

CITIZENS LEAGUE REPORT

No. 192

**Metropolitan Mosquito Control District**

**May 1966**

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CITIZENS LEAGUE  
REPORT ON  
METROPOLITAN MOSQUITO CONTROL DISTRICT

Approved:  
Citizens League Board of Directors  
May 4, 1966

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TO: Board of Directors

FROM: Mosquito Control District Review Committee, Harry Sutton, Jr., Chairman

SUBJECT: Findings and Recommendations on the Metropolitan Mosquito Control District

#### SUMMARY OBSERVATIONS

This is the first Citizens League review of a metropolitan area single-purpose district. There has never been to our knowledge any comprehensive legislative or other study of the structure, program, operations or performance of the Metropolitan Mosquito Control District since its inception in 1958. The study has significance beyond the review of the mosquito control function itself, because of the growing number of single-purpose authorities which have been created in our area, proposals that other governmental functions with metropolitan implications be operated through new single-purpose agencies, and proposals for the establishment of multi-purpose districts, including a recent suggestion that the counties through the Metropolitan Mosquito Control District Board be given policy control over such functions as air and water pollution, thus transforming the mosquito district board into the policy body for a multi-purpose district.

The creation of the Metropolitan Mosquito Control District represented an admirable effort on the part of six counties in the metropolitan area to cooperate in attacking a problem common to the whole area. Undoubtedly the approach used in 1958 in the creation of the District and in 1959 in achieving special legislation to aid the District was the only one possible. The original mosquito control program as conceived and established in 1958 through use of the Joint Powers Act and supplemented by legislation in 1959 has continued with no major changes.

Now, however, looking at the District and its program and operations eight years after its inception, we have found weaknesses which we believe are, almost without exception, closely related to the structure of government under which the District was established and under which it has continued to operate. We would cite particularly the following:

- . The District is restricted to the performance of one highly seasonal specialized function.
- . The District is a loose confederation of counties any one of which may pull out of the arrangement on a few months' notice and on the decision of county boards primarily concerned with what the District can do for their counties.
- . The operation is essentially conducted on a county by county, not on a district-wide basis, a situation which, we believe, is detrimental to a fully effective program. Headquarters are maintained and employees hired and promoted at the county level exclusively.
- . Because of the county by county approach, the District Board members,

all county commissioners, tend to concern themselves more with the operations and personnel within their own counties, and less with policy questions related to the needs of the total District program.

- . The District is not responsible to and is not reviewed in any manner by any level of government - state, county or municipal.
- . The District is arbitrarily restricted by legislation to financing limitations which bear no relationship to the needs of the program. This tends to result in a situation in which the allowed amount is spent yearly, even though it may not turn out to be needed. On the other hand, in a rainy year, when additional funds may be needed, there is no recourse to additional finances. Related to this is the legislatively set automatic increases in the total available funds which occur every ten years. This bears no relationship to whether the needs of the District will in fact prove to be greater every ten years.

We have found that it is most difficult to judge the effectiveness of the mosquito control program of the District. This difficulty stems primarily from the fact that the District Board has evolved no long-range plan or goals on the basis of which priorities of needs could be established and progress evaluated. This failure stems in part from budgetary limitations, a desire to put all available money into men in the field, and reluctance to provide for planning as such. But we believe it results primarily from disinterest on the part of the Board and the conviction of the county commissioners, especially those who have served on the District Board since its creation, that "we're doing this thing right in the way we originally set it up, and all we need now is some more money to get more done."

The Metropolitan Mosquito Control District operation can best be described as an extension of traditional county government together with centralized purchasing, contracting for helicopter services, truck rental, lab services and radio communication. Administrative control of the program is from the District headquarters to county supervisors located at county headquarters, to county foremen, to the crews in the field. Crewmen operate almost exclusively only in their counties of residence and in fact tend to think of themselves as county employees. This operating structure reflects the voluntary basis for the District's establishment under the Joint Powers Act and the fact that separate counties can withdraw from the District if they wish. It also reflects, we believe, strong public and political pressures for more employees or for more mosquito control in this or that county or community.

The greatest impression the study has made on us is of the inevitable deficiencies of a single-purpose district trying to efficiently operate a governmental function which is inherently highly seasonal in nature. The mosquito district is not necessarily to be blamed here; the shortcomings grow out of the nature of the mosquito control function itself. But, in trying to assess the District's performance to date, we have kept asking ourselves, isn't there some other way this thing can be set up to get around these built-in problems?

There is no formal merit or civil service system. Hiring and promotion is not even conducted on a district-wide basis, but on a county by county basis with active participation by the local county commissioners. The procedures are certainly open to the potential for patronage.

Despite the limitations resulting from the nature of mosquito control, government structure, provisions of the District legislation, and lack of policy in some areas, there are pluses. The District Director and staff appear to be conscientious. The board and staff have effected economies in operations, possibly resulting from the limitations of the legislatively set budget. We note here particularly the increased use of one versus two-man field crews, centralized bulk purchasing of supplies, and sound policies on rental versus purchase of trucks and on contracting for helicopter services. While we have not found all aspects of the personnel or financial practices to be in line with sound public administration concepts, no evidence of abuse or irregularities has come to our attention.

Looking to the future there are compelling arguments for the placing of the mosquito control operation under the direction of a policy body also responsible for other metropolitan functions. This does not necessarily mean that operations would be merged with those of other functions, any more than, say, the municipal park function should be merged with fire protection. But a multi-purpose board could consider mosquito control needs in relation to the needs of other functions. Hopefully, there would be a flexible means of financial support. There would be strong administrative tools available - planning, data processing, records control, budget analysis, professional personnel administration. And, if there were ways to coordinate, relate, or even merge the operations of mosquito control with those of other functions to circumvent the built-in problems of mosquito control, they could be implemented by a multi-purpose board and its administration.

## FINDINGS AND RECOMMENDATIONS

### I. Government Structure Review

1. The Committee believes that a strong mosquito control program is essential to the metropolitan area. Under whatever structure this program may ultimately be directed and operated, we believe that a comprehensive and adequately staffed and financed program must be conducted.

Requirements of a strong program in a structural sense include the following:

- . At the policy level we believe that an interested, informed body of persons willing to engage in review and planning is needed.

- . At the administrative level the program requires both the scientific skills of a qualified entomologist and a high degree of administrative capability. Access to expertise in areas of planning, technical assistance and administrative skills is necessary.

- . Because economy dictates that the seasonal "crewmen" should operate in the field alone, conscientious, responsible, well-motivated seasonal workers, especially students, are needed at the operational level under the direction of qualified full-time foremen and supervisors. These needs emphasize the importance of a vigorous recruitment policy and fair, well-defined personnel policies, especially for hiring and promotion.

- . The program should be funded by a source of revenue which is not fixed but flexible and which can be contracted or expanded as the needs of the program change.

2. The seasonal nature of mosquito control and the limitations of the single-purpose district approach to this function indicate strongly to us the desirability of placing the policy and directional control of this function under a body with policy responsibility for several metropolitan area functions. We have not studied and take no position on whether this body should be comprised of county commissioners, municipal officials, legislators or appointed or elected citizens. But we do feel that, if a metropolitan functions authority were created, preferably with a flexible tax base of its own, direction of mosquito control should come under such policy body.

The reasons are compelling:

- . The Board would have the benefit of a broad view involving relative assessment of the financial and operational needs of various governmental functions.

- . The public, local and county government, and the legislature would have a better idea of where the mosquito control function fits in or ought to fit in to the total scope of services provided in the metropolitan area.

- . The inflexibility of the current mosquito control financing arrangement could be ameliorated.

. There would be significant benefits to the program of administrative services such as data processing, records analysis, professional budget review, an overall merit personnel plan and professional personnel administration, methods and procedure review, centralized purchasing services, planning and engineering consultation.

. The makeup of the new policy body would most likely reflect accurately the various interests and constituencies in the metropolitan area, with proportional representation based on population. Such major policy body might also be directly responsible to the voters. These points are of concern to us because we believe that the most responsive and responsible government is apt to be the one which most accurately reflects the people it represents. Certainly with the "one man - one vote" principle being applied to the state legislature and to county boards in Minnesota, we believe it would be held to apply to an areawide authority with power over a number of crucial governmental services.

. Most important of all as far as the mosquito control function is concerned, such a policy body would be in a position to assess carefully to what degree operation of a limited and seasonal function might be profitably merged or coordinated with operations of other governmental functions. The built-in inefficiencies of a single-purpose operation such as this one resulting from the nature of the function might be minimized in such a manner as to produce more and better mosquito control per tax dollar spent. Not only could such a policy body investigate these possible efficiencies, it would be in a position to effect them.

Because of its existing single-purpose nature we have not recommended to the District that it consider joint use of its personnel with bodies operating other governmental functions. But we believe that, under a multi-purpose arrangement, joint use of personnel, both permanent and temporary, might be feasible so that, during slack periods in the summer and in the "off season", mosquito control employees could work in other governmental areas. Some functional areas in which cooperative joint use of employees might be considered include air and water pollution control, area park maintenance, and highway and lake site maintenance.

3. County commissioners are elected to their county boards by districts. In terms of the population each commissioner on the Mosquito District Board represents, a Hennepin County Commissioner has 38 constituents for each constituent of a Scott County Commissioner. The whole 12-member Metropolitan Mosquito Control District Board, two commissioners from each county, represented about 600,000 of the approximately 1,500,000 persons residing in the six-county mosquito district area when the 1960 census was taken - or only slightly over one third of the total population.

We carefully considered the implications of the existing structure of the District Board. Through area rather than population representation, maximum "local control" is achieved, the commissioners say. Equal county representation on the Board bears no relationship, however, to relative county populations, size, or financial support of the mosquito control program. It does reflect, however, the voluntary nature of the inter-county agreement and the county by county operational plan which has been established. Individual county commissioners tend to look after operations, personnel matters and job openings in their own counties.

To recommend amendments to the current law to provide for proportional

representation by population or for weighted voting would be impractical in terms of the whole current concept of the District, we decided. However, as noted above, we favor representation by population on any multi-purpose area authority, and we would favor population being the prime factor in the representation plan for a mosquito district if we were creating one anew.

4. As long as the Metropolitan Mosquito Control District remains a single-purpose district, we believe that certain structural changes should be made to strengthen the Board as a policy body. We believe a smaller board could operate as efficiently or more efficiently than the current 12-man board and believe that six county commissioners, one from each county, would be adequate.

We believe that the addition of some public members would bring to the board a needed public viewpoint plus possible expertise in such areas as engineering, public or business administration, or entomology. Such public members should not be appointed from counties but from the district area as a whole. The logical appointing authority would be the Governor.

5. Currently all Board terms are for one year only, with county boards yearly designating two of their respective members to serve on the District Board for \$30.00 per meeting, plus travel allowance. We believe that two-year terms would provide for better Board understanding of the District's operations and program. Two-year terms would still provide for turnover reflecting changes in the political complexions of county boards which can occur every two years.

6. If the District remains single purpose, we believe its law should be amended to provide for a biennial report to the legislature outlining its program and operations for the past two years and its plans, needs and budget estimates for the upcoming biennium. With such a report the legislature would be in a better position to analyze possible requests for increase in District taxing authority and to review the needs of the District prior to the automatic increase in taxing authority for the District occurring every ten years after the census is taken. We also believe that since the District is part of no established structure or level of government and since the District Board members (though county commissioners) are not directly elected by the voters, some basis for legislative review should be established. The report could be made to an appropriate committee of the legislature or, if created, to a state department of urban affairs.

#### RECOMMENDATIONS TO THE LEGISLATURE ON GOVERNMENT STRUCTURE

A. *Our conviction that this function could be better directed by a board responsible for more than one area function, leads us to strongly urge the Legislature to place the metropolitan mosquito control function under the policy control of any new body it might create with responsibility for areawide services in our metropolitan area. We recommend that such a new policy body be apportioned on the basis of population.*

*The new board, however comprised, should have broad discretion to coordinate or combine the operations of the existing District with those of other area functions under its direction. At a minimum the board should provide a full range of administrative services to the mosquito operation, even if the mosquito control operation remains separate and is not merged with that of other functions.*



B. As long as the Metropolitan Mosquito Control District remains a single-purpose district, we recommend an amendment to the District law to reconstitute the Board so that, rather than the current 12 members, it would be composed of nine members--six county commissioners selected by the county boards, one from each county currently a part of the program, and three public members to be appointed from the six-county area by the Governor, with consideration to be given in such appointments to persons whose business, scientific or professional background can bring desired expertise to the Board.

We also recommend that the District legislation be amended to provide for two rather than one-year terms for Board members.

C. If the District remains single purpose with separate taxing authority, the District law should be amended to provide for a biennial report to the Legislature outlining the program, proposed biennial budget, and needs of the District.

## II. Financial Needs of the District

1. The legislation under which the District operates establishes 2 mill and a 50 cents per capita limitations on financing of the District. Each of the six counties comprising the District levies a property tax in mills equal to the dollar amount 50 cents times the county population per the 1960 census would produce. The counties then remit the proceeds of the tax to the District. Currently and for the next few years this formula produces for the District about \$750,000 yearly.

Following the 1970 decennial census the funds available to the District would automatically increase by approximately \$160,000 unless the Board directed that levies based on less than 50 cents per capita be applied. Another increase of about \$280,000 over the 1970 limit would occur following the 1980 census, etc.

2. Neither the 2 mill nor the 50 cents per capita limitation bears a meaningful relationship to mosquito control program needs. The potential increase in the District's revenue every decade bears no relationship to the program's changing requirements which are based, not so much on numbers of people to be protected, as on number, size and location of active mosquito breeding sites to be controlled or eliminated, and on fluctuating weather conditions.

Rapid urbanization could so reduce the number of breeding sites that less mosquito control of the type now used might be needed in the future. But expansion of population could in the long run require a larger district. There is a likely need to increase the amount of adult mosquito control as contrasted with larval control. Other dynamic factors include the development of new, safer insecticides and of possible new methods of mosquito control.

All of these considerations indicate the strong need for a flexible basis of financial support for mosquito control - authority in a discretionary body to expand or contract the amount of money used for the program as needs and requirements change.

But such broad grant of authority tied to a flexible financing program should be granted only to a body which is in a position to assess the relative needs of several governmental functions and a body which has available to it a strong

administrative capacity including budgetary and methods and procedures control and review.

3. The District Board and the District staff believe that additional financing is needed now and should be requested of the 1967 Legislature through an amendment of the special District law raising the per capita limitation. They indicate that any additional funds received should and would be applied towards expansion of the existing control program. Specifically, they indicate that new money would go towards hiring of additional part-time, April-September employees so as to increase the number of crews available for mosquito control work particularly in the outlying, more sparsely populated parts of the area comprising the District.

We question whether additional taxing authority should be allowed the District before both the control program and the operations of the District are thoroughly reviewed by the District Board and until precise goals and objectives and a carefully prepared and documented operations and control plan are developed as recommended elsewhere in this report. Until these procedures are accomplished we believe it is impossible to adequately assess and evaluate the needs of the District.

#### RECOMMENDATIONS TO THE LEGISLATURE ON FINANCING OF THE DISTRICT

A. We recommend that, in the event the Legislature places direction of this metropolitan function in a discretionary body with authority over other metropolitan governmental functions as well as mosquito control, the mosquito program be financed from the same tax sources utilized to finance operations of such other functions, and that broad finance authority be given such new body.

B. We recommend that no additional taxing authority be granted by the Legislature to the existing District until and unless a thorough control program and operations review has been undertaken by the District Board and until, on the basis of such review, additional taxing authority can be justified as being needed.

In any event, prior to the automatic increase in taxing authority which the District will enjoy following the 1970 census, we recommend that the Legislature review the program and needs of the District in the light of the potential increase in revenues which will then be available to the District.

The following findings and recommendations regarding specific aspects of the existing District's operations, programs and practices are directed to the existing Board, to any successor board which may be created by legislative action, and to the Legislature, where appropriate.

### III. District Operations Review

#### Extent of District Area, and Scope of Operations

1. The District is a voluntary arrangement subscribed to by six counties, Hennepin, Ramsey, Anoka, Dakota, Washington and Scott. The Carver County Board has never wished to join, we have been told. The 1959 special legislation provided that

any county can withdraw from the program. There is no doubt in our minds that an areawide mosquito control program covering at least the six counties now in the District is necessary and would be crippled by the withdrawal of any county now participating.

2. The District Board has never adopted written guidelines as to desirable scope and intensity of operations as one moves away from the larger population centers, but the Director has stated that his practice is to effect control first in areas of highest population density and then to move out to the extent available time and manpower allow towards the fringes of the District. He tries to stick to this plan regardless of complaints or pressures which might be forthcoming from parts of the District area, he says.

The Director's stated practice is, we believe, a sound policy which should be officially subscribed to in writing by the District Board. The cost of effecting the same or even close to the same degree of effective mosquito control in sparsely populated fringe areas of the District as can be accomplished in heavily urbanized areas would be prohibitive, we believe.

The question is pertinent because we are told that the reason that more men and money are needed is to increase control effectiveness in the outlying rural areas some of which are the source of complaints to the District staff and to some county commissioners on the District Board.

More control may well be needed in parts of the District following heavy rainfall periods. We are not in a position to judge this. We believe, however, that policy questions in this area should be clarified. Achieving the maximum degree of freedom from mosquitoes for the maximum number of people within available resources should be the policy of the District, not operations geared to respond to the most vocal areas of the District. The adoption of a control program with stated goals and of new operations plans, as we recommend elsewhere in this report, should clarify to District residents in different areas the degree of mosquito control they can reasonably expect.

3. The policy of maximum protection for the maximum number of people within available resources could well dictate the need for operations in some instances outside of the District area so that effective protection for urbanized areas within the District can be afforded. The biting mosquito has the capacity to fly at least 15 miles. On occasion, given certain weather conditions, it has been known to swarm both into and out of the District covering considerable distances.

Even more important from the point of view of effective control is the need to keep large numbers of fly-in mosquitoes from laying eggs in breeding sites already being controlled within the District. These eggs can remain fertile for as long as four years and produce mosquitoes when inundated following heavy rainfall.

Chanhassen Township and Minnesota River bottom areas near Chaska in Carver County are heavy mosquito breeding areas sufficiently close to Shakopee, parts of Bloomington and developments in Eden Prairie to indicate that regular mosquito control is needed in this part of Carver County. There may also be other areas outside of the District producing large numbers of mosquitoes which on occasion provide a nuisance to built-up areas within the District. The legislation currently provides that the District may enter into agreement with adjacent counties providing for

control operations outside of the District where needed. It should be strengthened to assure that the District may engage in such control work even if local government in such non-District area refuses to contract with the District.

4. An increasingly important part of the District's operations will be the need to provide protection to large outdoor recreational areas including area parks increasingly being developed for heavy use, public beaches, camping sites, a metropolitan zoo, amusement parks, etc. Protection for such areas will require increased "mist spraying" and other forms of combating the adult mosquito as well as larval stage and/or "prehatch" control. Close coordination of District operations with those of agencies operating large recreational areas will be required. This, we understand, already exists, to some extent, although the District's resources, we have been told, can only provide for sporadic "adulticiding" work now.

5. The current policy of the District is to honor any requests of private property owners that operations not be conducted on their lands, although county supervisors attempt to persuade farmers, gun club owners and others to allow District employees to inspect and treat breeding sites on their lands.

The current law clearly allows the District to enter upon, inspect and treat any sites, "subject to the paramount control of the county and state authorities."

We understand that some of the most significant mosquito breeding sites in the District are not being treated due to the objections of landowners and pressures being brought to bear on local and county officials in some areas. We believe that the Board should adopt a clear policy, that, where deemed necessary by the Director for the effectiveness of the control program, District employees be allowed to treat sites even if the site owner objects, as provided for in the law.

#### RECOMMENDATIONS ON SCOPE OF OPERATIONS

A. We recommend amendment of the law so as to provide that no county can withdraw from the District to the jeopardy of the total metropolitan area program, and to provide that the District may conduct control operations in areas adjacent to the district upon the decision of the Board that such operations are needed.

B. We recommend that the District adopt and publicize written policies and goals relative to the purposes of the operation and the manner in which operations are to be carried out. Operations guidelines to achieve the purposes and goals should also be adopted. Operations plans should be related to control effectiveness goals and the overall control program plan.

C. Future operations plans should be developed taking into account the increasing needs for control in large outdoor recreation areas. These plans should be developed in cooperation with agencies operating such recreation areas.

D. We recommend a change in the District's policy so that, where deemed necessary by the Director for the effectiveness of the control program, District employees be allowed to treat mosquito breeding sites even when a landowner objects to treatment being conducted on his land. Such policy is clearly provided for in the District law.

Location and Operation of Permanent Headquarters  
and Deployment of District Personnel in the Field

1. The Metropolitan Mosquito Control District operation can best be described as an extension of traditional county government together with centralized purchasing, contracting for helicopter services, truck rental, lab services and radio communication. Operations, however, are largely conducted on a county by county basis, as is hiring. Structurally, administrative control of the program is from the District headquarters to county supervisors located at county headquarters, to county foremen, to the crews in the field. Crewmen operate in their county of residence unless emergencies dictate temporary transfer of crews into other counties. Extensive radio communication is used.

2. The highly seasonal and sporadic nature of mosquito control work emphasizing the abatement method used by the Metropolitan Mosquito Control District creates problems for a governmental unit with no other function to perform besides mosquito control. These problems have dictated the manner in which the District conducts its work. Most employees are hired on a seasonal basis (April to September). The trucks they use are rented for the active control period only.

3. The District maintains a central headquarters and six separate county headquarters on a year-round basis. It employs a central office staff plus county supervisors and foremen - a total of 40 people - full-time year around for a control operation that is accomplished almost entirely under the District's current control program between March and September, a period of about six months. Under the current plan we see little justification to the year-round operation of six separate county headquarters.

4. We believe that permanent headquarters should be located and maintained on the basis of the overall needs of the District and in close proximity to major breeding site complexes which threaten the heavily populated areas, not on a county by county basis, one per county. Mosquitoes do not recognize county lines.

If operations were reoriented in the suggested manner, we believe that more effective mosquito control per dollar of expenditure could be achieved, provided the control program itself was the soundest possible within available resources. Furthermore, the tendency of District employees to think of themselves as employees working within one county and for one county would be lessened.

RECOMMENDATIONS ON HEADQUARTERS AND DEPLOYMENT OF PERSONNEL

A. We recommend that as part of a revised operations plan headquarters be maintained on a regional basis, not a county basis. In this connection, whatever permanent headquarters are maintained should not be called county headquarters.

B. We also recommend, whether or not the headquarters are consolidated or their locations shifted, that the District consider closing some headquarters during the winter months. (If the District undertakes a breeding site elimination program, this might effect the above recommendation. Similarly, if District operations became coordinated with operations of other governmental functions, the possibility of joint use of facilities possibly justifying year-round maintenance of regional headquarters might be considered.)

*C. We recommend that deployment of District crews be governed by the needs of the total District control program without regard to county lines.*

#### Year-Round Use of Permanent Personnel

1. The committee questions whether the apparently high ratio of full-time supervisory personnel to seasonal workers is warranted under the current control program. Year-round supervisory personnel outside of the central District headquarters currently include six county supervisors and 26 county foremen, and on the average there are 60-100 seasonal workers being employed at any given time during the period between early April and late September.

It is argued that a cadre of full-time, year-round experienced men is needed to train and direct the seasonal help, even though some county commissioners tend to agree with our committee that much of the off-season work (maintenance of equipment, updating of maps) which is performed by permanent supervisory employees is "make work".

2. Unless the District comes to utilize permanent employees for off-season site elimination control work, or unless a coordination of governmental functions occurs so that Metropolitan Mosquito Control District employees can be usefully engaged in winter work in other governmental occupations, we see little justification for the year-round employment of as many as six supervisors and 26 foremen.

3. If the District, after the study we recommend elsewhere in this report, were to undertake coordination of an engineering program aimed at breeding site elimination in cooperation with county and municipal engineering departments, the need for the current number of year-round help might be justified. Under such circumstances we believe that supervisors and foremen might be usefully deployed under the direction of a district engineer or consulting engineer to identify some of the smaller but critical breeding sites which might be drained or filled. Supervisors might then work with county or municipal engineering personnel to see to the implementation of such a site elimination program.

Another related function in which permanent employees might become engaged would be a systematic program of working with public and private highway and building contractors to minimize the creation of new potential breeding sites resulting from new construction projects, and to maximize opportunities to eliminate existing breeding sites through cooperation with contractors. Some of this work is already being done on occasion by county supervisors. We are told that, even without a concerted program, active breeding sites are being eliminated in the District at the rate of at least 400 per year through urban development.

4. In the long term it would be desirable to increase spring "prehatch" control work, if and when new safer insecticides now being tested are approved for use. Also the need for more adult mosquito control work at large public parks will increase. As these trends develop, careful consideration should be given to how available personnel could be utilized so that they would be actively engaged in effective control work for as long as possible during the year. Prehatch control, an effective and economical method of abatement, is accomplished in March, April and May. Adult mosquito control is employed in the summer and is often needed in early fall, after the need for larval control ceases in mid-September.

RECOMMENDATIONS ON USE OF FULL-TIME PERSONNEL

A. We recommend that the District review whether the current number of full-time, year-round supervisory personnel is needed.

B. In its comprehensive review of the control program methods and procedures recommended elsewhere in this report, the District should consider maximum use of full-time personnel.

IV. Hiring and Personnel Practices Review

1. Currently all hiring and promotion is conducted on a county by county basis. The county commissioners, we are told, play an intimate part in these processes in that they recommend for employment substantially all full-time employees and about 90 per cent of the part-time workers. All applicants for seasonal jobs are interviewed by the Director, who then ranks the applicants and meets with the county commissioners from the county where there are openings for purposes of making personnel selections for that county.

When there is a full-time job opening in a county it is usually offered first to a part-time man who has performed well in that county in the opinion of the Director and his staff, the county supervisor, and the county commissioners from that county. Promotions of full-time men are handled on the same basis.

2. Justification given for the county by county approach to personnel matters is the existing operations structure, and the desirability of employees being located close to their work and being familiar with the areas in which they will work. We believe, however, that, if headquarters and operations were maintained by region without regard to county lines as we have recommended, these desirable needs could be as easily met as under existing county by county operations. We believe, therefore, that all hiring and promotion should be on a District-wide and not on a county basis.

3. There is no merit system for either full or part-time employees. We believe that permanent employees at the supervisor and foreman level should be under civil service if at all possible. The State Civil Service system would seem the logical one for these employees at this time.

4. Civil service does not appear necessary at this time for seasonal help. However, we believe that the District would benefit from Board enunciation of a personnel policy under which all job applications for temporary help would be made directly to the District Director who would have sole responsibility for hiring and promoting seasonal help. This responsibility should be exercised under express direction from the Board to hire at all times the most qualified available temporary help.

The criteria for evaluation and promotion of seasonal employees now apparently in use appear adequate, subject to the abolition of the county residence requirement.

5. No instance of abuse of the personnel function now being exercised by the elected county officials has been brought to our attention; nor have we sought

any such information. But, we find no justification for commissioners' being involved in hiring and promotion below the central office level. We believe that adoption of the changes we have suggested--civil service hiring and promotion for permanent help, and full authority in the Director to hire and promote temporary help on a merit basis--will protect the board and its members from the legitimate charge that the current system lends itself to patronage.

#### RECOMMENDATIONS ON HIRING AND PERSONNEL PRACTICES AND POLICIES

A. *We recommend that all hiring and promotion be on a District-wide rather than a county by county basis.*

B. *We recommend that the District investigate putting all supervisors and foremen under State Civil Service.*

C. *We recommend that the District officially adopt a merit policy for hiring and promotion for seasonal positions and that authority to hire and promote these employees be vested exclusively in the District Director.*

D. *We recommend that the Board not involve itself in personnel matters beyond setting policy, determining structure and numbers of positions, and setting wage rates on recommendation from and in consultation with the District Director. The only positions which the Board should fill are those of District Director, Business Manager, District Office Field Supervisor, and Aircraft & Equipment Coordinator.*

#### V. Control Program Review

1. Control efforts are concentrated on the species of mosquitoes which are of most annoyance to humans. By far the most important is the "aedes vexans", which hatches from May to mid-September and which accounts for 80 to 90 per cent of human mosquito bites. In addition the District expends some efforts fighting several species of hearty spring mosquitoes with long life spans which hatch in or near woodland pools for some weeks often beginning in March.

2. The control program of the District differs from control programs of other mosquito districts in that it has become increasingly concentrated on one method of mosquito abatement ("larviciding"). This method involves the killing of mosquitoes during the stages between the hatching of mosquito eggs and the development of the adult airborne mosquito - a period of 15 days or less. These "brood fights" with the aedes vexans occur during the five-month period from May to mid-September after sufficient rain has fallen to fill with water the lowlying sites in which the mosquito eggs have been previously laid. Aedes vexans lay their eggs mostly in temporary floodwater areas, mostly near potholes.

The control operation is a sporadic one which could be compared to the operations of a fire department which is needed intermittently, but in the case of the Metropolitan Mosquito Control District, for only five or six months every year. Following heavy rain there will be intensive activity in an attempt to kill all aedes vexans mosquitoes in as many breeding sites as possible before the mosquitoes mature. But, following a "brood fight", in a prolonged dry spell, little control work is needed. Similarly, control cannot be satisfactorily accomplished during the time the rain is falling.



We are told that there is insufficient manpower during periods when control is needed. But most of the men are not needed at times when larviciding cannot be accomplished - from mid-September to April, and during some spells in the summer depending on weather conditions.

3. Other methods of abating mosquitoes besides that emphasized by the Metropolitan Mosquito Control District include:

- . "Primary methods" aimed at elimination of breeding sites through ditching, filling, water level control, etc. (not used by the District, although such methods represent a key part of the programs of other districts we have studied).

- . "Prehatch" control involving sowing of insecticide at breeding sites before mosquito eggs are flooded and hatched (used by the District selectively during March and April but decreasingly used because of concern for possibly harmful effects on fish, birds and wildlife of "persistent" insecticides such as DDT).

- . "Adulticiding" - attacking the mature mosquito (selectively used by the District as demands warrant and resources permit).

4. In a district as large in area as the Metropolitan Mosquito Control District and containing as many potential mosquito breeding sites, extensive survey, map and map revision work is necessary. In addition, site inspections and inspection record keeping is necessary to effective control. Under the current practice of the District, inspections of all breeding sites are generally made and a lab analysis report is received before larviciding is undertaken.

While we understand that care must be taken not to larvicide unnecessarily, we question why, as 1964 season figures show, 38.02% of all salary and wage costs of the District were expended for inspection and mapping, while 36.65% of these costs went for actual control work of all kinds. (See page 31)

We also question why, after eight years of operation during which major emphasis has been placed on mapping, aerial survey, and especially on inspection work, it has not been possible to zero in more satisfactorily on the critical breeding sites of the aedes vexans mosquito which the program is geared to combat. Those sites represent only approximately one quarter of the total number of sites carried on the District's books. It should, we believe, be possible to evolve a program in which, under certain weather conditions, those critical sites are well identified and would be automatically treated with minimum preliminary inspection work necessary. This problem, essentially one of correlating a large amount of data, would naturally lend itself to use of a computer, we believe.

5. We have reviewed minutes of the 12-man District Board made up entirely of county commissioners, and have met with some of the commissioners and extensively with the District staff. We do not believe that the District Board itself, the policy body responsible to the public for operation of this governmental function, has concerned itself sufficiently with the direction of the control program, with possible alternatives to the existing control program, with setting goals and standards, and with measuring effectiveness of performance.

There has been no comprehensive review of the program or long-range planning since the operation was originally established on the basis of a control

plan evolved by the present Director and approved by the county boards in 1958. Except for the reduction in prehatch control, we understand that no specific reorientation of the existing control program is under study or contemplated, although the District staff has been receptive to the possible inclusion of a mosquito breeding site elimination program, provided more funds were available.

#### RECOMMENDATION ON CONTROL PROGRAM REVIEW

We recommend that the Board of the Metropolitan Mosquito Control District immediately undertake an in-depth review of the District's control program with a view towards establishing specific goals for the program. Specifically the review should include:

i) Careful analysis of the effectiveness of the control program as currently conceived. This should involve assembly and study of data so that measurable standards to judge program effectiveness could be established. We recommend that serious consideration be given to the rental of a computer and programming expertise out of currently available funds. This, we believe, would be of great aid in bringing together existing data to pinpoint positive breeding sites of biting mosquitoes and to correlate this data with available rainfall and temperature information. In this manner we believe a plan can be developed to reduce much otherwise costly and time-consuming inspection work so that a greater portion of the District's efforts can be devoted to actual mosquito control.

ii) Along with careful evaluation of the current control program, its improvement, and the levels of effectiveness which could be achieved under it, we recommend careful consideration of other means of mosquito control as possible parts of an overall coordinated control program. Specifically we recommend:

. That an engineer be hired or contracted for by the District to direct a feasibility study on what could be accomplished through a systematic program of site elimination utilizing ditching, draining, filling, water level control devices, etc. plus cost estimates for such a program. Primary mosquito control through site elimination work conducted by mosquito districts themselves or in conjunction with other governmental units is a major part of the program of every other major mosquito control program of which we have knowledge. The counties might cooperate in financing such a feasibility study if funds are not found to be available from the District's current resources.

. That continued and expanded study be undertaken in consultation with the University, State government departments, or outside consultants regarding the effect of insecticides, DDT and other chemicals, on fish and wildlife. The committee has observed that the District is curtailing use of "prehatch" control, an effective and economical control device. With the development of new "non-persistent" insecticides, prehatch control might become a more significant part of the District's control program.

iii) Development of specific long-range goals for the control program and evolution of a specific plan to accomplish the goals. Such plan should justify the method or combination of methods proposed to be included in a plan. It should also justify exclusion from the program of possible methods of control not included as part of the plan.

## VI. Review of District's Financial Administration

1. The State Public Examiner audits the District only every other year. In the intervening years the Board conducts its own audit. We have no reason to believe that this practice has resulted in any irregularities; however, as a matter of sound public administration we believe that the outside audit by the State Public Examiner should be conducted at least yearly.

2. The District from its inception has adopted a policy of segregating 5 per cent of its tax revenues for a capital fund although the capital needs of the District are limited due to the District's sound policy of renting and contracting on a seasonal basis for most major capital items such as trucks and for use of helicopters. The estimated book value of the District's equipment and furniture is about \$77,000.

It would appear that the cash flow needs of the District prior to the first yearly receipt of tax revenues can be met from carry-over funds from the previous year's operation. It appears that the capital fund balance kept in a separate bank account (but not at interest) seldom if ever has fallen below the \$60,000 range and runs in a given year as high as about \$90,000.

We believe that the District Board should review this policy. If the separate capital fund is maintained, we believe that no more should be maintained in the fund than is needed to meet capital expenditures anticipated in the budget for that year. Surplus funds might then be segregated at interest in the form of a separate reserve.

The site elimination feasibility study we have recommended might be financed out of available funds in the capital account.

### RECOMMENDATIONS ON DISTRICT FINANCIAL ADMINISTRATION

A. *We recommend a yearly rather than a biennial audit by the State Public Examiner.*

B. *We recommend that the District Board review its policy of maintaining a separate capital fund with a view to maintaining in such fund only such amounts as may be needed for capital replacement needs and new equipment in a given year.*

### SCOPE OF REPORT

The charge to our Committee from the Citizens League Board was as follows:

"Assess the performance of the Metropolitan Mosquito Control District since its creation as a single-purpose district in 1958, including such questions as possible need for governmental review of its budget and operations, size of the district area, size of its mill levy, utilization of full-time employees and hiring practices.

"COMMENT--The Mosquito Control District is an independent governmental agency covering six counties and with an operating budget in excess of \$750,000 annually. So far as we have been able to determine, its policies and procedures have not been subject to public review since its creation. Our committee will be conducting what may be the first review of the operations of a very important agency in this area."

The Committee as a whole has met 12 times and, in addition, toured and inspected the Hennepin County Headquarters of the District, located in St. Louis Park. The chairman, individual committee members, and the staff have also met on several occasions with the District Director and the Business Manager at the District Headquarters located at 797 Raymond Avenue, Saint Paul, Minnesota.

The District Director, Mr. Albert W. Buzicky, met with the full committee at three meetings, and the District Business Manager, Mr. Charles L. Langer, met with the committee twice. Mr. James Linton, the Hennepin County Supervisor for the District, conducted the tour of the Hennepin County Headquarters and addressed the committee and answered questions, along with Mr. Buzicky. Three County Commissioners--the District Board Chairman, Idor A. Pederson, Washington County; Mr. Albert A. Kordiak, Anoka County; and Mr. Robert Janes, Hennepin County--met with the committee at one luncheon meeting.

The cooperation extended to our committee by the Metropolitan Mosquito Control District Board and staff in providing information, patiently answering questions at meetings and on the telephone, and generally in accommodating our committee and staff has been magnificent. The committee wishes to thank the Control District Board and staff, and wishes to state that all recommendations and suggestions made in this report are made in a constructive vein in an attempt to strengthen and improve a commendable program which the committee feels is absolutely essential to the comfort and well-being of the population of this metropolitan area.

As is so often true in a report such as this, the main emphasis is placed upon aspects of the situation with which the committee is concerned, and in which it would like to see changes. Little or no mention is made of those aspects of the program and operation which the committee finds commendable, for example, the excellent record-keeping, the apparent high morale and lack of workmen's compensation claims, the cost-saving volume purchasing, the rental and economic use of trucks and equipment and of airplane and helicopter services, and other aspects of the program.

Members who participated in the committee's work include: Harry Sutton, Jr., Chairman; Mrs. N. J. Berkwitz, Richard Bowles, Robert A. Chapman, Mrs. John I. Coe, Henry F. Dever, Charles R. Gesme, Byrne Ghostley, James L. Jones, Robert Jones, Reginald Kroskin, Kimball L. Mason, Mrs. J. Paul McGee, William D. Musolf, Mrs. Stanley G. Peterson, Philip F. Sherman, Owen B. Stubben, Falconer Thomas and Arvid

Wendland. The committee includes members who are experts in personnel, public and business administration, and engineering.

### HISTORY, BACKGROUND AND RECENT DEVELOPMENTS

Mosquitoes have apparently been a serious problem in this region from the time of its first settlement. Located as it is at the confluence of three major rivers and in a terminal moraine area studded with thousands of poorly drained pot-holes, the area is a natural breeding ground for mosquitoes, particularly the most annoying, biting type of mosquito which lays her eggs in low-lying areas most likely to be covered by runoff water during the thunder showers we traditionally experience in the summer months.

Efforts to begin a comprehensive program of mosquito abatement in this region began following the second World War at the urging of the Minnesota Department of Health in cooperation with the United States Public Health Service. In 1949, a proposal for a program to operate in Hennepin and Ramsey Counties was put forth, but never seriously considered because of lack of interest on the part of Minneapolis and St. Paul city governments. This proposal involved a public health concept and was based on the experience in other parts of the country in which successful programs had been undertaken involving a multi-faceted approach to mosquito control, with heavy emphasis upon engineering work to eliminate mosquito breeding sites. Thus, the proposed control budget of slightly over \$300,000 included provision for the purchase of engineering equipment such as a crane excavator and for the hiring of engineers as well as entomologists and the superintendents, foremen and laborers to actually carry out the program.

In the fall of 1953 a senior sanitary engineer of the U. S. Public Health Service proposed to the Minnesota Department of Health a \$35,000 preliminary survey to take place during seven months of 1954 and to be conducted by a director with the aid of three engineers and five entomologists. The proposal stated: "This preliminary survey and planning operation is deemed most important and essential during a mosquito breeding season beginning on May 1 for an intelligent and economical approach to a budget and program for control work."

The proposal went on to outline a projected cost for a first season of operation in 1955 of approximately \$400,000, including about \$125,000 worth of new capital equipment, pipes for drainage, and insecticides. Approximately \$30,000 was estimated for administrative salaries for a director, assistant director, bookkeeper and stenographer, and approximately \$200,000 for engineers, superintendents, foremen, entomologists and laborers. The projected per capita cost of this program, with heavy emphasis on site elimination work, was 40¢ per capita in Hennepin and Ramsey Counties.

But the preliminary study was not funded, and the plan came to naught. However, during 1956 and 1957, summers of above average rainfall, mosquitoes abounded, and the public demand for organized mosquito control increased. This time, leadership was taken by the State Entomologist's office, a former branch of the Minnesota Department of Agriculture.

Utilizing a 1947 law which enabled local communities and counties to expend monies to control tent caterpillars, and armed with an Attorney General's opinion that under the tent caterpillar statute and the Joint Powers Act counties could contract with each other to provide for a joint program, the six metropolitan area counties currently a part of the mosquito control program established the

current District in the fall of 1957 to be effective as of January 1, 1958. The tent caterpillar law contained a 50 cents per capita limitation which carried over to the mosquito district and was then embodied in the special law passed for the district during the 1959 legislative session.

The county commissioners in late 1957 hired the present District Director, who drew up the plans for the operation of the district in the manner in which the operation and control program has been carried out ever since. For the first year of operation, 1958, 105 persons were hired and the six county headquarters were rented and furnished.

The special legislation passed in 1959 is contained in Minnesota Statutes, Chapter 399.

#### Selected Excerpts from Law Governing Mosquito District

Commission: "The district shall be operated by a commission which shall consist of two members from each county within the district. Commissioners shall be members of the board of county commissioners of their respective counties, and shall be appointed by their respective boards of county commissioners. . . . The terms of the commissioners shall be one year commencing on January 1 of each year. . . . The officers, who shall be commissioners, shall be a chair, a vice-chairman, and a secretary, no two of whom shall be from the same county. . . . Each county in the district shall have one vote. Each commissioner shall have one-half vote, but if only one commissioner from a county is present, he shall have one full vote. The majority of the voting power of the commission shall be a quorum although a smaller number may adjourn from time to time. . . ."

Powers: "It may take measures to control mosquitoes in the district in accordance with expert and technical plans. It may employ and fix the duties and compensation of a director who shall develop the mosquito control program of the district and shall supervise its execution; such Director shall be an Entomologist. It may employ and fix the duties and compensation of a business administrator who shall administer the business affairs of the commission. It may employ such other persons and contract for such other services as may be needed to carry out the program of the commission for mosquito control in the district, except that no person may be employed by the commission who is related to any commissioner. . . .

"It may purchase materials, supplies, and equipment as may be necessary to carry out the program of the commission for mosquito control in the district. . . . It may enter into agreements with counties, cities, villages, boroughs, or towns of the state of Minnesota outside of the district to conduct mosquito control activities in these political subdivisions in order to effectuate mosquito control in the district. . . . It may perform whatever other acts are reasonable and necessary to carry out the general and specific powers of the commission. . . .

"Members of the commission, its officers, and employees, while on the business of the commission, may enter upon any property within the district at reasonable times to determine whether mosquito breeding exists thereon, and such person may take all necessary and proper steps for the control of

mosquitoes on such property as the director of the commission may designate. Subject to the paramount control of the county and state authorities, commission members and officers and employees of the commission may enter upon any property and clean up any stagnant pool of water, the shores of lakes and streams, and other breeding places for mosquitoes within the district. . . .

Financing: "The method of providing funds for the commission shall be as set forth in this section. Each county in the district shall levy a special tax each year in order to defray its share of the cost of the activities of the commission, which share shall be based on population. This levy shall not exceed two mills in any year in excess of charter or statutory millage limitations and shall not exceed 50 cents per capita within the county making the levy. Such per capita limitation shall be calculated on the basis of the last official federal census. Such levy where necessary may be made separate from the general levy of the county and may be made at any time of the year, however, no participating county shall levy any tax for mosquito control except under this act. . . .

County Participation: "Any county may terminate its participation in the district by written notice given to the chairman of said commission on or before July 1 of any year and such termination shall become effective on January 1 of the following year. . . .

"Any county contiguous to the district may become a party to the district whenever the county board of such county petitions the district to be admitted and the commission by resolution gives its consent to include such county in the district. . . .

Cooperation with Other Agencies; Advisors: "The commission shall cooperate for the purposes of research and protection of public health and welfare, with the State Department of Agriculture, Dairy, and Food, the State Department of Health, the State Department of Conservation, the University of Minnesota, the State Agricultural Experiment Station, the State Highway Department, the U.S. Department of Agriculture, and U.S. Public Health Service.

"The Commissioners of Agriculture, Dairy, and Food, of Conservation, of Highways, the Secretary and Executive Officer of the Minnesota Department of Health, and the head of the department of Entomology and Economic Zoology of the University of Minnesota shall act in an advisory capacity to the Metropolitan Mosquito Control Commission and the Director of said Commission shall furnish to each of these departments a copy of the operational plan and pertinent technical reports of said district."

(Minnesota Statutes, Chapter 399)

\* \* \* \* \*

The financing formula provided for in the law provides for a constant and level number of dollars to be available for the District's operation for a ten-year period, following which the new decennial census will automatically increase the funds available to the District to a new limit which would then hold for ten years. This

assumes no change in the 50 cents per capita limitation in the bill, and that the county commissioners will continue to provide for levies based on the full 50 cent limit. The 1960 census figures which will control the amount available to the District through its 1971 operating year produce \$751,969. The increase for the 1972 year would amount to approximately \$160,000, and the subsequent increase in the 1982 year would be an additional \$280,000, based on Metropolitan Planning Commission population estimates for the six counties.

However, the county commissioners do not believe that the 50 cents per capita limitation provides sufficient revenue for operation of the mosquito control program. In their own words, in material distributed to our committee, they have this to say:

"Current budget estimates on eight years of experience indicate that one dollar per capita would more closely provide the degree of mosquito control which the public expects. Since 95 per cent of the population lives in the middle 50 per cent of the district, the highest degree of control is obtained there. Under heavy mosquito production conditions, even in the middle 50 per cent there may be annoying for limited periods. Complicating the per capita restriction is the limitation of the budget for a ten-year period by tying in to the last federal census. With continually rising costs, this simply means that mosquito control service has to be curtailed in spite of the imposition of very stringent cost-saving measures by the staff. The commission is giving very serious consideration to a request that the next legislature lift this restriction."

#### Proposals for Metropolitan Structure

A deluge of plans, ideas and observations are currently being put forth on the need for some structure of government to plan and coordinate the operations of those governmental functions which by their nature must be handled in some manner on an areawide basis. Almost all of these proposals, for example those of New Hope Mayor Milton Honsey and the recent proposals of Governor Rolvaag and others, have called for the creation of a new unit of government to direct these functions, and have suggested that the mosquito control program be put under the direction of the policy body to be created for the new metropolitan unit.

However, there are also suggestions that five or seven or eight counties in the metropolitan area might band together in some fashion to aid in the handling of these areawide problems. An inter-county council has recently been formed, and its chairman, Robert Janes, Chairman of the Hennepin County Board, proposed on February 19 that the existing Metropolitan Mosquito Control Commission law might be amended so that the existing district board could handle such matters as air pollution, waste disposal, water pollution, and possibly other functions.

#### INFORMATION FROM EXPERT LITERATURE AND FROM EXPERIENCE OF OTHER DISTRICTS

Literature on mosquito abatement methods emphasizes one point: All possible stress whenever possible should be put on "primary" methods of control - site elimination through drainage and filling and water level control.



For example, a basic work\* states:

"Effectiveness and Economy

"Principles basic to all abatement work are: 1) that mosquito production shall be eliminated as completely as is possible under the existing conditions and 2) that primary methods of abatement such as drainage or naturalistic control shall be used to the fullest extent possible, in preference to secondary measures such as oiling. These are the ideals which should be aimed at. Situations will be encountered in which they cannot be attained practically or within reasonable cost limits, and under such circumstances some form of compromise must be resorted to; but the fundamental aim of effective control of mosquito production and emphasis on primary abatement measures should never be lost sight of . . ."

And again, the same work states:

"The general principles in the selection and application of abatement methods may be summarized as follows:

1. Adopt those measures or combination of measures which, with due regard to economy of operation, will be effective in eliminating mosquito production as completely as possible; place emphasis on primary methods of abatement such as drainage, in preference to secondary methods such as oiling.
2. Adapt the abatement measures to the species of mosquitoes and to their particular breeding habits in the region; . . .
9. Use the winter months for maintenance work on drainage systems, for construction of new drains and other permanent structures, for overhauling equipment and getting it in shape for next season's campaign, and for planning the following year's work; . . .
11. Usually do large construction jobs by contract;
12. Develop an effective staff organization which will know its species of mosquitoes, its territory, and its people; keep key men continuously employed throughout the year and secure in their jobs, if necessary assigning foremen and inspectors to laborers' duties during the winter."

(Emphasis added)

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\* From "Mosquito Control - Practical Methods for Abatement of Disease Vectors and Pests" by William Brodbeck Herms, Sc.D. and Harold Farnsworth Gray, Gr. P.H., second edition revised and enlarged, 1944, New York - The Commonwealth Fund.

Another work\* states:

"Where public agencies are established for mosquito control, filling, ditching, diking, and the installation of pumps, tide gates, and other control structures are frequently the most basic procedures."

The 1964 Annual Report of the South Cook County Mosquito Abatement District was studied by our committee. Site elimination work plays a large part in this District's program as in the program of other districts we have learned of. The 1964 report has this to say on their operations in this sphere:

"Engineering Section

"Activities of the Engineering Section, unlike those of other sections of the District, are not primarily restricted to a given season but are continuous throughout the year. A registered professional engineer directs and controls this section. The most important activities of the engineers throughout the year are as follows:

"1. Source Reduction: By source reduction we mean actual elimination of a mosquito production source or the improvement of a water site to decrease its production potential. In determining when a project shall be undertaken, the first consideration is to determine what the field records show about the importance of the area as a breeding site. Obviously, an area which does not produce mosquitoes in large numbers will not justify sizeable engineering costs to eliminate it. In some cases it may be cheaper to treat an area by hand rather than by employing engineering methods. . . .

"During the fall season of 1964, 1,700 lineal feet of ditching was made in Rich Township, Section 27 to drain a vast area of land which produces great numbers of mosquitoes. One Thousand two hundred lineal feet of ditching was dug in Thornton Township, Section 19-A in the fall of 1964 to drain another swampy area. . . .

"4. Surveys: Surveys are also made at all seasons of the year in helping to determine the feasibility of a source reduction project or to assist the operating divisions in evaluating a problem. . . ."

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\* "The Story of the Mosquito and Its Control", New Jersey Agricultural Experiment Station, College of Agriculture, Rutgers, the State University, New Brunswick, in cooperation with the New Jersey State Mosquito Control Commission.

## DISCUSSION OF FINDINGS AND RECOMMENDATIONS

### Control Program

The philosophy of the District is that of nuisance control rather than the control being a public health measure, although it is true that some mosquitoes can transmit encephalitis and other diseases. The District is not a regulatory authority. But the law gives broad powers to the District to enter upon private lands to effect treatment. In this regard, however, the District has a policy of staying off the land of private persons who object to District employees coming onto their property.

There is no conflict between District operations and private spraying by homeowners and some village governments which is entirely directed at adult mosquito control. In fact, these operations complement those of the District.

It is important to note that the District does not fight all types of mosquitoes indiscriminately. It is only interested in those types which bite human beings. There are actually about 50 species of mosquitoes in Minnesota, of which about 40 can be found in this area. About 20 of these 40 are important, but by far the most important is the "aedes vexans", which is accountable for 80 to 90 per cent of the human mosquito bites. The control program of the District is almost exclusively geared to fight the aedes vexans mosquito although some work is done in combating other human-biting species which hatch in March and April.

The aedes vexans lay their eggs on damp grounds in low areas which are subject to flooding. The eggs are very resistant and, while flooding must occur to hatch the eggs, the eggs can remain dormant for up to four years and still hatch.

Upon being flooded, the eggs hatch into a larval, aquatic state which lasts for six to seven days while the organism is grazing on the bottom of the small bodies of water which result from spring floods and runoff. Next the mosquito goes into what is called a pupa stage, which is a transitional stage that lasts for seven to eight days prior to the mosquito becoming airborne.

The mosquito is an air breather with a small tube. There are two ways, therefore, that one can fight this mosquito; one, larvicide, a method of attacking mosquitoes at the bottom of the flooded pools while they are in the larval state, and two, spreading a small, slick film of oil on the top of these small bodies of water to make it impossible for the mosquitoes to breathe.

The District uses a light oil film, approximately two gallons per acre. This oil evaporates in one day and can cause no harm to other forms of life besides the mosquito. They mix with the oil a small amount of a spreading agent. In addition, they use various forms of insecticide, including two types of DDT, one a granule which they sow to the bottom of the ponds to attack the larval state, and the other a 50% DDT powder which they spray in a very light dose (two-tenths of a pound per acre) from the air and by hand. However, they do not use this material in pasture areas or other areas where there might be any harm to livestock, or any chance of affecting water supply of humans or animals.

The average life of the female aedes mosquito, which is the biter, is two to three weeks, somewhat longer in damp weather. This species has a long flight

range. Generally, after the mosquito becomes adult, it is much less economical to try to control it, so the critical periods of control are the larval and pupa stages. The problem is that District employees must get to active breeding sites and cover as many as possible in a relatively restricted period. It should be noted here that one go-over of a breeding site per year will not necessarily suffice because the eggs lie dormant in the ground and a given rainfall may activate hatching of some eggs, but thereafter there may be additional rainfalls making a larger area of water and thereby promoting the hatching of additional eggs, etc.

### Prehatch Control

Before the active *aedes vexans* breeding season, which in Minnesota commences in May, it is possible to employ prehatch control measures. These involve sowing DDT granules in small amounts in known breeding site areas before they are flooded in the spring runoff. Aircraft and helicopters can be employed in this work for areas larger than about five acres, and the District employees do the work at the numerous smaller sites conducive to this control device.

In the last two years use of prehatch control has been somewhat reduced. Although there is no evidence of any damage to fish or wildlife from prehatch work of the District, despite constant testing and evaluation conducted in cooperation with the State and University agencies, the Director is concerned that the cumulative effect of use of DDT, a persistent insecticide, could produce undesirable consequences.

The committee believes that the District Board should make policy decisions on the use and on the reduction or increase in the amount of any control method involving chemicals or insecticides on the basis of the best available information from their staff, from other districts, and from the State Conservation Department and other agencies with which the District cooperates and shares information and research under the provisions of its law. Any decisions in this area should be based on scientifically supported data. In making these decisions the Board should bear in mind the economies of use of such control methods as prehatch, practice elsewhere in the country, and standards for use of insecticides set by appropriate agencies of the federal government.

The result of the District's reduction in the use of prehatch control has been to place even heavier reliance on larviciding - the use of chemicals (and oil) in fighting the mosquito in the larval and pupa stages after the flooding of the mosquito eggs.

This control method can be employed only during a period from April or May to mid-September, following significant rainfalls and before mosquitoes actually mature and are airborne.

### Adulticiding

The District conducts a limited but increasing amount of adulticiding, which means attempting to control the mosquito in its adult form. This they do primarily at public recreation areas and only when the mosquitoes are abundant in the adult state. The control here involves use of insecticides and spraying of bushes and undergrowth. New "non-persistent" insecticides are increasingly being used in connection with this work.

METROPOLITAN MOSQUITO CONTROL DISTRICT

FIELD OPERATIONS SUMMARY

DATA AS OF: March 1 thru Sept. 30, 1965

DISTRICT COMPOSITE

INSPECTION DATA

Number of breeding sites inspected	173,920		
Number of breeding sites dry	65,853	Percent	37.86
Number of breeding sites wet	108,067	Percent	62.14
Number of sites positive for breeding	38,949	Percent	22.39

AERIAL CONTROL

	<u>Helicop.</u>	<u>Fixed Wing</u>	<u>Total</u>
Fuel Oil: Number of gallons used	2,479	34,828	37,307
Number of acres treated	895	13,065	13,960
Number of sites treated	50	742	792
DDT Dust: Number of pounds used	39,253	20,533	59,786
Number of acres treated	38,195	26,420	64,615
Number of sites treated	717	278	995
10% DDT Granules: Number of pounds used	91,355	32,050	123,405
Number of acres treated	9,062	3,185	12,247
Number of sites treated	1,237	109	1,346
5% DDT Granules: Number of pounds used	64,224	60,830	125,054
Number of acres treated	15,950	15,541	31,491
Number of sites treated	607	529	1,136
Total number of acres treated	64,102	58,211	122,313
Total number of sites treated	2,611	1,658	4,269

GROUND CONTROL

	<u>Quantity Used</u>	<u>Acres Treated</u>	<u>Sites Treated</u>
Fuel Oil:	16,502 gallons	8,182	8,348
DDT Dust:	54,783 pounds	96,976	15,056
10% DDT Granules:	130,810 pounds	17,724	27,131
5% DDT Granules:	22,742 pounds	5,939	8,078
Totals		128,821	58,613

GRAND TOTALS - AERIAL AND GROUND CONTROL

	<u>Fuel Oil</u>	<u>DDT Dust</u>	<u>10% DDT Gran.</u>	<u>5% DDT Gran.</u>	<u>Total</u>
Number of acres treated	22,142	161,591	29,971	37,430	251,134
Number of sites treated	9,140	16,051	28,477	9,214	62,882
Number of gallons used	53,809				
Number of pounds used		114,505	254,215	152,182	

ADULTICIDING OPERATIONS SUMMARY

Insecticide	DDT Malathion Emulsion
Amount of Insecticide Used	80,206
Number of Applications	1,003
Number of Repeats	579
Number of Acres Treated	40,123

### Site Elimination and Water Level Control

In the original 1959 District "Operational Plan" the following comments on primary control methods were made:

"These techniques involve draining, ditching, filling, and shoreline modification. Although these methods usually provide permanent mosquito control they are expensive and will be undertaken only after more adequate information is available regarding the location of the most important mosquito breeding sites. In the future such methods would be considered only after public hearings permitting water conservation, wildlife conservation, and other interested agencies and groups to be heard. The MMCD does not plan to utilize any of these engineering techniques during 1959.

"The MMCD personnel will advise water shed districts, county and local engineers, contractors, and others regarding mosquito production in relation to water level manipulation in their respective jurisdictions."

The District since 1959 has never undertaken a primary control program although on a sporadic basis county supervisors have tried to work with private contractors and state and county highway departments to achieve some site elimination work in connection with new construction. Also, some useful work has been done in cooperation with the Army Corps of Engineers to eliminate mosquito breeding sites in connection with dredging and channel work on the Minnesota River.

We have recommended that, on a systematic basis through the hiring of an engineer or a consultant, the District conduct a feasibility study to determine for the first time on the basis of expert information and cost analyses, whether it should engage in a site elimination program such as is being carried on in every other major mosquito control program which we know of in the country. The decision not to engage in such a program, or even to conduct feasibility studies on this question, stems from a determination made by county commissioners in 1958 that such a program would be too costly. This determination was made despite the fact that the original control plan recommended by the Director at the inception of the District had included provision for systematic site elimination and control work, and the employment of engineering help in this connection.

This type of work - draining, ditching, water level control work- represents as much as 75 per cent of the effort expended by many mosquito control districts, particularly on the east and west coasts. But even in the midwest, Cook County, Illinois, for example, so-called primary control work through site elimination represents a major part of the overall program of the mosquito control district.

In connection with breeding site elimination, we should emphasize that we are not talking about elimination of any large or significant bodies of water in the District area. In fact, almost without exception, we are not talking about permanent bodies of water at all, but rather about temporary pools which form after heavy rainfall, and often dry up until such time as another heavy rain will again temporarily inundate these low-lying areas. These are the small "pothole" type of temporary floodwater areas, mostly quite restricted in size which the District calls "Type I" sites. The District's records show that these sites represent 85% of the District's total sites currently subject to control.

We were told that only 20 to 30 per cent of the periodically active breeding sites would lend themselves to a drainage and filling program at modest cost. Such a program, if undertaken after a study, might involve nothing more than some limited bulldozer work to fill in certain low-lying areas, and possibly the construction of simple drainage ditches so as to prevent the accumulation of temporary waters in certain low-lying spots.

We believe that even the possible elimination of one-tenth of the Type I sites might prove beneficial and economical over the long term. Considering the cost of constant recording, mapping, inspecting and treating (perhaps as many as five times per season) a large number of small insignificant pothole areas over a number of years, it is quite possible that a simple site elimination program might save money over the long run.

Similarly, the feasibility study should take into account the possibility of water level control through possible limited engineering work on the banks of larger swampy areas and through the possible construction of small dams in areas of permanent water. The whole problem in connection with the biting mosquito involves temporary water which causes the hatching of the mosquito eggs which have been laid by the female mosquito, not in the water, but adjacent to permanent water or in low-lying areas subject to temporary flooding. Therefore, if water level can be controlled in such a manner that permanent water bodies are not temporarily swollen, such control will go far towards eliminating the mosquito.

These possible methods of primary control work are entirely compatible with conservation efforts, in that they do not eliminate water areas conducive to fish or wildlife propagation, but are only concerned with eliminating temporary water sites and stabilization of the water level of permanent water sites.

#### Possible Breeding Sites

The six counties involved cover 2,850 square miles and comprise the largest area in which mosquitoes are being combated by a single authority in the United States. As the site survey chart shows, the number of sites on the District's books varies from 40,000 to above 50,000 depending on weather conditions. For example, with the heavy rains in 1965, areas which had not held water for many years had to be added to the District's records as possible breeding sites. Actually, while all recorded sites amount to as much as 14 per cent of the total land area of the District, the number of sites positive for breeding of aedes vexans mosquitoes amounts in number and acreage to only a fraction of the total sites or acreage on the District's books.

Data of the District on "sites positive for breeding", "sites treated" and "acres treated" are cumulative reflecting multiple inspections or treatments of any given site in a year. Also, "sites positive for breeding" reflect inspections showing positive for any kind of mosquito, not just the aedes vexans mosquito which is the one type the District primarily combats.

It has been impossible for us to learn, therefore, how many sites in a given year are positive for breeding of aedes vexans mosquitoes. We only know that the number represents perhaps about 25 per cent of all the sites recorded by the District.

METROPOLITAN MOSQUITO CONTROL DISTRICT

MOSQUITO BREEDING SITE SURVEY  
DISTRICT TOTALS (1960 - 1965)

		<u>Type I</u> <u>Pasture</u> (Temporary)	<u>Type I</u> <u>Non-Past.</u> Floodwater	<u>Type I</u> <u>Total</u> Areas)	<u>Type II</u> (Woodland Pools)	<u>Type III</u> (Permanent Marshes, Swamps)	<u>Type IV</u> (Water Courses, Streams, Ditches)	<u>Type V</u> (Dumps)	Total Acres	Total Number of Sites	Aver. Size of Sites
1960	ACRES	73,765	163,520	237,285	6,579	27,675	8,665,303	68	271,607	39,856	6.82
	SITES	11,160	27,126	38,286	510	1,034	3,464	26			
1961	ACRES	75,366	172,456	247,822	2,196	18,981	9,589,490	95	269,094	42,393	6.35
	SITES	12,316	28,853	41,169	378	814	3,835	32			
1962	ACRES	74,696	165,595	240,291	1,653	25,947	7,544,722	122	268,013	47,676	5.62
	SITES	13,033	32,597	45,630	804	1,202	4,197	40			
1963	ACRES	69,427	165,090	234,517	5,356	29,763	9,218,810	117	269,753	56,587	5.19
	SITES	13,184	34,741	47,925	2,360	1,599	4,654	49			
1964	ACRES	69,433	152,657	222,090	8,867	33,100	5,065,689	77	264,134	47,792	5.83
	SITES	13,256	27,189	40,445	2,731	2,110	2,483	23			
1965	ACRES	67,866	143,875	211,741	9,188	45,212	6,311,257	45	266,186	54,552	5.21
	SITES	13,381	31,799	45,180	3,287	2,595	3,456	34			



### Inspections

For the 1964 season (fiscal year ending February 28, 1965) the breakdown of total wage and salary costs of District employees as between functions was as follows:

Inspection	25.82%	Adulticiding	8.57%
Mapping	12.38%	Maintenance	5.96%
Larviciding	24.02%	Administration	6.36%
Fixed wing aircraft	1.97%	Laboratory	1.62%
Helicopter	2.09%	Sick Leave	.65%
Soil sampling	.08%	Annual Leave	2.16%
Technical	3.59%	Compensatory time	4.27%

As can be seen, mapping and inspection work accounted for greater cost than treatment work of all kinds accounted for.

Our concern is that not enough is going into actual control. Secondly, we feel that, with the great effort expended on inspections and mapping, it should be possible to zero in on the critical sites so that they are clearly identified and so that more control work at these sites without constant inspection and reinspection be accomplished.

It is counted as an inspection when a man goes to a site, whether it is dry or wet. If it is wet, he then automatically takes a larval sample and ships it in to the lab. We were told that there are about 4,000 samples in the mill at any given time during the peak summer season. In general, overall statistics show that there are three inspections for each treatment.

The employee cannot tell if the larvae present are aedes vexans, it is claimed. Thus it can be seen that for each pothole or possible other breeding site control work generally does not take place until the second visit to the site and until a sample of larvae has been analyzed at the District central office. An exception involves critical periods following heavy general rainfall when employees are sometimes ordered to treat all sites where larvae are present. In these instances there is not time to follow the routine procedures.

Other critical data concerns rainfall and temperature. The District maintains and monitors 26 rain gauges. It usually takes 1½ to 2 inches of rain to produce runoff enough to cause temporary flooding. The mosquito eggs will not hatch unless the temperature is at least 50-55 degrees Fahrenheit. The District collects this information along with the volumes of inspection data. They have tried to work towards a situation in which they could zero in on critical sites so that, given certain weather conditions, treatment could be accomplished automatically without inspection work. But they have never successfully correlated their data so that this could be done. The best they have achieved is a situation in which sites have been classified as to relative probability, and are inspected in such an order that high probability sites are inspected before sites at which vexans breeding is less likely.

For example, the following shows the 1966 operations plan for the District sent to county supervisors in February:

	<u>Red X Sites</u>	<u>White Sites</u>	<u>Pre- Hatch Sites</u>	<u>Blue Sites</u>	<u>Yellow Sites</u>	<u>Total Sites</u>	<u>Spring Crews</u>	<u>Summer Crews</u>
Anoka	3,345	5,277	1,658	136	457	9,215	3	15
Dakota	1,674	4,006	975	71	89	5,840	3	12
Hennepin	3,957	12,351	2,558	89	1,313	17,710	4	24
Ramsey	1,520	3,996	1,121	330	533	6,379	3	12
Scott	1,601	4,928	657	101	421	7,051	3	9
Washington	<u>2,257</u>	<u>3,366</u>	<u>819</u>	<u>142</u>	<u>173</u>	<u>5,938</u>	<u>3</u>	<u>12</u>
District:	14,354	33,924	7,788	869	2,986	52,133	19	84

On the color coded cards given to men in the field they are told to inspect sites in a given area in an order of priority visiting "Red" sites first. These are sites where aedes have been present for two years. "White" sites = insufficient information; "Prehatch" sites are part of "Red" but presumably have already been spring treated before most of the men get in the field in the summer (they will need inspection and perhaps further treatment later); "Blue" = other biting species important only in the spring; "Yellow" = sites dry for 3 years.

Inspection and related data are being collected and correlated at heavy expenditure in time and money. A computer properly programmed, we believe, could pull together the available data so that a more economical control program could be achieved - with more control and less necessity for inspection work. We have recommended that the District consider use of a computer.

Another related matter bears comment. Other districts claim that permanent employees at least are taught and learn to identify particular mosquito larvae. This is true in Cook County, for example. If employees could make positive identification of the aedes vexans larvae so that they could treat a site on the spot, great savings could obviously be accomplished.

The District places heavy reliance on "bitecollection" data obtained by employees at their homes in the evening and on the job in connection with adulticiding work. Before adulticiding the employee is supposed to bare his arm for a period and record how often he is bitten. Similarly, he is supposed to do this at home every evening during the summer and report the results.

Still other data are obtained from light traps maintained by the District.

METROPOLITAN MOSQUITO CONTROL DISTRICT

SUMMARY OF GROUND OPERATIONS ACTIVITY AND RELATED DATA

Item	Calendar Year					
	1960	1961	1962	1963	1964	1965
1. Precipitation	20.11"	16.56"	24.65"	16.03"	21.07"	27.97"
2. Light Trap Collection	206,342	112,615	318,973	197,179	86,701	243,471
% Aedes Vexans	86.2%	80.3%	87.2%	80.4%	83.9%	79.6%
3. Larval Collections	10,992	10,607	24,373	19,641	19,607	27,639
% Aedes Vexans	53.4%	41.9%	39.8%	31.4%	45.4%	35.8%
4. Evening Bite Collections						
Total No. Mosquitoes	3,805	2,749	5,445	4,903	6,426	5,894
Total Collections	281	354	452	556	788	563
Average Per Collection	13.5	7.8	12.1	8.8	8.2	10.5
5. Daytime Bite Collections						
Total No. Mosquitoes	14,932	17,139	58,513	37,328	45,632	48,589
Total Collections	1,206	2,138	4,964	3,875	5,408	5,414
Average Per Collection	12.3	8.0	11.8	9.6	8.4	8.9
6. No. of Inspections						
Prehatch	11,885	17,456	29,483	49,093	44,568	33,577
General Larviciding	119,639	103,697	133,986	161,289	155,999	140,343
Totals	131,524	121,153	163,469	210,382	200,567	173,920
7. No. of Sites Treated						
Prehatch	10,740	16,124	22,925	26,347	25,922	18,930
General Larviciding	36,101	24,964	31,644	37,950	44,355	43,946
Totals	46,841	41,088	54,569	64,297	70,277	62,876
8. No. of Acres Treated						
Prehatch	65,388	86,165	128,030	64,869	56,869	48,689
General Larviciding	194,728	170,439	211,873	159,093	213,827	202,445
Adulticiding	11,064	23,132	27,847	27,049	39,693	40,123
Totals	271,180	279,736	367,750	251,011	310,389	291,257
9. Total Cost						
District Operations	\$560,386	\$546,638	\$710,199	\$697,036	\$722,370	\$735,000 (Est.)
10. Trend in Estimated Unit Costs						
Per Inspection	\$ 4.26	\$ 4.51	\$ 4.41	\$ 3.31	\$ 3.60	\$ 4.23
Per Site Treated	\$11.96	\$13.30	\$13.01	\$10.84	\$10.28	\$11.70
Per Acre Treated	\$ 2.06	\$ 1.95	\$ 1.93	\$ 2.77	\$ 2.32	\$ 2.52

METROPOLITAN MOSQUITO CONTROL DISTRICT

WORK ANALYSIS FIGURES FOR SIX (6) YEARS FOR PREHATCH  
AND SEVEN (7) YEARS FOR GENERAL LARVACIDING

Year	<u>PREHATCH</u>			<u>GENERAL LARVACIDING</u>		
	Number of Inspections	Number of Sites Treated	Number of Acres Treated	Number of Inspections	Number of Sites Treated	Number of Acres Treated
1959	-	-	-	64,086	14,492	136,219
1960	11,885	10,740	65,388	119,639	36,101	194,728
1961	17,456	16,124	86,165	103,697	24,964	170,439
1962	29,483	22,925	128,030	133,986	31,644	211,873
1963	49,093	26,347	64,869	161,289	37,950	159,093
1964	44,568	25,922	56,869	155,999	44,355	213,827
1965	33,577	18,930	48,689	140,343	43,946	202,445
Average	31,010	20,165	75,001	125,577	33,350	183,803

Daily Averages per Crew

18.93	12.31	45.79	23.07	6.13	33.77
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WORK ANALYSIS - ONE-MAN VS. TWO-MAN CREWS

	<u>Inspections</u>	<u>Breeding Sites Treated</u>	<u>Acres Treated</u>
Average of 7 two-man crews	25.2	6.4	16.4
Average of 8 one-man crews	<u>21.6</u>	<u>6.4</u>	<u>14.9</u>
Difference	3.6	0	1.5

### Control Program Effectiveness

We have found it most difficult through extensive study of District data and interrogation of the District staff to judge the effectiveness of the program. In general, of course, there will be more mosquitoes in a wet year, although this depends somewhat on the manner in which the rains come - in sufficient amounts per rainfall to cause flooding, etc.

While clearly there are less mosquitoes than prior to the advent of the program, it is not clear that program effectiveness in terms of mosquito control has improved appreciably over the last several seasons. Meanwhile, of course, the cost of the program has increased somewhat. The committee questions whether under the current control philosophy and program appreciably greater effectiveness can be achieved.

These problems while tough require urgent attention by the District Board, we believe. Review of the Board's minutes reveals little active consideration at least in recent years of the important questions we think are raised in the control area. For these reasons we urge that the Board and staff of the District undertake a comprehensive review of the control program.

### Operations

In the 1965 season the District used 91 vehicles, 65 of which were rented for a period of five to seven months. These were half-ton pickup trucks, 40 of which were rented for seven months at a cost of \$72.47 per month, and 25 of which were rented for five months at a unit cost of \$92.47 per month. All rented trucks in 1966 will be rented for six months. The District-owned vehicles are 7 station wagons for the county supervisors and field supervisor, and 19 pickup trucks for the foremen which are equipped with winches to aid in pulling other vehicles out of the mud, etc.

The District on bid basis has utilized extensively small aircraft and helicopters. In 1966 only helicopters will be used. The air operations contracts in 1965 cost about \$60,000. In addition, the District owns quite an amount of equipment needed for spraying and dusting work by employees, plus hip boots and other personal equipment.

### County Headquarters

The operational headquarters of the District (County Headquarters) are located in St. Louis Park, Hennepin County, in St. Paul in Ramsey County, in Anoka in Anoka County, in Farmington in Dakota County, in Jordan in Scott County, and in Mahtomedi in Washington County. In the case of Dakota and Scott Counties it would not appear that the headquarters have been located from the point of view of directing operations from locations near the fast-growing parts of the metropolitan area. The District claims, however, that in these counties it was impossible to find rental quarters "closer in".

In addition, during the summer the District operates out of sub-headquarters which are really spots at which men can report for work near areas needing control. Some equipment and supplies are maintained at these spots at no cost to the District, apparently a sensible arrangement.

The District's records show one supervisor per county, 5 foremen in Anoka (although we are told one works in Hennepin) 4 in Dakota, 6 in Hennepin, 4 in Ramsey, 3 in Scott, and 4 in Washington.

#### Year-Round Personnel

Our contention that the ratio of permanent supervisory help to seasonal workers is too high stems from two factors. One, the short control season - April to mid-September for larviciding, a little longer into the fall for the adulticiding work done, and limited pre hatch work this year pretty much restricted to March and April. There are at least five months when no control work whatsoever is accomplished.

It should be noted, however, that the permanent help often work long periods of overtime in the summer. They are paid for this, not through overtime pay, but by being given compensatory time off in the fall. This time averages nearly one month per man in addition to normal vacation time. It is the contention of the District that, when this is taken into account and considering the need for winter map and equipment maintenance work, the permanent help is quite well occupied most of the year. We cannot agree. However, we believe that if these men could be engaged in site elimination planning and work in the off season, they would be better occupied.

Secondly, we disagree with the District on the question of how much of the foremen's time is spent in actual control work. The District contends that this figure is as high as 85%. Their own figures from 1964, however, show that two-man crews, often a foreman and seasonal "crewman", accomplished only four more inspections (25 vs. 21) per day than one-man crews, treated no more sites per day than one-man crews (6.4), and treated only 1½ acres more per day than one-man crews (16.4 vs. 14.9). Essentially, therefore, when the foreman is out in the field, unless he is working alone on his own sites which is generally not done, except weather permitting in March he is operating in a supervisory capacity.

It should be noted that as a result of the District's study noted above, the switch-over has been made to a situation in which mostly one-man crews are now used. This seems a wise economy.

We agree that, in a highly decentralized situation such as is necessary in mosquito control work, with many men each with a truck out in the field during periods when control can be accomplished, competent supervision is needed. We believe, however, that with the hiring of superior seasonal help, mostly students, supervision can be kept down and we even believe that a college student in his second or third year of summer work with the District could perform a supervisory function over less experienced summer help.

#### New Counties in the District?

The argument is made that the District does not want Carver County in the District because, based on 1960 census figures, Carver would produce only \$10,679 in revenue for the District. We were told by the commissioners that this would not be nearly enough to provide effective control throughout Carver County, a very large area.

This argument, we believe, represents too narrow a view of the District's function in one sense and perhaps too broad a view in another sense. If, for the protection of metropolitan area as a whole from mosquitoes, Carver County should be in the District, we believe it should be in. But bringing Carver County in should not, we believe, necessarily guarantee Carver mosquito control throughout the county area. Presumably, as Carver grows and urbanizes, greater control efforts would be needed in Carver. Initially, however, if Carver were in the District, control in Carver should be geared primarily to protect growing urbanized areas close enough to Carver so that work is needed in Carver. In addition, growing areas in Carver like Chaska would need protection.

Another large factor related to Carver County is the recent large land purchase in Carver by the Hennepin County Park Reserve District for a large area park. When this land is developed there will very definitely be need for extensive mosquito control work in and near this major area park site. Looking ahead even further, similar need for mosquito control will be evident in the area park lands now being purchased on the Crow River which provides the boundary between northwest Hennepin and Wright Counties. Some of this park land may be acquired across the river in Wright County so that the park could encompass both sides of the river. When this park is developed for large-scale use it will be necessary for the District or any successor group to operate in Wright County. This should not necessarily mean, however, even if Wright joins the District, that a commitment should be made to protect all residents of Wright County from mosquitoes.

We believe these observations should be made because they go to fundamental questions of the concept of metropolitan mosquito control in our area and questions of governmental structure. We do not believe that the District should be a vehicle for separate counties to achieve a county mosquito control program, possibly with tax subsidies from more populous areas. If, however, for the benefit of the metropolitan area as a whole, a county should be in the District and help support the District, it can be argued that it should be in even though a particular county board might want nothing to do with the District. Similarly, if the needs of the District indicate that some measure of control is needed in parts of a county not a member of the District, it should be possible to effect this control even if some local residents or county board members might oppose District operations on a non-member county's lands, and we have recommended that the law be changed in this regard.

We have included in the report figures on existing and projected tax support per member county based on the existing 50 cents per capita maximum formula currently in the District's law. We do not believe that operations in a county should be tied to the degree of tax support provided by that county, even though the distribution of existing manpower and the location of existing county headquarters does not indicate to us that maximum potential for protecting the large urbanized areas of the District is being realized.

Rather, the control program and the operational plan to accomplish effective control should be entirely dictated by the needs of the metropolitan area as a whole with primary emphasis being given to a goal of attaining maximum possible relief from the biting mosquito for the maximum number of persons in the area consistent with available financial resources.

PROJECTED TAX SUPPORT FOR DISTRICT OPERATIONS, BY COUNTY

		<u>Anoka County</u>	<u>Dakota County</u>	<u>Hennepin County</u>	<u>Ramsey County</u>	<u>Scott County</u>	<u>Washington County</u>	<u>Totals</u>
1960 Census and	#	85,916	78,303	842,854	422,525	21,909	52,432	1,503,939
Current Revenue	%	5.7%	5.2%	56.0%	28.1%	1.5%	3.5%	100%
@ 50¢ per capita	\$	\$42,958	\$39,125.50	\$421,427	\$211,262.50	\$10,954.50	\$26,216	\$751,969.50
1970 Census (MPC Est.)	#	124,500	104,600	1,004,200	488,300	25,900	72,900	1,820,400
and Projected Revenue	%	6.8%	5.8%	55.2%	26.8%	1.4%	4.0%	100%
@ 50¢ per capita	\$	\$62,250	\$52,300	\$502,100	\$244,150	\$12,950	\$36,450	\$910,200
1980 Census (MPS Est.)	#	183,200	189,200	1,180,500	671,700	47,100	111,500	2,383,200
and Projected Revenue	%	7.7%	7.9%	49.5%	28.2%	2.0%	4.7%	100%
@ 50¢ per capita	\$	\$91,600	\$94,600	\$590,250	\$335,850	\$23,550	\$55,750	\$1,191,600



METROPOLITAN MOSQUITO CONTROL DISTRICT

SELECTED FINANCIAL DATA - FISCAL YEAR ENDED FEBRUARY 28, 1965

REVENUE FROM MEMBER COUNTIES

<u>County</u>	<u>Total 1964 Levy</u>	<u>County</u>	<u>Total 1964 Levy</u>
Anoka	\$ 42,958.00	Ramsey	\$211,262.50
Dakota	39,151.50	Scott	10,954.50
Hennepin	421,427.00	Washington	26,216.00
TOTAL: \$751,969.50			

OPERATING EXPENSES

	<u>Administration</u>	<u>Control Division</u>	<u>Board of Commissioners</u>	<u>Total</u>
Salaries, Wages, etc.	\$38,854.26	\$478,750.02	\$ 7,720.00	\$525,324.28
Rent & Bldg. Costs	2,968.68	19,187.14		22,155.82
Repairs & Replace.	180.33	5,605.17		5,785.50
Office & Gen. Supplies	1,980.81	5,846.85		7,827.66
Insecticides		20,269.23		20,269.23
Travel & Mileage	1,646.24	56,098.73	1,066.43	58,811.40
Air Operations		59,432.56		59,432.56
Insurance Expense	91.83	13,325.00		13,416.83
General Expense	5,318.05	4,029.02		9,347.07
Totals	\$51,040.20	\$662,543.72	\$ 8,786.43	\$722,370.35

SALARIES, WAGES, ETC.

	<u>Administration</u>	<u>Control Division</u>	<u>Board of Commissioners</u>	<u>Total</u>
Director	\$14,925.00			\$ 14,925.00
Business Administrator	11,383.20			11,383.20
Office Secretary	5,156.00			5,156.00
Accounting Clerk	5,210.00			5,210.00
Field Supervisor		\$ 8,843.40		8,843.40
Aircraft & Equip. Coord.		8,343.20		8,343.20
County Supervisors		44,958.20		44,958.20
County Foremen		162,316.47		162,316.47
Crew Personnel		223,659.19		223,659.19
Lab. Technicians		8,664.26		8,664.26
Clerk-Typist		3,570.00		3,570.00
Hospitalization & Medical	492.96	4,190.16		4,683.12
P.E.R.A. (Employer's Share)	1,687.10	14,205.14		15,892.24
Commissioners - Per Diem			7,720.00	7,720.00
Totals	\$38,854.26	\$478,750.02	\$7,720.00	\$525,324.28

METROPOLITAN MOSQUITO CONTROL DISTRICT

SALARY & WAGE SCHEDULE FOR 1966

JOB TITLE	NO. IN CLASS	ANNUAL SALARY	MONTHLY SALARY	HOURLY RATE BASED ON 1992 WORK. HRS.
<u>Permanent</u>				
DIRECTOR	(1)	\$16,270.00	\$1,355.83	\$ 8.1677
BUS. ADMINISTRATOR	(1)	13,020.00	1,085.00	6.5361
ACCOUNT. CLERK	(1)	5,460.00	455.00	2.7410
SEC'Y.-STENOGRAPHER	(1)	5,460.00	455.00	2.7410
FIELD SUPERVISOR	(1)	9,380.00	781.66	4.7088
A & E COORDINATOR	(1)	8,760.00	730.00	4.3976
CLERK-TYPIST	(1)	3,900.00	325.00	1.9578
LABORATORY CHIEF	(1)	7,800.00	650.00	3.9157
COUNTY SUPERVISOR IV	(1)	7,933.20	661.10	3.9825
COUNTY SUPERVISOR III	(5)	7,733.20	644.43	3.8821
COUNTY SUPERVISOR II	(0)	7,553.20	629.43	3.7918
COUNTY SUPERVISOR I	(0)	7,193.20	599.43	3.6110
FOREMAN III	(25)	6,533.20	544.43	3.2797
FOREMAN II	(1)	6,293.20	524.43	3.1592
FOREMAN I	(0)	6,053.20	504.43	3.0388
<u>Total Permanent Employees</u>	(40)			

Seasonal

LABORATORY TECHNICIAN II	-	500.00	3.0120
LABORATORY TECHNICIAN I	-	460.00	2.7711
CREW CHIEF II	-	-	2.30
CREW CHIEF I	-	-	2.20
CREWMAN II	-	-	2.15
CREWMAN I	-	-	2.05