CURA reporter

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CENSUS OF THE LAND: The Minnesota Land Use Map

The state of Minnesota is just becoming aware of important land use issues which must be dealt with in the next few years. How much land should be held in natural preservation? What are the appropriate sites and locations for regional industrial parks, regional commercial centers, regional airports, recreational and other public facilities? What are the effects of different land uses on the quality of streams and lakes in different regions of the state? All of these questions are related to present patterns of land use. These patterns have been determined by an innovative inventory, the Minnesota Land Use Map, which is one product of the Minnesota Land Management Information System (MLMIS).

MLMIS is a statewide land use inventory and data management project being developed by CURA and the Minnesota State Planning Agency. Additional support has been provided by the Upper Great Lakes Regional Commission, the Minnesota Highway Department, the Minnesota Land Exchange Review Board, the Minnesota Department of Administration and the Minnesota Department of Natural Resources. The primary goal of MLMIS is to improve the quality of environmental decisions made by Minnesota public officials by providing current accurate information on present land use, selected physical factors, economic and social data. Director of the MLMIS study is George Orning of CURA. Principal coordinator for the study is Les Maki of the Minnesota Department of Administration and CURA.

The project is achieving its goal in two ways:

By examining and revising present data collection and storage techniques relating to land use in an attempt to establish standards to be utilized in a statewide data system, and

By promoting long-term cooperation and coordination among researchers and public officials.

The Minnesota Land Use Map, one of the products of the land use inventory, represents a "census of the land" for the year 1969.

Land uses on the map are divided into 9 classifications:

Forested – A forty acre parcel in which the dominant land use consists of trees. To be considered forested, a forty must contain a scattering of trees whose crowns cover at least 10 percent of the land area.

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In This Issue

Environmental Council Formed

The need for a university activity directly addressing environmental quality has been recognized for some time. This is not to say that there have been no environmental programs at the University of Minnesota; on the contrary, several such programs, including teaching, research and public service, have been in existence for several years. There had not been, however, any formal attempt to coordinate programs, assemble information on existing programs, or explore possible new programs.

In the fall of 1969, Vice-President Shepherd appointed the *ad hoc* Intercollegiate Committee on Environmental Studies (InCESt). This committee was charged to examine existing programs in the University of Minnesota, to explore needs, and to suggest possible new or revised programs at the all-university level relating to the environment. The committee conceptualized the environment to include the natural physical and biological systems which comprise the surroundings of man and can operate without human input, and the human technological and organizational systems which interact with the natural systems with resulting modification of both. InCESt, made up of faculty members from various units of the Minneapolis and St. Paul campuses, and chaired by CURA Director John Borchert, met regularly during the 1969-1970 academic year and in June 1971 submitted its report, recommending the formation of a Council on Environmental Quality.

In October 1971 the InCESt recommendations were acted on and the All-University Council on Environmental

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THE MISSISSIPPI RIVER...How Do Minnesotans Feel About It?

The Mississippi River is many things to many people. It represents low cost water transportation to some, migratory waterfowl habitat to others and a convenient sewage disposal system to still others. It is variously described as a thing of beauty, a polluted mess, a fisherman's delight (or frustration), a tranquil river or a raging torrent. The Mississippi River is the focus of considerable attention and investigation at the present time. Much of this attention and study is in terms of water quality, municipal/industrial usage and recreational development.

A cooperative research effort of social scientists at Bemidji, St. Cloud and Winona State Colleges is producing "A Survey of Attitudes Towards the Mississippi River as a 'Total' Resource in Minnesota." This project is funded by the Office of Water Resources Research, U.S. Department of the Interior. The central purpose of this particular study is to survey attitudes about the river which are expressed through field interviews and mail questionnaires. This represents a preliminary review of findings to date and in no way represents a summary of the finished project. Completion is scheduled for September 30, 1972.

The study universe consists of the twenty-one Minnesota counties which front on the Mississippi River or through which the river flows. Scott and Carver counties have also been included, as they are generally considered to be part of the Metropolitan Area. Within these twenty-three counties reside some 2.33 million persons or about 61 percent of Minnesota's total population. Taken as a whole, the universe counties, from 1960-70, had a growth rate of 20.2 percent or almost double that of the state increase of 11.5 percent. Only three universe counties experienced population loss during the most recent census period.

Two techniques were used to sample attitudes held by persons: 1) a questionnaire was mailed to 5000 motor vehicle owners, selected at random, who lived within the twenty-three county universe; 2) personal interviews were conducted with over 100 persons living along or using the Mississippi for recreational purposes.

The questions asked involved attitudes on desirable and undesirable characteristics of the Mississippi River, spending leisure time on the Mississippi, uses of the river, prime sources of pollution and responsibility for control, and means of paying for pollution control. Generally

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PCA: Tough Job Ahead

The goal of the state legislature when it formed the Minnesota Pollution Control Agency in 1967 was to provide Minnesotans with an effective governmental instrument for environmental control and management. The hope was that the Agency, through its emission standards and enforcement powers, would and could abate pollution to the point where it would have no adverse effect on public health or normal life-styles.

After four years some inroads are being made toward meeting those goals, but as with any embryonic organization, the MPCA is frought with growing pains and frustrations. The entire environmental movement, in fact, is in a period where only the groundwork for effective pollution control is being laid. As national and state environmental legislation is developed over the next decade, people will begin to understand more clearly what is expected of them in the area of abatement action.

For now, controversy and confusion seem to dominate the continuing ecology debate. Should a company with a small profit margin be forced to close down if it cannot afford abatement equipment? Just what is "safe" when one talks about something like radioactive emissions into the environment? What overall standards should apply? Is zero discharge into the nation's waters realistic? Can industry afford it, and is it really necessary? Should the consumer have to assume the cost of cleaning up the air by paying $800 more for a new car?

All these questions, and more, are still basically unresolved, while many politicans are attempting to take advantage of the ecology movement. Industry generally counters that it cannot afford clean-up costs and that they are being forced to do too much, too soon.

Another question plaguing the environment is one of technology. The "state of the art" in such areas as sulfur dioxide removal from smokestacks varies from industry to industry, but for coal burning facilities it is at best shaky and unreliable. Recycling, which many claim is the ultimate answer to both solid waste disposal and unnecessary depletion of natural resources, is mostly at the study stage. In the opinion of PCA Public Information Director James Dunlop, until more scientific brainpower is put to work developing workable abatement equipment, it makes no sense to set tough standards.

Meanwhile, the MPCA continues to do its best, given present attitudes, standards for emissions, and technological feasibilities, to cut back on the amounts of contaminants entering the air and water and to provide for clean and efficient solid waste management.

The Agency, governed by a 9-member Board appointed by the governor to 4-year terms, has authority to set standards and follow up with enforcement to regulate the quality of Minnesota's air and water. The Board is served by a staff of 95, with authority to hire up to 145 during this biennium. The staff is headed by executive director, Grant J. Merritt, who is also appointed by the governor. All other MPCA staffers are covered by Civil Service.

The functions of the Agency staff are, principally, to evaluate the nature and cause of pollution problems within the state, to present reasonable, feasible solutions to such problems to the Board for its consideration and action, and to lend technical assistance to public and private bodies engaged in pollution control projects.

Serving under the executive director are four divisions: air quality, water quality, solid waste, and special services, each staffed with appropriate personnel in science and engineering as well as in other disciplines required for pollution control. As of June 1, 1972, there will be five district offices in Marshall, Rochester, Duluth, Brainerd, and Fergus Falls.

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those questioned felt that the Mississippi is beautiful but heavily polluted and therefore would rather spend leisure time on some other body of water. The river should be used mainly as a fish and wildlife habitat, but is actually used for waste disposal. Industrial waste and sewage disposal were judged the worst sources of pollution and the effort of all people working together was felt to be the only means of control. Assessing user fees against industry and business would pay for pollution control and federal monies could be taken from foreign wars and foreign aid, defense spending and space programs.

Additional questions were included to sample attitudes on more general environmental topics. In general respondents perceived that water pollution is most harmful with air pollution second; also mentioned were pesticide pollution, soil erosion, and destruction of beauty. A large percentage of urban respondents may account for attitudinal rankings.

In response to one question, 65% of the respondents felt that there is a major environmental crisis.

Three-fourths of the respondents felt that comprehensive long range planning is the ideal approach to environmental problems.

In response to a yes-no check list concerning ways in which individuals can work toward improving environmental quality, respondents say they would change in many ways. A little over ninety percent would use soaps instead of detergents, and returnable bottles and cans. Between eighty and ninety percent favor non-use of colored toilet paper and paper towels, reduction of pesticide use, sorting waste materials for proper disposal, adoption of stricter zoning regulations, and driving less powerful cars. Seventy percent would pay extra fees for excessive water use. Less than half would be willing to use fewer electrical appliances and less than a third would favor gasoline rationing. It appears that energy is not something respondents would like to see reduced in order to curb environmental degradation. A final general question concerning readership of selected environmental books showed nearly half of the respondents had read one or more of the listed books.

It can be assumed that through investigations of many kinds our knowledge of natural resources will become more complete and thus our use more rational. This preliminary study reveals some interesting and significant attitudes and perceptions which a segment of Minnesota's people hold concerning the Mississippi River. It is not too much to presume that public information programs, resource educational efforts, legislative deliberations and agency action can all benefit from having some knowledge of lay attitudes and perceptions regarding the Mississippi, our major river and an important natural resource.

Members of the research group include: Norman Baron — Geography, Winona State College; James Cecil — Political Science, Bemidji State College; David Ostenso — Geography Graduate Student, and Philip Tideman — Geography, both of St. Cloud State College. James Ludwig — Director of the Center for Environmental Studies at Bemidji State College serves as project coordinator. Joel Reed, formerly of the Sociology Department at Bemidji State College had a major part in the development of questionnaires used in the study. Eleanor Hanlon formerly of the Geography Department at St. Cloud State College did a considerable amount of preliminary work related to the organization of the project.

Progress reports on the study as well as several related research papers were given at a series of three public information seminars held on April 10, 11, and 13 at Bemidji, St. Cloud, and Winona State Colleges respectively. It is hoped that through these public information seminars some additional interest in the Mississippi River will be generated and that some of the research which is being carried on will be made known to the public.

LAND CENSUS (from page 1)

Cultivated — A forty acre parcel in which the dominant use consists of land which has been recently tilled or harvested mechanically.

Pasture and open — A forty acre parcel of non-forested land not used for any identifiable purpose. Examples are grazing land or abandoned farm land.

Water — A forty acre parcel in which the dominant land use is open and permanent water.

Marsh — A forty acre parcel in which the dominant land use consists of non-forested, shallow permanently wet, vegetated areas.

Urban Residential — A forty acre parcel containing five or more residential dwellings, and no commercial buildings.

Urban Non-Residential or Mixed Residential Development — A forty acre parcel containing at least one commercial, industrial, or institutional, development and may or may not contain residential development.

Extractive — A forty acre parcel in which the dominant land use consists of the extraction of minerals, including ancillary facilities. Examples are mines, tailing piles, gravel pits.

Transportation — A forty acre parcel in which the dominant land use consists of facilities for the conveyance of people or materials.

These land use classes are compatible with most public records and can be correlated with land ownership, property values and various natural resources inventories. As this is done, faster and more accurate answers will be available for questions such as:

How many acres of wet lands are there in Minnesota? How much of this does the state own?

What is the surface use of the land where the state owns only minerals? Who owns the surface?

How much of the good agricultural soil is cultivated? Where is the surplus high quality land?

How many Northern Pike spawning areas are there in Minnesota? How many are in public ownership? How many of these areas are being encroached on by development?

Aerial photographs of the entire state were secured for the spring of 1968 and 1969. The photos were then subdivided into forty acre parcels, the smallest consistent unit of the federal land survey system. In Minnesota there are approximately 1.4 million 40-acre parcels. The majority of Minnesota's roads and blocks of land, whether in public or private ownership, utilize the edges of forty acre parcels as boundary lines. The forty acre parcel edges are therefore easily identified on aerial photos in agricultural areas as field lines and roads; in forested areas as timber cutting boundaries; in urban areas as city streets.

The Minnesota Land Use Map illustrates how the interaction between man and nature has produced some wide variations in land use patterns across the state:

The predominance of cultivated land in the prairie areas of the west and south.

LAND CENSUS (Cont'd on page 4)

COUNCIL (from page 1)

Quality was formed. The first Council chairman is Dean E. Abrahamson, Associate Professor and Director of the Institute of Technology Center for Studies of the Physical Environment. The Council is now and will remain for the immediate future administratively associated with CURA until a permanent home is found either by the creation of an academic unit dealing with environmental quality or by moving the Council into one of the established academic units of the University. At present, the Council has representation only from the Minneapolis and St. Paul campuses of the University. Steps are now being taken, however, to assure Council representation from the other campuses of the University as well.

The Council concentrates its efforts on new activities and on activities whose success requires coordination between existing units of the University. This includes reviewing all legitimate requests for support of environmental efforts from any and all units of the University.

Other than the Council chairman and a small staff, it is not anticipated that the Council will have its own faculty. Rather, it will work through existing units of the University in developing its programs. Proposals will be entertained by the Council for support of seminars, courses, other multi-disciplinary learning programs, and for seed grants to aid in the development of research programs. Once approved, the Council will evaluate the activity, but will not otherwise exercise control of that activity.

The program of the Council includes:

Information Gathering and Dissemination

The Bulletin of Environmentally Related Courses and Programs was first published in October, 1971 through a grant from the University of Minnesota Center for Curriculum Studies. The Bulletin describes courses and programs relating to environmental studies in the various schools, centers, and departments on the Minneapolis and St. Paul campuses and at the Itasca, Cloquet, and Cedar Creek field stations. It is the purpose of this bulletin to make available a list of courses and programs that relate to the study of the environment, its problems, and its protection. The Bulletin does not include all environmental courses and programs at the University of Minnesota, but to be most useful, identifies only the most appropriate courses within the various departments. The Bulletin will be revised and published on a two-year schedule. Copies are available upon request from the University of Minnesota Bulletin Room, S-1 Morrill Hall, or from CURA.

A Newsletter will be published to disseminate information about environmental programs (teaching, research and public service) not only at the University, but insofar as possible at other institutions in Minnesota as well.

Clearinghouse Activities — The Council provides a mechanism for the exchange of information between all institutions engaged in environmental quality programs. These include such groups as the Minnesota Public Interest Research Group (MPIRG), the Minnesota Resources Commission (MRC), various state agencies, Minnesota industry, the Ecology Institute which may be formed as part of North Star Research, and the various Minnesota colleges and universities. Periodic workshops or symposia will be arranged to facilitate coordination between these various groups.

Environmental Education Activities

Curriculum Review — The Bulletin of Environmentally Related Courses and Programs brings together, for the first time, the courses currently being offered at the University in the area of environmental quality. The Council is reviewing these courses, arranging for the creation of courses or course sequences not now being offered, and identifying areas of redundancy in present course offerings. In addition, the University undergraduate distribution requirements will be reviewed and suggestions made for the inclusion of appropriate environmentally-related courses.

Referring Students — Students interested in environmental courses or programs (degree programs or special learning experiences, *e.g.*, intern programs) are referred to advisors drawn from the cooperating faculty. The Council maintains a registry of courses, special programs, intern programs, possible work openings, and active research activities which can utilize student participation.

Seminars — The Council will entertain proposals for the support of multi-disciplinary undergraduate and graduate seminars dealing with specific environmental problems. Initially, one such seminar will be arranged per academic year. It is anticipated that the 1972 seminar will deal with the roots of environmental problems in Minnesota and will be held in conjunction with the "Policy Assessment Group."

Funding Multi-Disciplinary Courses — Several multi-disciplinary courses having environmental emphasis are now being offered at the University. The Council has

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The ribbons of forested land along the Minnesota River and its tributaries in the midst of open prairie farming country in southwestern Minnesota.

The heavily forested non-agricultural northeast, location of the state's wood products industry and major source of clean water runoff.

The partly cleared "big woods" deciduous forest extending from southeastern Minnesota to northwestern Minnesota which lies between the non-agricultural northeast and the fertile prairie of the west and south.

The almost unbroken belt of extractive use extending about 90 miles from north of Grand Rapids eastward to Birch Lake in eastern St. Louis County.

The extensive marshland north of Red Lake and smaller marshland areas in Aitkin, St. Louis and Anoka counties — much of it surviving abortive attempts at farm drainage early in this century.

The major lake district in Minnesota shaped like a large C extending westward from the Twin Cities area to Kandiyohi County, northwestward to Otter Tail County, northeastward to Leech Lake and southeastward toward Mille Lacs.

The 500 square mile Twin Cities urban area, which contains about 1/3 of the state's urban land and half the state's population.

Knowledge of these characteristics of land use can improve the quality of public and private decisions related to the acquisition, protection, control, preservation and development of land. With this kind of information now available it will be possible to make land use decisions from a broader, more clearly defined perspective.

The Minnesota Land Use Map (approx. 48 x 55 inches in size) is now available from the Bulletin Office, 90 Coffey Hall, University of Minnesota, St. Paul, Minn. 55101. Cost: over-the-counter $2.50; postage paid $3.50. All Minnesota residents must add 4% sales tax. Checks should be made payable to the University of Minnesota.

Technology and Environmental Policy To Be Assessed

Environmental quality, and its social, political and economic implications, has become a matter of intense interest to all elements of our society. An integral part of discussions of environmental quality has been consideration of the role of technology. In a recent report, the University of Minnesota Senate Committee on Resources and Planning (SCRAP) begins the section entitled "Future Environments: Physical and Social" with the following statement:

> "It is the purpose of this chapter to raise conjectures about social and physical aspects of the environment. As will become evident, any scanning of the future horizon, whether the question relates to the inventory of natural resources or to the direction of the activities of mankind, must recognize the ubiquitous presence of technology. It permeates men's lives in such subtle ways that its resounding impact often goes unnoticed. It will not go unnoticed as we proceed to accumulate conjectures about nature and man."

This concern with the interactions between technological change and the physical and social environment has been expressed in a proposal to establish a "policy assessment group" at the University of Minnesota. This proposal was first put forth in the report of a seminar and summer study group sponsored by the Minnesota State Planning Agency and conducted by CURA during the 1969-1970 academic year. After comments on the first proposal were obtained, a revised version was prepared and advanced by the IT Center for Studies of the Physical Environment and the School of Public Affairs with the endorsement of the All-University Council on Environmental Quality.

The proposal to establish the "policy assessment group" was based on the following premises:

- that change in our society is dominated by technology;
- that no institutions exist to anticipate systematically the secondary implications of technology;
- that competitive pressures in politics and economics cannot be expected to guarantee that these secondary implications will be accounted for;
- that the present promotional process is operationally biased away from the consideration of secondary and detrimental effects;
- that in a society increasingly circumscribed by diminished space, resources, and individual privacy, this situation constitutes a serious defect.

The proposal in no way expressed an opposition to technology, *per se*; rather it is conceived as a mechanism to enhance and foster the overall desirability of any specific technology or policy.

The Policy Assessment Group is scheduled to be formed in July, 1972 and located in the School of Public Affairs with some yet-to-be defined ties to the IT Center for Studies of the Physical Environment. The multi-disciplinary group would be given the responsibility to prepare arguments on technologies which have substantial unexplored relevance to the natural and social future of the state.

The activities of the group would include:

- selecting topics, problems (an agenda) for study
- carrying on comprehensive research as to the secondary and long-term impact of the changes chosen for study, detailing present knowledge, gaps in knowledge and alternative means of countering whatever difficulties emerge as resultant from the policies studied
- publicizing the results of the research
- not assuming adversarial postures but to make available to anyone the results of the research

Initial funding for the Policy Assessment Group will come from the All-University Council on Environmental Quality with possible additional financial support from the School of Public Affairs. Such broad-based academic and financial support draws on a wide range of University resources to help cope with the interdisciplinary scope of the environment-technology question.

EARTH WEEK 1972

EARTH WEEK coincides with Engineers Week this year, so they are making the week of May 1-6 a joint effort. Economics, lifestyle and family alternatives, state and local environmental issues, technology and environment, and the United Nations Conference on the Human Environment will be subjects discussed at the University of Minnesota during Earth Week, 1972.

ELM Grows on Fourth Street

The Environmental Library of Minnesota (ELM) was organized in early 1970 with an awareness that each member of the ecosystem affects the whole. ELM is a library for the public, with free use available to all. The resources of ELM have, in large part, been loaned or donated by individuals. Reference materials include books, periodicals, newspaper clippings, slides, tapes and various research papers which are organized into 300 categories. Environmental issues involve more than the technical questions of the chemistry and biology of pollution; the library is devoted to incorporating material on the social and cultural, political and economic aspects of environmental problems. Though size compels ELM to focus on current and prospective issues rather than the past, the library is unique in the fact that everything is housed together.

Numerous books on general ecology and biology; specific topics such as organic farming, hunger, city planning; popular books by Rachel Carson, Paul Ehrlich, Rene Dubos, Ralph Nader are kept at the library. There is a large collection of U.S. Congressional documents on radiation, nuclear power, air and water

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selected the course offered as Social Science 3-402, "Ecology, Technology and Society," as the first such course to support. This course is described in the Bulletin of Environmentally Related Courses and Programs, as:

> "An examination of the impact of technology on society as seen by engineers, scientists and social scientists. The social problems associated with economic growth such as environmental consequences, the arms race, food and fertilization and population growth will be explored. Alternative strategies for meeting the problems will be examined."

The All-University Council on Environmental Quality is not, of course, the only unit at the University of Minnesota with concerns and activities in environmental studies. The Division of Environmental Health in the School of Public Health has had degree programs, research, and public service activities for many years. The recently formed School of Public Affairs is increasingly active in environmental matters. The Institute of Agriculture has formed an Agriculture Council for Environmental Affairs and on September 16 and 17, 1971 sponsored an all institute retreat, "The Institute and the Environment." (Copies of the proceedings of the Institute of Agriculture retreat are available from the Office of Special Programs, Institue of Agriculture. Bulletins and other descriptive materials regarding the programs of the School of Public Health, and the School of Public Affairs are available from the collegiate offices.)

A very effective effort to stimulate cross-disciplinary environmental programs has been made by the Institute of Technology (I.T.) through the formation of the I.T. Center for Studies of the Physical Environment. The I.T. Center was formed in the fall 1970 to encourage the creation of new courses, to act as a clearinghouse for students and faculty regarding research and teaching, to sponsor seminars and special programs, and to facilitate the development of interdisciplinary research programs.

With the existence of the All-University Council on Environmental Quality, it is hoped that these kinds of on-going programs can flourish at the University by increased awareness of each other and of new needs for environmental programs.

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pollution, population, and urban problems. The library is collecting and indexing pertinent bills from the Minnesota Legislature and a number of U.S. Atomic Engery Commission reports. The library's periodicals cover a spectrum of current thought and research. They range from ENVIRONMENTAL ACTION and MOTHER EARTH NEWS to AUDUBON and POLLUTION ABSTRACTS. Back issues of many periodicals both in and out of print and clippings from the four major metropolitan newspapers are also on file.

Since most resources are from private collections and there is not enough money to buy multiple copies, materials are not loaned for use outside of the library. A copy machine can be used at minimal cost. A small grant has been received under the Environmental Education Act from the U.S. Office of Education for the fiscal year 1971-72. This money will be used to expand the collection.

The library also serves as a center for: recycling metal and glass; distributing thousands of 3 x 5 dis"cards" and computer paper rejects; relaying eco-tips or news, exchanging spices, herbs, plant cuttings and ideas. The library is staffed entirely by volunteers who come from daily activities such as studying, raising children, and teaching, and who share a common interest in ecology and desire to promote understanding and change. George Bloom and Diane Lake have been the principal organizers of ELM.

Governance is by a monthly meeting which evolves into a congenial "please pass the sunflower seeds and oranges" rap. A rotating chairman sets up and runs each meeting, which naturally is scheduled for each night of a full moon. In general, those who do the work set the policy. The result is a mellow bunch of people who enjoy working with each other.

ELM is a place to extend your assistance. Slides on local environmental issues are of special interest; ELM will reproduce them and make copies available to the public. To make environmental information more widely available, back issues of periodicals to which ELM currently subscribes, similarly books, etc. would be appreciated. Your use of or participation in ELM makes it all the more worthwhile.

Come to visit ELM in the basement of the Southeast Branch Library.
1222 – 4th St. S.E.
Minneapolis, Minnesota 55414
Open: 1-10 pm, Monday – Thursday
1-6 pm, Friday and Saturday