of the Mississippi. The interim committee asked the U. S. Public Health Service to make a study of pollution of the river from above Minneapolis to Winona. This study was carried out in 1926 and 1927.

The interim committee reported to the 1927 Minnesota Legislature asking for action to alleviate the situation. The result was that the Legislature that year created an agency to study the subject of sewage disposal in the metropolitan area. The agency was called the Metropolitan Drainage Commission.

As the Metropolitan Drainage Commission was making its study the State Board of Health, the Wisconsin State Board of Health, and the Minnesota Commissioner of Game and Fish prepared a statement of requirements expressing the opinion "that the pollution of the river (Mississippi) should be restricted to such an extent that the public health hazard will be reduced to a minimum, that the health of livestock will not be materially endangered, that the present public nuisance will be eliminated, and that fish life in the river at least below the mouth of the St. Croix will not be jeopardized."

In 1929 the Metropolitan Drainage Commission proposed to the Minnesota Legislature that a joint sewage treatment plant be constructed for Minneapolis and St. Paul. The proposal failed that year and again in 1931. The stumbling block was financing and the fact that South St. Paul with its packing plants was included. South St. Paul had a population of only 10,000 but had sewage equivalent to a population of 250,000.

In 1933 the Legislature excluded South St. Paul and passed enabling legislation to create the Minneapolis-St. Paul Sanitary District. The Sanitary District was formally created on August 22 of that year by order of the Board of Health.

Upon its organization the Board of Trustees of the Sanitary District adopted the program which the Metropolitan Drainage Commission had recommended. This called for a system of interceptor sewers leading to a single treatment plant for both cities to be located in the Pig's Eye Lake area below St. Paul.

During the five years between enactment of the law creating the Sanitary District and the time sewage was diverted to the interceptors and conducted to the sewage treatment plant, the condition of the river continued to deteriorate. In this period the river reached its lowest stage on record and was characterized by floating islands of sewage solids, scum on the water surface and offensive odors that could be noticed for a distance of several blocks from the river.

Within a few weeks after the plant was placed in operation the condition of the Mississippi through the Twin Cities improved to such an extent that the odors and visible evidence of pollution disappeared.

The sewage treatment plant was designed for an average flow of 134 million gallons of sewage each day. This was reached in 1952. Over the years both Minneapolis and St. Paul had contracted with suburbs to handle their sewage disposal. West St. Paul had been the first, tying in with St. Paul in 1921. Columbia Heights was the first suburb to connect with Minneapolis, in 1927.

As the treatment plant reached capacity there was the parallel development of more and more postwar homes being constructed with private septic tank soil absorption systems for sewage disposal. As early as 1950 the State Department of Health officially advised one suburb that wholesale use of septic tank sewage disposal inevitably would result in ground water becoming affected by the sewage. Between April, 1959 and December, 1961 the Department of Health reported that surveys in 39 suburbs revealed that $47\frac{1}{2}$ per cent of private home water wells showed evidence of contamination by sewage.

Faced with the realization that suburban growth would force expansion of the existing sewage works, the Board of Trustees of the Sanitary District in May, 1956 authorized a five-year, \$500,000 program of research and investigation. Part of the program was development of preliminary plans and estimates of cost of alternate sewage works projects for an extensively enlarged service area.

In the 1961 Legislature a bill was proposed to create an expanded metropolitan sanitary district. The Minneapolis-St. Paul Sanitary District includes only the two central cities, but suburban communities contract with the central cities for service. The metropolitan sanitary district would have had boundaries including suburbs as well as Minneapolis and St. Paul. The bill was passed by the House but died in the Senate. The 1961 Legislature, though, did pass a bill allowing a group of suburbs in the north suburban area to form a regional sanitary district.

Since the metropolitan sanitary district bill did not pass, the Board of Trustees of the Sanitary District decided to proceed and expand its treatment plant for the area it was then serving--the two central cities and 24 suburbs. Under existing law, that is all the further the Sanitary District could go. In April,

1962 a \$22.8 million expansion of the treatment plant was started. It is scheduled for completion in 1966 and is to increase sewage treatment from 35% to 75%. It was designed to be adequate for the central cities and the 24 suburbs in the year 1980. But since 1962, 13 more suburbs have contracted to be served by the Sanitary District, so the treatment plant--even when expanded--will reach capacity before 1980.

In the 1963 Legislature a bill creating a metropolitan sanitary district was introduced again, this time with the backing of a governor's advisory committee on metropolitan problems. However, the Legislature instead passed a major bill authored by Sen. Gordon Rosenmeier of Little Falls which strengthened the powers of the Minnesota Water Pollution Control Commission. The Rosenmeier act provides that the Water Pollution Control Commission can order that sewage service be extended to certain areas.

The Legislature, though, did pass another bill in the 1963 session, authored by Rep. Robert O. Ashbach of Arden Hills, which required the Minneapolis-St. Paul Sanitary District to come up with a specific comprehensive plan by October 1, 1964, for the construction and financing of a sewerage system for the entire area likely to be served by the sewage treatment facilities of the Minneapolis-St. Paul Sanitary District.

This plan was prepared and adopted by the Sanitary District and the city councils of Minneapolis and St. Paul and has formed the basis for a variety of proposals now being made to the Legislature to solve the sewerage problem.

The Plan of the Minneapolis-St. Paul Sanitary District

The Ashbach law in the 1963 Legislature required the Sanitary District to include the following in its plan:

--A plan of a basic sewage works system required for the collection, treatment and disposal of sewage for the entire area likely to be served by the sewage treatment facilities of the Minneapolis-St. Paul Sanitary District.

--A schedule of the construction of the sewage works system.

--An estimate of the total cost of construction of the sewage works system.

--The proposed method of financing the construction costs involved and of dividing the costs among the townships and municipalities affected, including the formula to be used in determining each community's share.

The plan calls for a \$145 million construction program to collect, transport and treat sewage in a 900-square mile area of the Twin Cities to the year 2000.

All sewage would be carried through an expanded system of interceptor sewers (costing \$105 million) to the Pig's Eye treatment plant which would have to be expanded (at a cost of \$40 million). However, \$22.8 million of the \$40 million treatment plant expansion already is underway.

The area to be served extends as far north as Anoka and as far south as Burnsville and Lebanon Township south of the Minnesota River, as far west as Deephaven and as far east as East Oakdale Township in Washington County.

The great majority of communities which border on Lake Minnetonka are excluded. Also excluded are communities along the Mississippi River below the Pig's Eye plant, such as South St. Paul, St. Paul Park and Inver Grove Heights. The plan is based on serving 3 million people in the metropolitan area in the year 2000.

A major network of interceptor sewers, up to 9½ feet in diameter, would be constructed to transport sewage from the southwest suburbs, northwest suburbs and suburbs north of St. Paul to the Pig's Eye treatment plant.

Almost one half of the interceptor construction, about \$48.7 million worth, would take place between 1965 and 1970. The bulk of this construction would be for the southwest suburbs. By 1980, another \$32.4 million worth of interceptor sewers would be built, with the balance coming by the year 2000.

As already has been noted, expansion of the treatment plant already is underway. Another \$4.3 million worth of treatment plant construction would take place between 1973 and 1980; another \$6.9 million worth between 1980 and 1990, and another \$6.2 million worth between 1990 and the year 2000. When completed, the plant would have a capacity of 400 million gallons of sewage a day.

The plan is based on the idea that the existing governmental structure by which suburban areas contract with the Sanitary District will continue, but the plan suggests that suburban areas might form regional districts to contract with the Sanitary District rather than continue the existing procedure by which most communities contract on their own.

The Sanitary District proposes a complex financing arrangement by which a community would pay for its interceptor sewers according to distance from the Pig's Eye treatment plant. Costs of construction, operation and maintenance of the treatment plant would be apportioned according to the annual sewage flow from a community.

Plan of the North Suburban Sanitary Sewer District

The 1961 Legislature passed enabling legislation allowing the creation of a regional sanitary district in the north suburbs. As a result, the North Suburban Sanitary Sewer District (NSSSD) was established in January 1962. Five suburbs are members of the district—Blaine, Coon Rapids, Fridley, Mounds View and Spring Lake Park.

NSSSD now is constructing a joint interceptor sewer system to collect sewage from its five member communities. NSSSD has contracted with Minneapolis to handle its sewage through the Minneapolis-St. Paul Sanitary District. In 1970 NSSSD intends to build a regional treatment plant of its own on the upper Mississippi River in Fridley. The plant would provide 90 per cent treatment of sewage. Effluent would be discharged into the Mississippi River about 1.1 miles below the point where the city of Minneapolis has its water intake.

However, the Minnesota Water Pollution Control Commission has established standards which prohibit discharge of sewage effluent, regardless of the amount of treatment, between Anoka and the Pig's Eye plant, which includes, of course, the area where NSSSD wants to build its plant. NSSSD has filed suit in Anoka County District Court asking that the standards of the Water Pollution Control Commission be overruled.

NSSSD contends it would be able to meet all requirements of the Water Pollution Control Commission other than the absolute prohibition of sewage effluent, and the river would not be harmed.

NSSSD contends that it would be cheaper to be served by a regional plant on the Mississippi rather than be connected to the single plant network at Pig's Eye. The construction costs under the plan of the Minneapolis-St. Paul Sanitary District would be \$12 million more than the regional plan, NSSSD contends.

Plan of the Southwest Suburban Region

There is no formal sewerage district in the southwest region as exists in part of the northwest region in the form of the NSSSD.

Three engineers representing various parts of the southwest region last fall prepared a report in response to the plan of the Minneapolis-St. Paul Sanitary District. These engineers, Otto G. Bonestroo, representing suburbs south of the Minnesota River; Sam H. Hobbs, city engineer, Bloomington, and William D. Schoell, representing the village of Minnetonka, proposed that three regional plants be constructed on the Minnesota River. Construction costs of the regional plant plan would be \$12.2 million cheaper than if the southwest suburbs were to connect to the single treatment plant at Pig's Eye, they said. Bills have been introduced in the 1965 Legislature to allow regional plants on the Minnesota River.

The Water Pollution Control Commission has developed--but not yet adopted--standards which would prohibit construction of regional plants in this section of the Minnesota River. The communities in the southwest region last fall also hired three sanitary engineers from the University of Wisconsin to study whether regional plants on the Minnesota River with 95 per cent treatment of effluent would be able to meet water quality standards of the Water Pollution Control Commission with the exception of the absolute prohibition of sewage effluent.

The Wisconsin engineers said that the proposed standards of the Water Pollution Control Commission, except for prohibiting effluent altogether, could be met by construction of the three regional plants with 95 per cent treatment.

Report of the Minnesota Water Pollution Control Commission

The Water Pollution Control Commission was required under the Ashbach law passed by the 1963 Legislature to approve, reject or recommend modifications in the plan of the Minneapolis-St. Paul Sanitary District. The law also required the Sanitary District to modify and resubmit its plan to the Water Pollution Control Commission if the Commission recommended modifications.

After reviewing the plan the Commission came up with the following recommendations.

--The basic engineering plan, with one treatment plant and a network of interceptor sewers, should be followed.

--A metropolitan sanitary district should be created to replace the present arrangement by which suburbs contract with Minneapolis and St. Paul for service.

--Construction of interceptor sewers and treatment plant and reimbursement to various municipalities for existing sewage facilities should be financed by a tax levy on all property (not including personal property) in the area.

--Operation and maintenance financing of the metropolitan sanitary district should be on the basis of a municipality's share of the total amount of dry weather sewage flow.

--The Board of Trustees of the metropolitan sanitary district should represent all communities within the service area and provision should be made for reapportionment of the board as population increases.

As is noted above, the Board of Trustees of the present Minneapolis-St. Paul Sanitary District was to modify its plan in accord with recommendations of the Water Pollution Control Commission. However, the Board of Trustees passed a resolution saying that the Water Pollution Control Commission had exceeded its authority in recommending a metropolitan sanitary district, since this was not required by the Ashbach law. Therefore, the Sanitary District has not submitted modifications in its plan.

Extent of Potential Sewerage Service

The plan of the Minneapolis-St. Paul Sanitary District covers all or parts of 77 municipalities and townships in a six-county area. They are Minneapolis*, St. Paul*, Bloomington*, Burnsville, Deephaven, Eagan Township, Eagle Creek Township, Eden Prairie, Glendale Township, Hopkins*, Lebanon Township, Medicine Lake, Minnetonka, Prior Lake, Plymouth*, Savage, Shakopee, Woodland, Brooklyn Center, Columbia Heights*, Crystal*, Edina*, Fridley*, Golden Valley*, Hilltop*, Lauderdale*, Morningside*, New Hope*, Osseo*, Richfield*, Robbinsdale*, St. Anthony*, St. Louis Park*,

Anoka, Blaine*, Brooklyn Park*, Centerville, Champlin, Champlin Township, Circle Pines, Coon Rapids*, Dayton Township, Lexington, Lino Lakes, Maple Grove, Mounds View*, New Brighton*, Shoreview, Spring Lake Park*, Arden Hills*, Birchwood, Dellwood, East Oakdale Township, Falcon Heights*, Gem Lake, Grant Township, Landfall*, Lilydale, Lincoln Township, Little Canada, Mahtomedi*, Maplewood*, Mendota, Mendota Heights*, Northdale, North Oaks, North St. Paul*, Oakdale, Pine Springs, Roseville*, Shore View*, Vadnais Heights, West St. Paul*, White Bear Lake*, White Bear Township, Willernie, and Woodbury Township*. (Asterisk indicates community now is served by Minneapolis-St. Paul Sanitary District plant at Pig's Eye Islands.)

Also included are the Twin Cities Arsenal, Minneapolis-St. Paul International Airport and Fort Snelling, and Northern Ordnance, Inc.

There are some small regional treatment plants in operation in this area now. Communities with their own plants include Shakopee, Savage, Prior Lake, Burnsville, Eagan Township (Cedar Grove Utilities Company) and Anoka, plus two or three industries with their own plants along the Minnesota River in Eagle Creek Township. All of the regional plants--with the possible exception of Shakopee and Anoka--eventually would be displaced by the single plants system, according to the plan of the Minneapolis-St. Paul Sanitary District.

A number of other treatment plants have been constructed in the area over the years and have been abandoned. Examples include plants at Hopkins, Edina, North St. Paul and White Bear Lake. The White Bear Lake plant was closed down most recently, in 1963, and the city was connected to the Minneapolis--St. Paul Sanitary District system.

Of course, there are a number of other sewage treatment plants serving communities outside the planning area of the Minneapolis--St. Paul Sanitary District, but still in the seven-county metropolitan area. For example, South St. Paul has a plant on the Mississippi River below Pig's Eye as does St. Paul Park. Mound, Wayzata and Excelsior have treatment plants which discharge effluent into Lake Minnetonka.

The Twin Cities Metropolitan Planning Commission (MPC) has estimated that 4 million persons will be living in the seven county metropolitan area by the year 2000. If the area served by the Pig's Eye plant will handle 3 million persons, this will mean that sewage facilities will still have to be provided for the other 1 million.

The MPC in its report to the 1965 Legislature has recommended that comprehensive sewage planning similar to what was done under the Ashbach law be required for the balance of the metropolitan area.

Previous Citizens League Stands on the Sewerage Problem

The Citizens League in a report approved by the Board of Directors in January 1961, recommended that the Minneapolis-St. Paul Sanitary District be expanded to become a true metropolitan sanitary district with representation on the board from the suburban areas as well as Minneapolis and St. Paul. In April 1961 the Citizens League issued another report urging passage by the Legislature of a bill creating a metropolitan sanitary district which had been introduced that session. The bill failed to pass.

The League continued to support metropolitan sanitary district legislation which was proposed in the 1963 Legislature and was among the supporters of the Ashbach bill which was approved, requiring the Minneapolis-St. Paul Sanitary District to prepare a comprehensive plan.

EXPLANATION OF COMPARATIVE FINANCIAL DATA

(See Report, Pages 6 - 13, Findings and Conclusions 1 - 5)

In making our projections on the comparative cost differential between a system involving a single downstream treatment plant and one involving four upstream plants, each under independent autonomous governing boards, we reviewed a massive amount of detailed financial data. Because this report is intended primarily to be of assistance to the so-called "non-expert", we have endeavored to keep the presentation of this financial data as brief and as simple as possible. Our committee has not itself developed the financial data presented in this report. Rather, we have reviewed the financial data developed and submitted by the contending interests representing the two basic approaches. Where this financial data has been placed in dispute by one or the other of the two contending approaches, we have had to make our own evaluation.

The basic question we have attempted to answer in this report is whether the Twin Cities metropolitan area will better have its sewerage needs met from a cost standpoint by means of a single downstream plant at Pig's Eye Island or by constructing four upstream plants on the Minnesota and Mississippi Rivers. In other words, which of these two approaches will result in the least expenditure of tax dollars? Any meaningful answer to this question must take into consideration all costs. Although the cost of constructing the necessary sewerage works will constitute a larger proportion of each year's budget than will operation and maintenance costs over the next several decades, the costs of operation and maintenance will represent the larger total expenditure over the useful life of the facilities constructed. Therefore, both construction costs and operation and maintenance costs must be considered in presenting meaningful comparative cost projections.

The following table shows the comparative costs between the two basic approaches for both construction and operation and maintenance. The construction cost in each case is the projected cost of providing the necessary sewerage works to handle estimated flows for the Northwest and Southwest Regions to the year 2000. It is important to note that the figures presented are construction costs and not apportioned costs. Who will pay what portion of these construction costs is an entirely different question. The first question, before we need concern ourselves about how to allocate these costs, is to determine what the total costs will be which later must be apportioned. This requires combining the costs of constructing the necessary facilities and the costs of operation and maintenance through the design capacity year, which is the year 2000. The following table presents these comparative total costs for the two basic alternative approaches.

SINGLE DOWNSTREAM PLANT SYSTEM VS. SYSTEM OF FOUR UPSTREAM REGIONAL PLANTS
ON THE MISSISSIPPI AND MINNESOTA RIVERS

Comparative Costs to Serve the Northwest Region and the Southwest Region
Through the Year 2000

<u>Type of Cost</u>	<u>Downstream Plant</u>	<u>Upstream Plants</u>
Construction costs		
Treatment plants	\$20,663,600	\$38,700,000
Pumping Station		860,000
Outfall		962,000
Interceptors	96,206,850	59,679,900
Total construction costs	<u>\$116,870,450</u>	<u>\$100,201,900</u>
Operation and main- tenance costs	<u>31,575,453</u>	<u>49,255,900</u>
Total combined construction and operation and mainten- ance costs	\$148,445,903	\$149,457,800

The above figures indicate that the approach involving a single downstream treatment plant would be approximately \$1 million cheaper in terms of total costs than the approach involving four upstream plants on the Minnesota and Mississippi Rivers. Principally because of the greater network of interceptors to transport the effluent down to the Pig's Eye plant, construction costs under the single downstream plant system are higher by about \$16.7 million. However, these higher construction costs are more than fully offset by savings in operation and maintenance costs. The above projected cost differentials lead us inescapably to the conclusion that there is so little difference in the comparative costs between the two basic alternative approaches that cost should not be the decisive factor in choosing between the two approaches. The choice between the two basic alternative approaches should be made solely on the basis of which approach will assure the more effective control of pollution within the Twin Cities metropolitan area. In other words, which approach will assure the broadest possible future use of the Mississippi and Minnesota Rivers as they flow through the Twin Cities metropolitan area. Under the single downstream plant system, we can avoid entirely any possible risk of a pollution threat to these two rivers as they flow through the Twin Cities area. No similar assurance can be given under the approach involving four upstream treatment plants. Therefore we can see no justification whatsoever for deliberately choosing the approach involving the greater risk of pollution, particularly when the approach involving the greater risk of pollution will be at least slightly more expensive in the long run.

Comparative Costs after the Year 2000

As we have seen from the above projections of comparative costs, there is almost no distinguishable difference in the total cost of the two alternative approaches to the year 2000. Any attempt to project comparative costs beyond the year 2000 involves highly speculative assumptions, and we therefore have excluded from our basic comparative cost figures any costs which would be attributable to effluent flows

beyond the year 2000. However, it should be noted that the slight cost advantage for the downstream treatment plant system to the year 2000 should clearly widen from and after the year 2000 for the remainder of the useful life of the sewerage works.

The most influential factor in making the single downstream plant system the more economical after the year 2000 is its lower per unit operation and maintenance costs. The following table shows the projected year 2000 operation and maintenance costs to treat the combined flows from the Northwest and Southwest Regions under the two basic alternative approaches. The projected year 2000 operation and maintenance cost figures for the single downstream plant have been developed by TKDA (Toltz, King, Duvall, Anderson & Associates), consultants for the Minneapolis-St. Paul Sanitary District. Those for the three plants within the Southwest Region have been developed by Otto G. Bonestroo, Sam H. Hobbs, and W. D. Schoell, engineers representing the advocates of the Southwest Regional approach, and are contained in an engineering and financing report on a comprehensive sewage works plan for the Southwest Region, published in November, 1964. The figures for the Northwest Region were developed by TKDA, based on operation and maintenance cost curves. These cost curves resulted from one of the most intensive cost analyses ever undertaken by an engineering firm. Our contacts with disinterested engineers familiar with these operation and maintenance cost projections convinces us that the cost projections for the Northwest Region can be relied upon for purposes of making this comparison.

YEAR 2000 COMPARISON OF O/M COSTS

<u>Region Served</u>	<u>Downstream Plant</u>	<u>Upstream Regional Plant</u>
Northwest Region		
Treatment Plant	\$863,478	\$1,030,000
Interceptors	4,220	---
Pumping Station	-----	113,900
Northwest Region - Total Cost	\$867,698	\$1,143,900
Net Difference	276,202	
Southwest Region		
Treatment Plant	\$966,966	
Bloomington Sub-Region		274,000
Southern Sub-Region		534,000
Western Sub-Region		450,000
Interceptors	54,210	-----
Southwest Region - Total Costs	\$1,021,176	\$1,258,000
Net Difference	236,830	
Combined NW & SW Region		
Year 2000 O/M Costs	\$1,888,698	\$2,401,900
Combined Net Difference	513,026	

Thus we see that the annual operation and maintenance costs for the single downstream plant system will amount to \$513,000 less in the year 2000 than would be the costs under the system of four upstream regional plants. Savings of

this magnitude should continue each year for the remainder of the useful life of the sewerage works.

Converted into percentages, the figures indicate that the single downstream plant can treat the same amount of effluent in the year 2000 at 16% less cost than a smaller upstream plant servicing the Northwest Region and for 24% less cost than the three smaller plants on the Minnesota River serving the Southwest Region. Proportionate savings of this magnitude do not appear to be unrealistic. Under the single downstream plant there is only one treatment plant to which all effluent flows. Under the upstream regional plant system, there would be four separate treatment plants. Each of these four plants would be under separate and autonomous governing boards. Each would have to have employees on duty 24 hours a day. Each would have its own administrative space, each would have its own equipment, its own stenographers, its own purchasing procedures, etc. It would seem preposterous not to believe that some operation and maintenance cost economies would accrue under a single plant system with a single governing board.

Additional cost advantages would accrue under the single downstream plant system after the year 2000 because of the difference in the type of sewerage works constructed under the two alternate approaches. The single downstream plant system involves a much more extensive network of interceptor sewers than does the upstream regional plant approach. Interceptors, as a practical matter, will last almost indefinitely. For depreciation purposes, the usual useful life is 80 years. They require almost no upkeep. On the other hand, a higher proportion of the facilities are for treatment plants under the upstream regional plant system. For depreciation purposes, treatment plants are generally estimated to have a useful life of 40 years. While treatment plants are not actually replaced after 40 years, considerable sums of money must be spent on them in order to keep them in operation indefinitely. Therefore somewhat lower costs in this area should result after the year 2000 under the single downstream plant system.

The single downstream plant system would appear to lend itself, at a more economical cost, to expansion after the year 2000 should additional flows develop. For example, the Southwest interceptor, which would handle flows for the Southwest Region, would be oversized at an additional cost of \$3.7 million as a precautionary measure to handle possible greater flows after the year 2000. A relief interceptor leading from Minneapolis to the Southwest interceptor is also proposed, but not to be constructed until after the year 2000, just to meet the possibility of underestimating future sewage flows. In these two ways, a substantially increased flow after the year 2000 could be handled at relatively little additional construction cost. There would not appear to be the same degree of flexibility to handle these possible additional future flows under the system of upstream regional plants.

Impact of Inflation

All of the construction costs used in the projections contained in this report are based on 1964 engineering costs. It is important to note, however, that construction costs for engineering projects of this type have been increasing steadily for the past several decades at between 3% and 5% a year. Nothing which might reverse this lengthy trend appears imminent. A continuation of these trends in future years could have an important impact on the comparative costs between the two basic alternative approaches. This also assumes, of course, that the general cost of living index continues to rise at a smaller rate than the construction engineering index.

At first glance, any such continued trend in the engineering cost index would appear to widen the already excess construction costs under the single downstream plant system. This would not actually be the case, however, because construction schedules under the single downstream plant system are earlier than those under the system involving four upstream regional plants. An earlier staging of construction schedule would mean that construction would be accomplished at lower prices. It would be our guess that the two factors would be offsetting and if there is any advantage at all it probably would be in favor of the single downstream plant system.

The cost projections for operation and maintenance are likewise based on 1964 cost levels. Any inflationary tendency in future years would widen the advantage in favor of the single downstream plant system.

Any attempt to project meaningfully future cost differentials based on the impact of inflation, staging of construction, etc., involves factors so highly speculative that we have eliminated them entirely from our cost projections.

Procedures Used in Projecting Comparative Costs

In making our comparative cost projections, we had the benefit of detailed financial data developed by the consultants for each of the two basic alternative approaches. Therefore, with a few exceptions, we have accepted the cost projections developed by the consultants for the approach being proposed within the two regions. Certain of the figures developed by the consultants for the two alternative approaches have been disputed by the other. In these situations we have sought additional supporting documentation and have made our own evaluation.

Actually, we have been surprised at the relatively small proportion of the total projected costs which have been placed in dispute. And even those which are disputed have not proved so complex as to defy analysis and a judgment on the merits. For this reason, we are reasonably confident that our projections of cost differentials between the two alternative approaches will prove sufficiently accurate to justify the conclusions flowing from these projections.

Because our committee favors the downstream plant approach as the preferable way to control pollution of the Mississippi and Minnesota Rivers as they flow through the Twin Cities area, we have tried to be scrupulously fair to the upstream regional plant approach in making our financial projections. All other things being equal, we have tended to resolve doubts against the single downstream plant approach.

Comparative Cost Differentials for the Northwest Region

Following is a table showing the comparative construction and operation and maintenance costs for the Northwest Region under the two basic alternative approaches. The construction cost for each approach is to handle projected year 2000 flows. The operation and maintenance costs are the cumulative costs to the year 2000.

NORTHWEST REGION

<u>Category of Cost</u>	<u>Single Downstream Plant</u>	<u>Upstream Plant</u>
Treatment Plant	\$9,733,000	\$17,000,000
Pumping Station		860,000
Outfall		962,000
Interceptors		
- Within North Suburban Sanitary Sewer District	33,515,000	33,515,000
- Brooklyn Park	2,765,500	2,765,500
- Brooklyn Center - Minneapolis	3,370,200	2,800,000
- Within Minneapolis	11,398,200	1,093,900
- Capacity in Southwest interceptor	<u>3,717,250</u>	<u>---</u>
Total construction costs	64,499,150	58,996,400
Operation and maintenance costs to year 2000	<u>13,240,500</u>	<u>20,315,000</u>
Total combined costs	\$77,739,670	\$79,311,400

From the above table we note that construction costs are higher under the single downstream plant approach, but that these excess construction costs are more than fully offset by savings resulting from lower operation and maintenance costs. The net differential in favor of the single downstream plant would amount to \$1,571,730. This differential in favor of the single downstream plant would widen in years after 2000 because of continuing lower operation and maintenance costs. The annual savings under the single downstream plant in the year 2000 would amount to \$276,202.

Following is an explanation of how the projected cost figures used in the above table were derived:

1. The \$9,733,000 indicated as the cost for the treatment plant under the single downstream plant system was projected by TKDA. It represents TKDA's estimate of the cost necessary to expand the Pig's Eye plant to handle year 2000 flows contributed by the Northwest Region. The cost to provide for Northwest Region flows at 75% treatment at the Pig's Eye plant was estimated to be \$7,300,000. A recent estimate provided by TKDA indicates the construction cost to increase the degree of treatment at the Pig's Eye plant to 90% would be one-third more than the cost to provide for Northwest Region flows at 75% treatment. We have therefore added an additional \$2,433,000, giving a combined total construction cost of \$9,733,000 for expansion of the Pig's Eye plant.
2. The construction cost figure of \$17,000,000 for the treatment plant under the upstream regional plant system was developed by representatives of the North Suburban Sanitary Sewer District. These figures envision 90% treatment.
3. The costs of the pumping station and the outfall are unique to the upstream regional plant system. The figures were developed by TKDA.

Representatives of the NSSSD agree on the cost of the outfall, but appear to feel the projected cost of \$860,000 for the pumping station is somewhat excessive. Since we have had no specific explanation from representatives of the NSSSD to substantiate their question, we have used the figure provided by TKDA.

4. Within the Northwest Region essentially the same interceptor design is contemplated under both the single downstream plant and the upstream regional plant approaches. Representatives of both approaches agree on the projected cost figure of \$33,515,000.
5. Within the past few years, a major interceptor has been constructed within Brooklyn Park. This interceptor was oversized to enable its use for all projected capacities through the year 2000. This interceptor, presently owned by Brooklyn Park, would have to be acquired irrespective of whether the single downstream or the upstream regional plant approach is chosen. Therefore, the figure of \$2,765,500 has been used as the present worth of this interceptor. There is no dispute on this figure.
6. Under either approach it will be necessary to construct a joint interceptor leading from Brooklyn Center to Minneapolis. Under the upstream plant approach the length of this interceptor would be somewhat less, because of the location of the treatment plant in Fridley. Representatives of both approaches agree that \$3,370,200 is a reasonable projection for the cost of this interceptor under the single downstream plant approach, and that \$2,800,000 is a reasonable projection under the upstream plant approach.
7. Under the downstream single plant approach, substantial costs for interceptor construction within the city of Minneapolis would be necessary. This interceptor would generally run from just south of the proposed upstream treatment plant in Fridley to the joint Minneapolis-St. Paul interceptor. We know of no dispute with the TKDA projected total cost of \$11,398,200 for this network of interceptors. Representatives of both approaches likewise agree that \$1,093,900 is a reasonable projection of the cost of an interceptor crossing the Mississippi River, which would be necessary under both approaches. This interceptor would be placed at a different location under the upstream plant approach, but the cost would not vary considerably.
8. TKDA developed the projected cost of \$3,717,250 for construction of additional capacity in the Southwest interceptor. Representatives of the NSSSD have not disputed this figure. There are valid arguments for not including this cost in our comparative cost projections. The additional capacity in the Southwest interceptor is intended to provide for the possibility of additional flows developing either within Minneapolis, from the Northwest Region or from the Southwest Region after the year 2000. Since we have excluded from our projections costs attributable to flows after the year 2000, it would not have been unreasonable to exclude this figure. Furthermore, the cost of providing additional capacity in the Southwest interceptor would not be charged to the Northwest Region under any of the cost apportionment formulas being proposed, unless the flows

after the year 2000 were contributed by the Northwest Region. However, since there is some remote possibility that this additional capacity might be needed before the year 2000, and any such need would depend on substantial failure of the storm separation program now under way within the city of Minneapolis, we have included the entire cost of providing this additional capacity.

9. We have not included in these cost projections that portion of the Minneapolis-St. Paul joint interceptor which would be used by the Northwest Region under the single downstream plant system. This is not a construction cost item, since the interceptor is in existence and has sufficient capacity to handle year 2000 flows from the Northwest Region. If and as the Northwest Region would be required to purchase this capacity in the Minneapolis-St. Paul joint interceptor, it would represent a transfer of funds from the Northwest Region to the two central cities. This item must be included in any comparative data on apportionment of costs. However, it is important to understand that even under the comprehensive plan for apportionment of these costs developed by the Minneapolis-St. Paul Sanitary District, the total apportioned cost for the Northwest Region would be less than the construction costs included in these projections.
10. The proposed relief interceptor from Minneapolis to the Southwest interceptor is not included in these cost projections for reasons discussed in previous pages of this report. The reason is that the relief interceptor, to the extent it will be needed, will be to provide for flows after the year 2000.
11. The method of developing the operation and maintenance costs has been discussed on earlier pages of this report. They are based on 90% treatment at the upstream regional plant and 75% treatment until 1980 at the Pig's Eye plant. After the year 1980, operation and maintenance costs are based on 90% treatment. TKDA has estimated that 90% treatment at the Pig's Eye plant will result in additional operation and maintenance costs of 10% over those at 75% treatment.

Comparative Cost Differential for the Southwest Region

Following is a table showing the comparative construction and operation and maintenance costs for the Southwest Region under the two basic alternative approaches. The construction cost for each approach is the amount necessary to handle projected year 2000 flows. The operation and maintenance costs are the cumulative costs to the year 2000.

SOUTHWEST REGION

<u>Category of Costs</u>	<u>Downstream Plant</u>	<u>3 Upstream Plants</u>
Treatment Plant	\$10,930,600	
Western Sub-Region		\$8,650,000
Southern Sub-Region		9,045,000
Bloomington Sub-Region		<u>4,175,000</u>
Interceptors		
Western Sub-Region	21,281,300	12,193,000
Southern Sub-Region	16,135,000	7,348,000
Bloomington Sub-Region	<u>4,024,400</u>	<u>---</u>
Total construction costs	\$52,371,300	\$41,411,000
Operation and maintenance costs to year 2000	<u>18,334,933</u>	<u>28,940,900</u>
Total combined costs	\$70,706,233	\$70,351,900

Thus, we see that excess construction costs totalling approximately \$11 million under the single downstream plant are offset by a comparable amount of savings resulting from lower per unit operation and maintenance costs. The net result produces an almost identical total cost for each of the two basic alternative approaches. Since annual operation and maintenance cost savings, totalling \$236,830, will accrue in the year 2000 under the single downstream plant system, the downstream plant system would prove less expensive over the long run.

Following is an explanation of how the projected costs included in the above table were derived:

1. The \$10,930,600 indicated as the cost for the treatment plant under the single downstream plant system was projected by TKDA. It represents TKDA's estimate of the cost necessary to expand the Pig's Eye plant to handle year 2000 flows contributed by the Southwest Region. TKDA estimated the cost to provide for Southwest Region flows at 75% treatment at the Pig's Eye plant to be \$8,200,000. A recent estimate provided by TKDA indicates the construction cost to increase the degree of treatment at the Pig's Eye plant to 90% would be 1/3 more than the cost to provide for Southwest Region flows at 75% treatment. We have therefore added an additional \$2,730,600 to the \$8,200,000 figure, giving a combined total construction cost of \$10,930,600, for expansion of the Pig's Eye plant to handle Southwest Region flows through the year 2000.
2. The construction costs totalling \$21,870,000 for three treatment plants on the Minnesota River to serve the Southwest Region were made by advocates of the proposed three upstream plants for the Southwest Region.

They are contained in "Engineering and Financing Report on a Comprehensive Sewage Works Plan for the Southwest Region of the Minneapolis-St. Paul Metropolitan Area," prepared by Otto G. Bonestroo, Sam H. Hobbs, and W. D. Schoell. This report was published in November, 1964.

3. The interceptor construction cost, totalling \$41,440,700, under the single downstream plant system was developed by TKDA.
4. The interceptor costs, totalling \$19,541,000, under the upstream plant system were developed originally by engineers representing advocates of the upstream plant system for the Southwest Region. W. D. Schoell developed the figure of \$12,193,000 for the Western Sub-Region. Bonestroo, Rosene & Associates, Inc., developed total interceptor costs of \$5,112,000 to serve the Southern Sub-Region. TKDA criticized the \$5,112,000 estimate as being \$236,000 too low. TKDA contended that an interceptor sewer system for the Southern Sub-Region under the upstream regional treatment plant system would cost \$8,348,100. We have been unable to develop precise data on this dispute. However, we understand that all but \$1,000,000 of the \$3,236,000 in dispute has been conceded by advocates of the upstream regional plant system. On the other hand, representatives of the upstream regional plant system contend that TKDA interceptor estimates for the Western Sub-Region provide for less capacity than do the W. D. Schoell figures for these interceptors. About \$1,000,000 is involved in this controversy.

We have been unable to obtain sufficiently adequate data to resolve these two disputes. Inasmuch as they involve approximately the same dollar amounts and, therefore, appear to be offsetting, we have not adjusted either engineering estimate.

5. The Southwest interceptor would be oversized at an additional total cost of \$3,717,250 under the single downstream plant system. This oversizing would not be for the benefit of the Southwest Region and, therefore has not been included in these cost projections. However, the cost of this additional capacity in the Southwest interceptor has been included in the cost projections for the Northwest Region and is therefore included in the comparative cost projections for the combined Northwest and Southwest Regions. The additional capacity in the Southwest interceptor is intended to provide for the possibility of additional flows developing either within Minneapolis or from the Northwest Region after the year 2000. Since we have excluded from our projections costs attributable to flows after the year 2000, it would not have been unreasonable to exclude this figure entirely.
6. The operation and maintenance cost figures for the single downstream plant system were developed by TKDA and reflect their view of what the actual costs of operation and maintenance would be at the Pig's Eye plant. These figures are based on 75% treatment at the Pig's Eye plant until the year 1980 and 90% treatment after 1980. TKDA has estimated that 90% treatment at the Pig's Eye plant will result in additional operation and maintenance costs of 10% over those at 75% treatment.
7. The operation and maintenance cost figures for the upstream regional plant system were developed by representatives advocating this system.

These figures were contained in the "Engineering and Financing Report on a Comprehensive Sewerage Works Plan for the Southwest Region of the Minneapolis-St. Paul Metropolitan Area," prepared by Otto G. Bonestroo, Sam H. Hobbs, and W. D. Schoell. The report was published in November, 1964.

New Comparative Cost Projections for Southwest Region

The committee held its final meeting on Tuesday, April 27. On that day the committee received new material under date of April 26, 1965 submitting a completely new set of comparative cost figures for the Southwest Region. The new projections were developed by Bonestroo, Rosene & Associates, Inc., consulting engineers for Eagan and Burnsville, municipalities within the Southwest Region. The new data compared costs between the single downstream plant plan and an upstream regional plant plan for the Southwest Region. While the new upstream plant plan envisioned three treatment plants, the location of at least two of them would be different and they would serve different municipalities. The new projected comparative costs contained substantial revisions over previous projections made by the same consulting firm.

The committee has had no opportunity to assess the merits of these totally new and different figures. However, at first glance, several significant cost changes over previous cost projections have been noted. For example:

1. The three proposed upstream regional plants will provide treatment for greater flows than provided for in previous projections made by upstream regional plant advocates at a substantially less cost than under their own previous estimates. The new cost, for example, would be more than \$3.5 million less. No details are provided to explain this substantial change from their previous estimates.
2. Their previous estimates of interceptor construction costs under the upstream regional plant system have been revised downward substantially. No details are provided for this revision in their previous estimates.
3. The projected comparative interceptor construction costs under the two basic alternative approaches do not appear to include all the interceptors which would be required under the upstream regional plant system. For example, the cost of the proposed interceptor from Savage to Shakopee appears to be included under the single downstream plant system, but excluded under the upstream regional plant system. This interceptor is common to both alternative approaches and either should be included or excluded in any cost comparison.
4. The new revised projections have reduced the previous operation and maintenance costs to the year 2000 under the upstream regional plant system by approximately \$4,000,000. No detailed explanation is provided for this substantial downward revision in previous estimates.
5. The new projections also appear to dispute certain TKDA cost projections developed for the single downstream plant system. For example, TKDA estimates that operation and maintenance costs under the single downstream plant system will increase by 10% if the degree of treatment at the Pig's Eye plant is raised from 75% to 90%. The new Bonestroo report

places these increased costs at 17%.

Obviously, it is not possible at this late date to make any meaningful evaluation of these new cost projections. However, it is somewhat difficult to understand how a revision in the location of treatment plants under the upstream regional plant system can result in such substantial cost savings over previous estimates made by the same consultants. If this is possible, it is difficult to understand why the new system was not proposed initially.

MINORITY REPORT

TO: Board of Directors
Citizens League of Minneapolis
and Hennepin County

SUBJECT: Metropolitan Area Sewerage Committee Minority Report

This Committee was assigned by the Citizens League Board of Directors to review the comprehensive plan prepared by the Minneapolis-St. Paul Sanitary District in 1964. The Committee has concluded in its report adopted on April 27, 1965, by a majority vote of the members present on that date, that the comprehensive plan is substantially adequate but that it is not equitable in meeting future needs for the metropolitan area.

We respectfully dissent from the findings and conclusions, as well as the recommendations, of the majority, upon the general ground that the facts heard by the Committee do not logically support the findings, conclusions and recommendations.

To illustrate, we point out that recommendation 1 is against the weight of the facts presented to the Committee both as to paragraph A, relating to costs, and paragraph B, relating to pollution. The information supplied to the Committee indicates that the regional treatment plant system would be substantially less expensive to the metropolitan area in construction costs and that this saving would be in excess of \$20,000,000.00. Moreover, the saving of interest costs gained by staged construction of regional treatment facilities as opposed to immediate full capacity construction of long interceptors is a significant difference in favor of regional treatment plants. Conflicting engineering opinions concerning operation and maintenance cost differentials were presented to the Committee. The conclusion that such costs for large regional treatment plants would be significantly greater than for a somewhat larger single treatment plant at Pigs Eye is therefore unjustified.

Concerning recommendation 1B, no facts were presented to the Committee to support the statement that upstream regional plants would create the threat of pollution to portions of the rivers flowing through the Twin Cities area, by any accepted definition of pollution, including the definitions promulgated by the Water Pollution Control Commission in its 1962 adopted standards for the Mississippi River and the 1964 proposed standards for the Minnesota River. The Committee did, however, receive uncontradicted information that the Pigs Eye plant even after operation with the current 22.8 million dollar improvement, cannot always comply with the extremely low standards for the zone below Pigs Eye, established in 1962 by the Water Pollution Control Commission.

There is no reason to carve out from the seven county metropolitan area only that portion which can be served by the single treatment plant at Pigs Eye. A truly metropolitan sewer district should not be precluded in its inception from a thorough analysis of the relative costs and pollution hazards of regional treatment plants vs. a single treatment plant. As the majority say, "which approach is selected is an engineering decision...", (page 22, paragraph 3B).

The 1961 and 1963 Citizens League positions favoring a metropolitan sanitary district would be modified by the current Committee report favoring a single treatment plant at Pigs Eye. This prejudgment of the engineering decision, excluding as it does $\frac{1}{4}$ of the expected 4,000,000 people in the year 2000, seriously jeopardizes the prospect of a metropolitan sewer district capable of solving the pollution problem in our metropolitan area.

(signed)

William J. Hempel
Paul H. Hauge
J. Henry Schipke
Zane B. Mann