FINAL REPORT

FEB 0 3 2003

1999 Project Abstract
For the Period Ending June 30, 2002

TITLE: Tools and Training for Community-Based Planning
PROJECT MANAGER: Deborah R. Pile, Local Planning Assistance
ORGANIZATION: Minnesota Planning
ADDRESS: Centennial Building; 658 Cedar Street; St. Paul, MN 55155
WEB SITE ADDRESS: www.mnplan.state.mn.us
FUND: Trust Fund
LEGAL CITATION: Carryforward Language: The availability of the appropriation for the following project is extended to June 30, 2002: ML 2001, 1st Special Session, Ch. 2, Sec. 14, Subd. 18, paragraph (a): 008b Tools and Training for Community-Based Planning. ML 1999, Chap. 231, Sec. 16, Subd. 8 (b) Urbanization Impacts Appropriation Language: Tools and Training for Community-Based Planning $225,000 the first year and $225,000 the second year are from the trust fund to the office of strategic and long-range planning to develop software, data, and training for local government planning for delivery of state geographic information systems data and models for social and environmental decision making.

APPROPRIATION AMOUNT: $450,000

Overall Project Outcome and Results

This project developed easy-to-use geographic information system (GIS) software, coordinated existing data and provided training to assist local governments as they worked to envision and choose their futures. Software and data are free to local governments.

The created software, EPICplanner, provides a viewer-friendly interface and data management scheme suitable for novice GIS users. Software features include easy methods to import and export geographic and tabular data into EPICplanner from other software, including ArcView GIS and Microsoft Excel.

EPICplanner includes a report builder and modeling feature to address more complex questions. The report builder allows users to answer questions about data and create charts. Modeling with EPICplanner gives users the options of creating customized planning application scenarios, or using the three models already loaded with the program: agricultural suitability, forest viability and development potential.

The Tools and Training project held eight GIS training sessions throughout the state. More than 120 attendees, representing 51 counties and nine regional development commissions, came away with software, data sets, an exercise manual and an increased awareness of the type and amount of data available for land use analysis. An additional 25 officials from five pilot counties were given one-on-one training sessions.

Project Results, Use and Dissemination

EPICplanner was featured in state-level conferences and newsletters, and has received a highly favorable reception from the planning and GIS communities. It is in use at the county and regional development commission level and is now being adapted for use in county all-hazard mitigation planning. The deadlines for these FEMA-required plans would be difficult to meet without EPICplanner.

The training guide, *Planning Places with GIS: A guide to using EPICplanner in local planning*, promotional brochure and Web site will continue to be used to increase awareness and use of the product.

Date of Report:	July 1, 2002
Date of Work Program Approval:	August 2001 (revised work program approved)
Project Completion Date:	June 30, 2002

LCMR Final Work Program Report

I. PROJECT TITLE: Tools and Training for Community-Based Planning

Project Manager:	Deborah R. Pile, Local Planning Assistance
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Total Biennial Project Budget:

$ LCMR	$450,000
$ LCMR Amount Spent:	$432,494
$ LCMR Balance:	$ 17,506

A. Legal Citation: Carryforward Language: The availability of the appropriation for the following project is extended to June 30, 2002: ML 2001, 1st Special Session, Ch. 2, Sec. 14, Subd. 18, paragraph (a): 008b Tools and Training for Community-Based Planning. ML 1999, Chap. 231, Sec. 16, Subd. 8 (b) Urbanization Impacts Appropriation Language: Tools and Training for Community-Based Planning $225,000 the first year and $225,000 the second year are from the trust fund to the office of strategic and long-range planning to develop software, data, and training for local government planning for delivery of state geographic information systems data and models for social and environmental decision making.

B. Status of Match Requirement: Not Applicable

II. and III. FINAL PROJECT SUMMARY:

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IV. OUTLINE OF PROJECT RESULTS:

- **Result 1 – GIS software enhancement and development:** Enhanced existing GIS programs to manage, analyze and map comprehensive planning information.
  Budget: $146,500
  Expended: $146,500
  Balance: -0-
  Completion date: June 2002
  Interim dates: Prototype or Alpha version – July 2001
  Test or Beta version – October 2001

This portion of the project involved enhancing EPPL7/EPIC to improve its functionality in a windows environment, adding necessary additional functionality, developing interfaces with ArcView and data systems, and writing the scripts or programs for decision-analysis tools. Staff evaluated the current functions of EPPL7 and EPIC, EPPL7's windows-based interface, and identify desired functions for local comprehensive planning, using findings from result 3. The resulting GIS planning tool, EPICplanner, expands the core functionality of EPIC to include a report builder and model builder, and also includes data sets tailored to local planning and a conversion tool.

Attention was given to ease of use, ensuring that screens and menus were user friendly, that data could be easily imported, exported and merged, and that options could be turned off to reduce complexity.

Import and export functions were improved to created a simple relationship between ArcView and EPICplanner and their existing data formats. Many GIS users work with ArcView and have data formated for it. These users can import data into EPICplanner, use its decision-analysis tools, then export results back to ArcView.

An Intable command was also created, allowing users to directly import tabular databases, such as 2000 census information for Minor Civil Divisions and local data sets.

- **Result 2 – Decision-analysis tool development and data packaging:** Built environmental, economic and social decision-analysis tools and combined with appropriate data.
  Budget: $147,000
  Expended: $147,000
  Balance: -0-
  Completion date: March 2002
  Interim dates: Prototype or Alpha version – July 2001
  Test or Beta version – October 2001
  Enhancements/additions identified – December 2001

Result 2 covered designing and developing decision-analysis models and assembling and packaging statewide data for local planning. The resulting product allows user to view and analyze the state regions and communities with tools and functions distributed in button and menu formats. They can select the standard EPICplanner statewide data sets or smaller user-defined study areas to quickly work with and analyze data sets.

Viewing data and making maps

With EPICplanner, users can quickly view data and create maps using standardized 30 and 100 meter data sets either statewide or by county, watershed or other custom built area. They can highlight areas of significance with vector and raster overlay options and create elevation profiles with the measurement tool. Simplified legends are tailored to planners' needs, replacing attribute codes with text, and the user-friendly file structure makes it easy to incorporation local data sets.

Users can display data on a map and query the map for useful information. They can see the map on the computer's window, control its visual appearance and print it or insert it into word processing reports. Basic features allow users to add cartographic features, view two data layers together, measure single and multiple segments and view elevation profiles.

Data management is critical for any successful GIS effort. EPICplanner uses a "planning gateway" approach in organizing statewide data and information into directories. The

planning gateway serves as a hub for spatial and tabular information that is ready to use for many different planning efforts. Data sets are linked to key attribute tables and metadata files. Directories are intended to provide a framework for organizing and using local data.

A more than 100 data sets and associated attribute tables were collected from state and federal agencies and categorized into directory structures. These base data sets are complete for the entire state, providing all local governments with a standardized starting point. Several data sets, like the location and type of cell towers, were previously unavailable to Minnesota governments.

In addition, a prototype process for bringing SSURGO and SSIS soil databases into the software was developed for several pilot counties. Adequate soils data proved to be the limiting data set for many counties. The process could be duplicated in other Minnesota counties lacking modern, digitized products to yield more detailed soil surveys.

Analyzing data with EPICplanner

EPICplanner data sets can be analyzed using the operations under the Analysis and Tools menus – including a Conversion tool, Intable function, Report Builder, buffer function and one-layer and two-way reclass features. Interfaces with Excel allow users to incorporate multiple fields from dbase files for in-depth study and to create charts.

The Conversion tool helps users quickly compute metric equivalents, lot sizes and numbers, and estimates of land needed for development. They can convert miles to meters and kilometers, input the size of an area and determine the number of lots it can contain, or forecast the number of future households and commercial/industrial land for a community.

Report Builder helps users generate statistics and create customized reports covering number of features, minimum/maximum/ average values, and area of features, plus create charts in Excel. It includes:

- **Feature count report –** quickly sums the number of features found in a layer for a specific geographic area. Data can be put into a pie chart or bar graph using Excel or other database managers.

- **Min/max/average report –** determine a layer's minimum, maximum and average values, as well as a layer's range of values.

- **Selected classes report** – determine the total area of selected features from a layer or all features within a geographic area.

Evaluating planning scenarios

Planning Applications, EPICplanner's "on the spot" modeling tool, helps users develop planning scenarios and get results for a county-sized area in as little as five minutes.

Users can address suitability, probability and likelihood scenarios by applying predefined models or creating their own. The drag and drop function allows users to rapidly reclassify data to depict spatial relationships.

The Planning Applications window allows users to view and run applications, as well as create and delete them. Three preset applications – agricultural suitability, forest potential and development probability – help users understand the structure and rationale of planning applications. Users can tailor these applications or creating new ones to address local needs.

Each Planning Application is composed of four considerations: jurisdiction, landscape, soils and infrastructure. Considerations are sets of related databases or components that influence the model.

Composite values for each consideration are developed by: 1. removing or "knocking out" components that are not compatible with a particular planning application, 2. assigning values for influential components through reclass, and 3. defining spatial relationships and impacts using buffer.

The Planning Application runs through each consideration and creates a new map for each knockout, reclass and buffer component. In addition, EPICplanner produces a new map for each of the four consideration and a final planning application map.

The modeling concept is new to the EPIC environment. Comparable commercial software is costly, difficult to use and time consuming to run.

- **Result 3 – Outreach and training:** Coordinated GIS software and tools development and testing with local governments; developed documentation and training materials, distributed software to local governments and conducted training.
  Budget: $156,500
  Expended: $138,994
  Balance: $17,506
  Completion date: June 2002
  Interim dates: Decision analysis tools selected – March 2001
  Beta tests done/changes identified – December 2001
  Training materials finalized – April 2002

This portion of the project ensured that products responded to the needs of local governments and that local level practitioners received the training and materials to use the products for maximum benefit in local planning. Efforts included conducting a survey of county planners to ascertain what types of tools they needed and what questions they are trying to answer, and working with state agencies to identify state data useful for local planning. Five pilot counties – Cook, Hubbard, Lake, LeSueur and Pine – kept the focus on local needs.

Once the decision-analysis tools and data were identified, the project continued to involve local governments and other cooperators in the testing and development. Test copies of

data sets and software were disseminated to pilot projects for feedback on suggested refinements. Pilot counties also helped finalize training materials.

Eight full-day training sessions were held, two each in Duluth, Mankato, Bemidji and St. Paul. Staff worked with the University of Minnesota-Duluth, Bemidji State University, Minnesota State-Mankato and University of Minnesota to establish the training locations, ensuring that equipment for and access to training were readily available across the entire state.

A flyer announcing the sessions was developed and sent to all county planning and zoning staff, as well as regional development commissions and state agencies. Notice also was placed on Minnesota Planning's Web site. More than 120 people, representing 51 counties and nine regional development commissions, attended the June 2002 training sessions. A training packet, including a manual with exercises, data packets and software on CD-ROMs, was created for the sessions and provided to each participant.

In addition, one-on-one training sessions were held with the five pilot project counties. Another 25 local officials attended these sessions. The one-on-one training sessions proved to be extremely useful to the pilot counties allowing for more localized applications and questions. Additional smaller training sessions, similar to the one-on-one training sessions for pilot counties, could have made the training portion of this project even more successful. Training was completed by June 2002.

A final training guide, *Planning Places with GIS: A guide to using EPICplanner in local planning*, was prepared along with final software and data disks. This 68 page guide includes 26 exercises with step-be-step instructions for using EPICplanner, plus a data dictionary with details about all the data sets. Finalizing these products after the training sessions insured that lessons learned were incorporated.

Costs under this result fell short of budget estimates due primarily to savings in printing and advertising. First, we were able to use previously purchased folders and in-house copy services for production of initial training materials. Second, we were able to copy and label most CDs in house, using a Minnesota Planning purchased duplicator. This reduced the cost of CD production to the cost of CDs and cases. This approach will also simplify ongoing duplication and distribution, and allow for easy updates. Finally, the Duluth training facility was offered free by UMD.

V. DISSEMINATION: An integral component of *Tools and Training* was disseminating free data packets and GIS software to local governments and training them in their use. A training manual, data packets and software on CD-ROMs were distributed through the June 2002 training sessions. Staff marketed the software through meetings with Regional Development Commissions and counties, as well as the Minnesota American Planning Association annual conference, local government association conferences, emergency management conferences and GIS/LIS conference, and is continuing to do so. Training on EPICplanner also was provided through two Government Training Service workshops in spring 2002. The software also was presented in a session at the 2002 ESRI International Users Conference.

Articles on EPICplanner, and its availability to local governments, appeared in the Minnesota American Planning Association's newsletter, *Minnesota Planning*, and in *GIS/LIS News*. In addition, Minnesota Planning's web site (www.mnplan.state.mn.us) was updated to profile the software. The web site also is used as a bulletin board for posting EPICplanner questions and updates. A new brochure profiling EPICplanner was prepared for broad distribution.

Additional enhancements to EPICplanner are already being pursued for all-hazard mitigation planning through a grant from FEMA. Minnesota's local governments must have FEMA approved plans; EPICplanner can quickly provide the maps and analysis needed for them. Specifically, the model builder can be used to develop models, such as flooding potential, and report builder can be used to create necessary charts. Data sets specific to hazard mitigation needs are also being added.

VI. CONTEXT:

A. Significance: Successful local planning is commonly hampered by the absence of useful data about local conditions and user-friendly technology designed to help assess the probable results of planning decisions. This project removed these barriers by providing customized GIS tools that support planning, by integrating needed data, and by supplying practical planning models. It built on and complemented other work at Minnesota Planning, including the Land Management Information Center efforts to develop useful GIS tools for clients and the Sustainable Development Initiative and Local Planning Assistance teams' work on local planning guides.

This project developed and packaged GIS software and a comprehensive collection of state data into easy-to-use planning tool kits. The kits were tailored to assist Minnesota communities in their local planning efforts. They include a computer software called EPICplanner and existing data useful for plan development, environmental assessments, and sustainable development analysis. Special features like the report builder and the modeling applications, designed collaboratively with the pilot counties, enable communities and citizens to envision and evaluate different development scenarios as they address local issues. The planning applications are successful because they allow for local input. Local communities have the ability to transform and customize the planning applications to complement the land use issues currently going on in their areas.

The Land Management Information Center had already developed EPPL7 and EPIC, two "first generation" planning tool kits with GIS software and data addressing several of the functions necessary for local planning. The Tools and Training project represents a significant step beyond what had already been done to create EPPL7 and EPIC, adding functions specific to comprehensive planning and sustainable development goals.

B. Time: Project was completed June 30, 2002. While the project development and training are complete, distribution of data and software materials will continue through Minnesota Planning. As noted under V. Dissemination, additional dissemination, use of and enhancements to EPICplanner are already being pursued for all-hazard mitigation planning through a grant from FEMA.

C. Budget Context: This project was built on the State of Minnesota's EPPL7 and EPIC geographic information system software, developed by the Land Management Information Center, and more than $30 million in environmental and resource data funded by the state. This included data on soils, wetlands, geology and land use, as well as digital aerial photos and elevation data. In addition, the project looked to the state's sustainable development and growth management studies, including the LCMR 1997 projects *Evaluation of Urban Growth Economic and Environmental Costs and Benefits* and *Reinventing the Agricultural Land Preservation Program*, for input on decision-analysis tools.

BUDGET:

Personnel:	$385,000		
		Software Specialist (65% time):	$95,000
		Modeling/Data Specialist (95% time):	$130,000
		Liaison/Training Specialist (95% time):	$120,000
		Student Workers (2-4 at 25% each):	$25,000
		Planner (20% time):	$15,000
		Note: All personnel will either be unclassified or contracted through the LMIC Service Bureau.	
Equipment:	$0		
Acquisition:	$0		
Development:	$0		
Other:	$65,000		
		CD-ROM production:	$10,000
		Publication of guides/training materials:	$15,000
		Office Supplies	$ 2,500
		Communications	$ 4,000
		Training Facilities Rental:	$ 4,000
		Local Mileage:	$ 500
		Outstate travel (for model development and critiques)	$ 5,000
		Other direct operating costs	$ 6,000
		In-State Travel Expense:	$18,000

In-state travel includes mileage, lodging, meals, phone, etc. for the following activities:

- Decision Analysis Tools Selection (5-6 on-site 2 day visits with projects) $1,250
- Local Government Users Interface (8-10 groups/ 2 visits each during project) $2,250
- Beta Testing Product Site Tests (3-4 sites, 2 team members on-site testing) $3,500
- Tool Kit Demonstration & Distribution (6-8 conferences, i.e. AMC, APA, MARDO,

GIS/LIS) Including exhibitor & registration fees, travel expenses $4,500

- Training Module for Tool Kits (2 day training at 8-10 sites at various sites state-wide) Travel costs for 3-person team $6,500

Total: $450,000

VII. COOPERATION: The Land Management Information Center's Service Bureau provided software and model development expertise. This work built on past EPPL7/EPIC work and contacts with the Department of Natural Resources, Board of Water and Soil Resources and other EPPL7/EPIC users. The pilot counties of Hubbard, Cook, Lake, LeSueur and Pine were critical in identifying desired decision-analysis tools and testing products. Finally, involvement of state agencies that collect and manage data and use it to evaluate environmental, social and economic problems was essential.

This project pulled together representatives from three departments within Minnesota Planning:

Local Planning Assistance Team, charged with assisting communities with comprehensive planning efforts and implementing the Community-Based Planning Act, lead the effort to ensure that tools and data were consistent with identified local needs.
Land Management Information Center provided the technical expertise on geographic information system design and enhancement and data packaging.
Environmental Quality Board's Sustainable Development Initiative, assisted in identifying data sets and key questions that the tool kit needed to address in helping communities evaluate the sustainability of various growth scenarios.

VIII. LOCATION: Statewide. Tools and Training was developed for and provided free to local governments throughout Minnesota.

IX. REPORTING REQUIREMENTS: Periodic progress reports were submitted January 2000, August 2000, January 2001, July 2001 and January 2002. This final work program report completes the Tools and Training project.

Attachment A: Deliverable Products and Related Budget [revised 1/01]

Budget Item	**Result 1: Software**	**Result 2: Data and Decision Analysis Tools**	**Result 3: Outreach and Materials Development**
Wages, salaries and benefits	Software spec. (65%) $95,000 Modeling spec. (20%) $27,000 Training spec. (10%) $12,000 Students (25%) $12,500	Modeling spec.(75%) $103,000 Training spec. (20%) $24,000 Planner (10%) $7,500 Student (25%) $12,500	Training spec. (65%) $84,000 Planner (10%) $7,500
Space rental, maintenance and utilities	-0-	-0-	Rent (training facilities) $4,000
Printing and Advertising			Guides/training materials and announcements $15,000 CD-ROM production $10,000
Communications, telephone, mail, etc.			$4,000
Contracts	-0-	-0-	-0-
Local automobile mileage paid			$500
Other travel expenses in Minnesota			$18,000
Travel outside Minnesota	-0-	-0-	APA/ESRI Conferences; UWisc. $5,000
Office supplies			$2,500
Other supplies			-0-
Tools and equipment	-0-	-0-	-0-
Office equipment and computers	-0-	-0-	-0-

Other capital equipment	-0-	-0-	-0-
Other direct operating costs	-0-	-0-	ArcView/ESRI instructor certification $6,000
Land acquisition	-0-	-0-	-0-
Land rights acquisition	-0-	-0-	-0-
Buildings or other land improvement	-0-	-0-	-0-
Legal fees	-0-	-0-	-0-
COLUMN TOTAL	$146,500	$147,000	$156,500