LOCAL DEVELOPMENT II
URBAN PROJECT

Submitted to

USAID / CAIRO

Submitted by

WILBUR SMITH ASSOCIATES

in association with

PUBLIC ADMINISTRATION SERVICE

DEVELOPMENT CONSULTING OFFICE

DELOITTE HASKINS AND SELLS

ENGINEERING AND GEOLOGICAL CONSULTING OFFICE

+ COVER LETTER : DON'T ASSUME APPROVAL

LAND MANAGEMENT
TRAINING AND COMPUTERIZATION
EXIT REPORT

September, 1989.

LOCAL DEVELOPMENT II URBAN PROJECT

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September 6, 1989

Mr. Jack Gisiger
Chief Urban Development Branch
Office of Local Administration and Development (LAD)
United States Agency for International Development (USAID-Cairo)

Dear Jack,

We are pleased to submit this document titled Land Management Training and Computerization Exit Report for your review. The report summarizes recommendations and involvements of Dr. Thomas Lyons regarding his short-term specialist assignment over the period from July 10, 1989 to August 13, 1989 in Egypt.

The following sections are presented in the report:

Section I	-	Background and Introduction
Section II	-	Proposed Training Program for Land Management
Section III	-	Computer Hardware and Software Acquisition Justifications
Section IV	-	Land Management Computer Applications
Section V	-	Staging of Land Management Training and Computerization Activities
Section VI	-	Summary of Recommendations

We wish to point out that the software recommended for Land Management computerization is available, packaged software which, at the same time, meets the needs of Egyptian planners and minimizes the necessity for additional programming. It should also be noted that this software is recommended as part of a computerized land management planning information system. To delete individual software packages will destroy the system.

We strongly suggest this document be used, to obtain review inputs and approval of governorate land management staff and other key governorate decisionmakers regarding land management training and computerization issues.

WILBUR SMITH ASSOCIATES

DELOITTE HASKINS AND SELLS

DEVELOPMENT CONSULTING GROUP

PUBLIC ADMINISTRATION SERVICE

ENGINEERING AND GEOLOGICAL CONSULTING OFFICE

Should you have any concerns, desire clarification, or wish to discuss recommendations of this report in greater detail please do not hesitate to call me, otherwise we will assume the recommendations have your approval. DON'T

Respectfully Submitted,

WILBUR SMITH ASSOCIATES

Richard E. Miller
Chief of Party

CC: Dr. Thomas Lyons, Short-Term Urban Planning Specialist
Mr. Remah Talaat - USAID, Cairo (LAD)
Mr. Richard Heald - Land Management Team Leader
Mr. Bruce Davis - MIS Team Leader
Dr. Richard Hailer - Training Team Leader
All Project Implementation Coordinators

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Section I

BACKGROUND AND INTRODUCTION

This report is submitted by Wilbur Smith Associates with principal investigations performed by Thomas S. Lyons, Ph.D., Assistant Professor, Urban Planning Program, Michigan State University. Dr. Lyons has considerable training and professional experience in land use planning, and land management, and was retained by Wilbur Smith Associates to undertake a six week assessment focusing on: (1) an appropriate staged land management training program, and (2) possible computer applications regarding land management office operations and project development functions at the Governorate level. The report that follows offers observations and recommendations pertaining to these two issues based on field visits by Dr. Lyons to selected Governorates and work with the Technical Assistance (TA) Contractor land management staff.

Section II gives a brief background of the land management component of the Local Development (LD)-II Urban Program and offers a proposed program of training for Land Management office staff. It addresses basic planning and land management training, land management feasibility analysis techniques, land management administrations procedures, shelter affordability, basic computer skills, and computer applications in land management.

Section III provides the description and rationale for recommended computer hardware and software for the Land Management offices. The application of this hardware and software is presented in Section IV.

The recommended staging of both the training and computer applications activities can be found in Section V. Section VI closes the report with a summary of recommendations.

Section II

PROPOSED TRAINING PROGRAM FOR LAND MANAGEMENT

This section gives an overview of the land management component of the Local Development (LD-II) Urban Program and details regarding specific training components. It addresses the following topics:

- Intent and Purpose of Land Management
- Status of Land Management Activity Prior to the LD-II Urban Program
- Current Status of the Land Management Component of the LD-II Urban Program
- Current LD-II Project Computer Equipment and Software Resources
- Current Assessment of Staff Resource Skills
- Source of Relevant Background Information
- Proposed Training Program Component.

Intent And Purpose of Land Management

The Technical Assistance (TA) Land Management effort under the United States Agency for International Development, (USAID) funded LD-II Urban Program seeks to improve the capacity of six Egyptian urban governorates to execute project development and other associated land management activities. Urban governorates presently include Port Said, Suez, Alexandria, Giza, Qaliubia, and Cairo. The purpose of increasing the capacity of these urban governorates in land management is to acquire, control, and hold vacant lands for future urban needs, to allocate such lands efficiently, to service and develop such lands in partnership with private or informal sector participants, and to undertake the upgrading of deficient urban areas. This purpose aims not to replace master planning activities of existing Government of Egypt (GOE) departments or organizations (where available), but to strengthen the capacity for implementing projects to meet action plan objectives formulated by existing entities or agencies intimately involved in land planning and development for the urban governorates. Interagency coordination between existing local or national planning agencies would be accomplished through proposed land management Board of Directors or Steering Committees.

Proposed land management offices must have authority to market, sell, develop and pursue cost recovery fund raising activities for upgrading existing areas as well as new lands development projects. As such, proposed operating offices, or agencies for land management would be intimately involved in scoping out projects to obtain funding; developing Terms of Reference for consultants and contractors; monitoring performance progress of consultants, contractors, or developers; identifying appropriate site and upgrading needs through adequate database activities; developing strategies for effective land management which maximize revenues and minimize public sector resource subsidies by means of cost recovery techniques; and helping to establish administrative frameworks for the use of and monitoring of outside developers, housing companies, and informal sector participants in developing and managing new lands development and upgrading project improvements. In upgrading projects, the agency or office would promote self-help programs or other programs to involve more informal sector participation.

The mission objectives of the Land Management component can be summarized according to the following program benefits to each governorate.

- Improved resource management capacity and coordination;
- Improved project identification, development and administration procedures to obtain project financing;
- Improved database development regarding project implementation and identification activities.

Status of Land Management Activity Prior to the LD-II Urban Program

In connection with preparation of the Program's Diagnostic Report, an assessment of existing conditions and what was available in terms of staff and facility resources to implement land management activities was undertaken. In participating governorates, there are no lack of urban plans (Master Plans, Structure Plans, Action Plans, etc.) which serve as a framework for guiding urban development. Thus, for example, Cairo, Giza and Qaliubia have plans prepared by the General Organization for Physical Planning (GOPP) called the Greater Cairo Master Scheme. Suez and Port Said have had master plans prepared by UNDP consultants, and Alexandria has had plans prepared by Alexandria University.

Although a documentary framework exists, the institutional means of implementation is weak or missing. All participant governorates carry out some land management functions on day-to-day basis with existing administrative structures, but none have what could be called dedicated land management units which fulfill the functions required for efficient management. In all governorates the need for better and more organized land management efforts is clear although the most suitable forms of this management will vary considerably from governorate to governorate. In general terms, it is possible to typify current land management capacities of the six governorates as falling into the following categories:[1]

- CAIRO : Governorate which is lacking the organization to carry out most land management functions except in an "ad hoc" fashion and, considering the magnitude of the problem, is in need of new administrative structures to deal with vacant land control, development of new lands, and upgrading.

- PORT SAID AND SUEZ : Governorates which have existing planning and land development units that carry out some land management functions and which are in need of strengthening and/or reorganizing of existing land management capacities to implement projects.

- QALIUBIA AND GIZA : Governorates which do not have much urban vacant land, but which are almost completely lacking in ability to carry out upgrading or long-term re-development planning initiatives and, thus, require new administrative structures to effectively execute both day-to-day and long-term activities.

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1 Alexandria Governorate, at the present time, has declined to participate in the LD-II Urban Land Management Unit development program.

Current Status of the Land Management Component of the LD-II Urban Program

Appointment of a Director and his "core" technical staff is taking considerable time in each of the five currently participating governorates of Cairo, Giza, Qaliubia, Suez and Port Said. Cairo, Suez, Port Said, and Giza have passed Land Management Decrees officially recognizing a need for a land management administrative entity. Some of the Governorates, as of the end of July 1989, have appointed or "hired" core staff. Alexandria Governorate is on hold at the present time. In general, space for land management office operations has been finalized for Port Said and Suez and is being finalized in Cairo, Giza and Qaliubia based on recently passed or anticipated staff decrees.

It is difficult to program a list of participants for training, when government action to hire or appoint "core" staff is still pending. The current target schedule to have "operating" land management staff determined is no later than the end of September, 1989 for all participating governorates as presented in the Diagnostic Report. (USAID) however is pushing for an earlier date. It is possible that some governorates could become "operational" earlier and would therefore be available for training programs.

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Review of the attached training program descriptions is needed with both key existing government technicians and officials and "core" technical staff officially hired or appointed to staff of a land management office operation. As of the end of July, 1989 training for a least 7 "core" professional level technical staff participants, and up to 8 other staff individuals from existing technical departments inside the governorate, could be anticipated. A total of as many as 15 professional level participants and up to 3 technician or secretarial participants per governorate could therefore be estimated at this time. This may change and is dependent on action taken by government. Past concept papers and draft Decrees have suggested job descriptions and "ideal" qualifications for the seven professional "core" land management positions. Secretarial word processing training and possible training on Lotus 1-2-3, dBASE III Plus, Formtool and Flow-Chart may also be necessary.

Office procedures and database activities have been proposed as work plan activities. Many requests are coming in from Governorate authorities regarding procurement of computer equipment to computerize land management planning information systems.

Current LD-II Project Computer Equipment and Software Resources

As a part of the Management Information Systems (MIS) component of the LD-II Project, IBM/PC's and supporting furnishings and equipment are being installed at the Governorates. Current LD-II Urban Program software being installed includes LOTUS 1-2-3; dBASE III Plus; Nafitha Arabic Utility and others. Computer Aided Mapping (CAM) and a Geographic Information System (GIS) are also being considered in two phases. The first phase would involve the use of a basic thematic mapping software package (e.g.: Atlas AMP) and selected basic GIS system components.[1]

Training programs with governorate technical and administrative staff are underway. These include, Computer Assisted Training (CAT) as well as others. Feasibility regarding more sophisticated computer technologies, such as for CAD or CAM, systems is programmed to be addressed in later effort of the LD-II Urban land management program.

Current Assessment of Staff Resource Skills

In land management, resource skills vary considerably by Governorate for existing staff, but in all cases additional training is needed to appreciate needs for project feasibility based on cost recovery; involvement of the private and informal sectors; self-help programs; and certain planning, monitoring, accounting, and administration procedures. Project and individual financing is limited in Egypt and constrains effective project implementation. Training programs are needed to illustrate appropriate land management strategies to obtain project or individual means of financing, such as through intermediary mechanisms, administered through land management offices.

In the area of automation, skills vary with existing Governorate staff but in almost all cases additional training in operation of computers and basic software programs is needed. Port Said is perhaps the most advanced in terms of having an MIS Center with the staff resource skills to automate certain database systems, but this is limited. An MIS needs assessment program will be implemented as a part of LD-II Urban project activities.

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[1] A distinction should be drawn between computer - aided mapping(CAM) and geographic information systems(GIS). CAM software packages possess what are known as thematic mapping capabilities. This essentially amounts to nothing more than the simple display of data in a graphic form, i.e.: a map (Wiggins 1986). An example of an appropriate use of a thematic mapping package would be the display of land uses in their geographic locations. Thematic mapping packages are extremely useful in developing maps for planning reports and presentations. Their advantage lies in their low-cost, relative ease of use, and speed. GIS, on the other hand, is a highly sophisticated set of software components that permits the user to store, analyze, and retrieve data in a manner that allows for measurement, design, and the overlay of maps (Dangermond 1980).

Sources of Relevant Background Information

In regards to training and computer applications of land management information systems for office administration and project development activities, expected products or outputs should consider the various publications and work papers developed or researched during the LD-II Urban Program addressing land management. The following references, therefore, were consulted and reviewed:

- Final Diagnostic Report - Local Development II Urban Project, December 1988 (on-site);
- Various land management trip reports and office concept organization reports, official governor's orders and decrees (on-site);
- The Bangkok, Thailand Land Management Study funded by the Asian Development Bank, and more specifically the following publications by David E. Dowall, of the Institute of Urban and Regional Development, University of California, Berkeley, California. (on-site, but also available in U.S.).
    - "A Shining Example - Bangkok's Land and Housing Markets";
    - "The Land and Housing Market Assessment - An Important Tool for Increasing Housing Delivery in Third World Cities".
- Works of Jonathan Levine and John D. Landis of the University of California, Berkeley on geographic information systems including an article in the Spring, 1989 issue of the Journal of the American Planning Association titled: (Same as above)
    - "Geographic Information Systems for Local Planning", p.209
- World Bank (Economic Development Institute) "Bertaud Model-Affordability Submodel" (Available in U.S.).
- Neil G. Sipe and Robert W. Hopkins. 1987. Microcomputers and Economic Analysis: Spreadsheet Templates For Local Government. Gainesville, FL.: University of Florida (Available in U.S.).
- Lyna L. Wiggins, 1986, "Three Low-Cost Mapping Packages For Microcomputers" Journal of the American Planning Association 52,4: 480-488 (Available in U.S).

Proposed Training Program Component Descriptions

A land management training program is suggested for review with appropriate Government of Egypt staff. This program comprises the following specific components in order of priority:

- Basic Land Management Orientation Workshop;
- Land Management Seminar/Workshop;
- Basic Computer Skills Workshop;
- Land Management Feasibility Analysis Techniques;
- Land Management Administrative Procedures Workshop;
- Automation and Computer Training of Land Information Systems;
- Shelter Affordability Training.

The program highlights local training and U.S.-based training requirements. These training program component descriptions are intended to "stand by themselves" for use in Requests for Proposal (RFP), or other orientation needs, to implement training.

Of the workshops seminars, and courses proposed, above, four (4) are recommended for staging in Egypt (Basic Land Management Orientation Workshop, Land Management Seminar/Workshop, Land Management Administration Procedure Workshop, and the Basic Computer Skills Workshop). The other three (3) training sessions (Land Management Feasibility Analysis Techniques, Automation and Computer Training of Land Information Systems, and Shelter Affordability Training) are proposed for presentation in the United States. These latter three courses could be offered concurrently as part of a 1-2 month intensive training term for selected Land Management staff. They would include a combination of lecture, "hands on" training, and field trips to relevant project sites.

The following references were used in development of this training program.

- Dangermond, Jack. 1980. "Software Components Commonly Used in Geographic Information Systems." Redlands, CA: Environmental Systems Research Institute.

- Wiggins, Lyna L. 1986, "Three Low-Cost Mapping Packages for Microcomputers." Journal of the American Planning Association 52(4) (August).

• Basic Land Management Orientation Workshop - This is an orientation and "refresher" course for "core" staff of Land Management offices to appreciate basic urban and land planning processes and procedures.

Necessary fundamentals of the urban planning process should be outlined as a first part of the program. Planning coursework material should review and build on processes and procedures developed by the General Organization for Physical Planning (GOPP) under the Ministry off Housing and Reconstruction. Other programs in Egypt and elsewhere should be considered with regard to planning process guidelines that are relevant to urban growth areas of Egypt.

A second part of this basic training should address various land management planning processes and how these processes are applicable or unique to the six urban governorates under the UD-II Urban Program. Review of the Land Management Program's Diagnostic Report should be accomplished in this regard to refine suggested land management planning process activities. These processes were identified as land-banking; new lands development; and upgrading of deficient urban areas. Community participation should be addressed as a part of land management project development strategies etc. ? REQUIRES LONG-TERM COMMITMENT.

A basic orientation workshop for land management staff in Egypt is proposed therefore to be made up of the following components or training modules;

Section One : Background: Planning and Land Management's Nature and Context.

1.1 What is Planning? (1 lecture)

- 1.11 A Definition
- 1.12 The Need for Planning
- 1.13 Some Basic Theory
- 1.14 The Planning Process.

1.2 Planning Roles and Context (1 lecture)

- 1.21 The General "Political" Context of Planning
- 1.22 The Legal Basis of Planning in Egypt
- 1.23 Styles and Roles of Planners
- 1.24 Limits of Planning.

1.3 What is Land Management? (1 lecture)

- 1.31 Planner's Role
- 1.32 Implementation Issues
- 1.33 Finance Issues

Section Two : Land Management Practice

2.1 Comprehensive Planning (1 lecture)

- 2.11 Its Goals
- 2.12 The Process
- 2.13 The Elements of a Comprehensive Plan.

2.2 Land Use Planning (2 lectures)

- 2.21 Concern for Land Use and Development Regulation
- 2.22 Tools of Land Use Planning

    a. Land Use Controls
    b. Public Investment
    c. Using Land Use Controls and Public Investment in Tandem.

2.3 Fiscal Planning and Management (2 lectures)

2.31 Planning and Finance
2.32 Management
2.33 Fiscal Planning
2.34 Budgeting.

2.4 Capital Facilities Planning (1 lecture)

2.41 Importance of Capital Facilities Planning
2.42 Elements of Capital Facilities Planning
2.43 Planning Phase
2.44 Financing Phase
2.45 Capital Improvements Programming Phase. (use of OMED capital improvement forms)

2.5 Environmental Planning (2 lectures)

2.51 Introduction
2.52 Underlying Concepts
2.53 Environmental Planning Practice.

Section Three : Planning Issues and Practice in Egypt (3 lectures)

3.1 Land Development
3.2 Land Control\Land Banking
3.3 Upgrading (Component and Comprehensive)
3.4 Planning Strategies

a. Informal Sector
b. Private Sector
c. Community Self-help
d. Cost Recovery
e. Public\Private Partnership

Section Four : Feasibility and Economic Analysis of Public Projects (5 lectures)

4.1 Principles of Economic Analysis
4.2 Private vs. Social Costs and Benefits
4.3 Fiscal Analysis
4.4 Evaluation of Projects
4.5 Case Studies.

Relevance of Land Management Processes to The Individual Governorates - It is recommended that each Governorate's team of trainees bring with them relevant data from their respective jurisdictions to be used in exercises employing some of the various processes and techniques of land management discussed in this course. This will serve to both provide "hands-on" experience in applying these methods and to make the experience relevant via Egyptian case studies.

Criteria for Measuring Satisfactory Completion - The following criteria is proposed:

1. Satisfactory performance by trainees on a written examination covering the materials presented.
2. Successful completion of the course by a minimum of three (3) "core" staff persons in each Land Management office.

All training manual documentation is to be in both Arabic and English.

Time Required for Completion and Documentation Requirements - This material can be covered in one 5 to 7 day workshop. Approximately 1-2 months of preparation time should be allowed prior to the actual conducting of the workshop. The workshop is proposed to be conducted in Egypt.

• Land Management Seminar/Workshop - This program should be offered in Egypt and should provide an overview of current Land Management practice in Egypt and point out the need for an administrative entity addressing land management problems associated with the effective implementation of site services, upgrading, and housing projects at the Governorate level. The case for an appropriate Governorate entity should emphasize a requirement for additional capacity, with authority to develop land management strategies. These strategies should be geared to increasing informal sector participation, and cost recovery, with the objective of minimizing or eliminating public resource subsidies.

The seminar/workshop should be attended by senior officials and outside consultant specialists who should be viewed as training resources in the seminar itself. Such officials should be from appropriate Ministries and existing Governorate land management operations, such as at Ismailia, to illustrate case study innovations and state- of- the- art in Egypt. The seminar should address:

- Organization, Coordination, and Administrative Issues;
- Development Strategies, Approaches, and Methods;
- Individual and Project Financing Constraints, Opportunities and Needs; and
- Legal and Legislative Reform Issues.

A period of time should be devoted to a workshop approach focusing on the above topics and including such issues as cost recovery, community self-help programs; informal sector participation, laws of Egypt pertaining to land management, development financing, land resource and environmental protection, private and public sector involvement and incentive programs. Outside consultant specialists should suggest other successful international land management practices, particularly relevant and practical to Egypt, that address these topics, such as transfer of development rights, land release mechanisms, etc.

The seminar/workshop should be held early in the training process so that ideas can be shared and momentum established in the Land Management program. Documentation from the sessions should prove highly useful as reference material for the Land Management staff in each of the Governorates. Seminar discussions and workshop results should be fully documented in Arabic and English so as to serve as a resource of ideas for future Land Management office operations as well as for other seminar participants on what is "working" and what will "likely work" in Egypt.

Criterion for Measuring Satisfactory Completion - The following criterion is proposed:

1. Generation of a seminar proceedings that can serve as a handbook for Governorate Land Management staff.

Time Required for Completion - The seminar/workshop, itself, should be 3-5 days in duration. A minimum of four (4) months should be allowed for preparation. All handbook documentation should be in Arabic and English.

• Basic Computer Skills Workshop - Before training in land management feasibility techniques, computer applications, and administration procedures can take place, selected Land Management staff must be made computer literate. That is the sole purpose of this skills workshop. The workshop is intended to take place in Egypt and will focus on the use of microcomputers. It should cover the following topics:

1. Understanding of the hardware components and their basic configuration.
2. The basic disk operating system (DOS).
3. Word processing software (WordPerfect).
4. Spreadsheet software (Lotus 1-2-3)
5. Database management software (dBASE III Plus)
6. Computer - aided mapping software (Atlas Graphics).

Criterion for Satisfactory Completion - The following criterion is proposed:

1. Satisfactory completion by trainees of a series of work assignments demonstrating the ability to use the software outlined above.

Time Required for Completion - The workshop can be completed in an intensive two week course of study. Preparation time requirements should be minimal - perhaps 2-3 weeks to prepare exercises and gather class materials. The workshop should be followed-up by periodic 3-5 day workshops that explore more fully each individual software type.

• Land Management Feasibility Analysis Techniques - This is a practical urban planning course designed for "core" land management staff, or other interested governorate planning and engineering staff, to address the rationale for public programs, the measure of direct, indirect or induced costs and benefits of projects; economic analysis versus financial analyses; and sensitivity analysis versus economic and financial analysis. Socio-economic marketing and financial analysis techniques regarding project development should also be addressed.

A case study approach is to be used employing potential land management demonstration projects particularly relevant to each Governorate. These case studies should show how potential cost-benefit, cost recovery, involvement of the informal or private sector, and community self-help programs can come together to determine feasible projects for implementation. All training manual documentation is to be in both Arabic and English. The course lends itself to instruction in the United States, where guest speakers and field examples relating to successful implementation of these techniques are abundant. Specified topics to be covered in this course include the following:

1. A model for public policy analysis (Mazmanian and Sabatier).
2. Cost - benefit and cost - effectiveness analysis.
3. Cross-impact analysis.
4. Fiscal impact analysis.
5. Market analysis.
6. Project feasibility.
7. Sensitivity analysis.
8. Land suitability analysis.
9. Development pro forma preparation.
10. Capital improvements programming (Use of OMED capital budgeting forms).

As in the case of the Basic Land Management Orientation Workshop, each governorate will be asked to bring data from a relevant case study. Each group of governorate representatives will then work as a team to apply the techniques listed above to their data.

Criterion for Satisfactory Completion - The following criterion is proposed:

1. Successful application of relevant techniques of analysis by each Governorate Land Management team to its case study. From this, a manual can be assembled that can serve as a guide for future similar analyses. The manual should be in both Arabic and English.

Time Required for Completion - The course, itself, can be completed in four (4) to six (6) weeks. Preparation should require 1-2 months.

• Land Management Administrative Procedures Workshop - This is an orientation course, to be conducted in Egypt, and designed for the "Director" and "core" staff of Land Management offices to outline both specific administrative program activities and suggested operations procedures. These procedures are to be a starting point subject to revision and expansion during the course of initial year land management operations. A training manual is to be developed in both Arabic and English addressing the following topic program areas and databases for possible eventual automation:

A. Annual and Projected Budget Systems: - (Spreadsheet format development of annual revenues and expenses for office operations versus project development operations; projected versus actual revenues and expenses (including any debt service requirements, etc); five-year forecast of revenues and expenses; capital improvement program documentation in coordination with OMED Action Package guidelines, etc.).

B. Project Development Analysis Systems: - (Spreadsheet formats for project cash-flow analysis; calculations of project investment rates of return; projected versus actual analysis of revenues/expenses; checklist formats of project development cost items required; etc.)

Topics A and B, above, could be taught employing available spreadsheet templates developed in the United States (e.g.: Neil G. Sipe and Robert W. Hopkins. 1987. Microcomputers and Economic Analysis: Spreadsheet Templates For Local Government. Gainesville, FL: University of Florida.) These templates can then be modified to meet specific Egyptian needs.

C. Project Management Techniques and Systems: - (Training in the use of PERT, Gantt, and Critical Path Method (CPM) technologies for project management; development of charts using project management software, such as Harvard Project Manager (HPM).)

D. Office Operations Systems: - (A series of database files concerning standard agreements, or procedures for dealing with consultant/contractors, etc.).

- Sample Terms of Reference (TOR) outlines;
- Sample legal agreements for types of services with consultants/contractors;
- Evaluation criteria for consultant/contractor qualification for types of services;
- Criteria for selection of consultants/contractors for types of work;
- Consultant/contractor performance evaluation criteria;
- List of qualified governorate located consultants/contractors;
- List of qualified outside governorate consultant/contractors;

The completion of checklists or outline format documentation should be accomplished on a priority basis and available to illustrate a work program of activity to be established for staff of "operating" land management offices. This material is to be reviewed by and coordinated with the Land Management Team Leader. This documentation is programmed to be automated using available software programs compatible with current LD-II Urban MIS resources and hardware being installed at the Governorates.

Criteria For Satisfactory Completion - The following criteria is suggested:

1. The completion and availability of checklist and outline format documentation at all Land Management offices.

2. The complete automation of this documentation at each Land Management office.

3. Satisfactory performance by trainees in completing a series of directed exercises relevant to the material presented.

Time Required for Completion - This workshop can be completed in 10 days of intensive coursework. Preparation will require 1-2 months.

• Automation and Computer Training of Land Information Systems - A prerequisite to this course, which should be conducted in the United States, is the Basic Computer Skills Course to be completed in Egypt. This program is ultimately aimed at training professional and technical land management staff in the development and use of certain databases relevant to identifying appropriate projects. The objective of the training program is to illustrate how these databases relate to each other in arriving at feasibility presentation reports for decisionmakers, such as the Land Management Board of Directors or Executive Committees being established, or the Governors themselves.

Prerequisite actions to the training, will require first determining the most appropriate hardware and software compatible with existing LD-II Urban Program resources at the Governorates and more specifically use of IBM/PC's. Recommendations and alternatives with costs, if necessary, should be considered and approved by USAID prior to implementation or scheduling of actual training. Software packages should be developed prior to training consistent with final feasibility studies.

In determining feasible software technology, appropriate vendors should be contacted to review demonstration material and recommend the most appropriate software to fit needs (a list of vendors and their addresses is provided in Appendix A). At a minimum the following software packages should be reviewed;

- Atlas Graphics;
- Geo- based Systems;
- MAP INFO;
- PC - ARC/INFO;
- Harvard Graphics;
- SPSS - PC +;
- STATGRAPHICS;
- Urban Data Management System (GIS)
- SYSTAT
- PCMAP
- MULTIMAP
- AutoCAD/LANDCADD
- Harvard Project Manager
- Micromap
- Generic CADD
- CADKEY

Current LD-II Urban Program software being installed at the governorates includes LOTUS 1-2-3; DBASE III Plus; Nafitha Arabic Utility and others. The MIS Team leader of the LD-II Urban Program should be contacted and consulted for appropriate procurement procedures and official policy regarding installation and use of software at the Governorates. Recommendations of appropriate land management software or needed hardware and support systems, their costs, and installations requirements should be compatible with current LD-II Urban Program computer

resources being installed at the Governorates. Recommendations should be presented as to appropriate Arabic language conversion programs, such as "Nafitha" or others, as necessary to fit packaged program software. Hardware required to use many of the aforementioned software packages should include plotters and digitizers for computer-aided mapping.

A course of training in computer applications for land planning should include the following topics:

1. An overview of the use of microcomputers in land management planning.
2. Appropriate use of DOS.
3. Word Processing software.
4. Spreadsheets
5. Computer Mapping packages.
   - Thematic mapping
   - CAD (Computer - aided design)
6. Geographic Information Systems
7. Database Management Systems
   - Flat files
   - Relational databases
   - Programming
8. Using DOS to integrate software into a Planning Information System.

This course should be presented in a combination lecture/"hands-on" laboratory format.

Again, it should be emphasized that a prerequisite to this course of study is the Basic Skills course in the use of DOS, Lotus 1-2-3, dB/.SE III Plus, and Atlas Graphics that can perhaps be completed in Egypt prior to any more sophisticated computer application training.

All training documentation, including software to be installed, or written manuals should be in both Arabic and English. Land information systems for eventual automation in each of the governorates as part of land management operations include the following systems based on available data or data which Governorate land management staff will be manually collecting as a part of work program activities during 1989.

A. Small Area Profile Database Systems
(By Kism, or Section, aggregated to District and Governorate Subtotals)

- Existing Land Use Data File - (Percent of land allocated to urban use; agricultural land; desert land; type of urban land use, conversion rates of desert or agricultural lands to urban development, etc.).
- Demographic Data File - (Population and employment trends, current estimates and projected data, growth rates, etc.).
- Land Values Data File - (Selected surveys of land values along selected

major roads for vacated sites versus sites with building or structure improvements, with and without site services, etc.)

- Available Services Data File - (Percent of area having services of various types such as water sewer, electrical, access and other urban services by kism boundaries, etc.).

- Master Planning Standards Data File - (Data on planning densities desired regulatory requirements, service requirement standards for housing, spatial density standards and other related data, etc.).

- Proposed Land Use Data File - (Data on proposed land use budgets specified in Master Plan documents or other documented resources by Kism).

- Graphics Data File - (Governorate level map graphics comparing data above graphically by geographic units of the Kism, or Section, District, or by other means, etc.).

Participants should be instructed in the data entry process, data analysis as it pertains to the database systems, and the synthesis of this analysis into reports that are understandable and useful to decisionmakers.

B. Project Development Database Systems
(Site Specific or Facility- Oriented Databases)

- New or Vacant Lands Inventory Data File - (Kism located; area of site; major access roads bordering site; surrounding land uses; comparable land values; existing services; proposed land use budgets and standards corresponding to master plans; existing land uses, etc.).

- Deficient Urban Areas Data File - (Kism located; area of site; major access roads bordering site; existing standards; surrounding land uses; existing services and deficiencies identified; component or integrated upgrading improvements required based on available master plan or urban action plan proposals for governorate; prioritizing or ranking of deficiencies for upgrading improvements; etc.).

- Needs Assessment File of Investment Projects (BSDS) - Ongoing and future BSDS component upgrading needs by facility or specific site location based on District level needs identification.

- Follow-up Actions Data File - (New lands inventory actions; upgrading of deficient urban area actions; resolution of illegal encroachment actions required; land tenure resolution actions required; etc.).

- Site Map (Graphics) Data File - (To be considered based on feasibility studies of micro-computer or other compatible computer capacities to provide site mapping at various scales with various site related planning or design background visually displayed, etc.). If adopted, it should employ at the very least, a thematic mapping software package (such as Atlas AMP), and it is recommended that the groundwork be planned for the future development of a GIS system by installing selected GIS components. Use of land CADD a computer-aided drafting and design program could also be considered in

addition to GIS, or separately. The application initially should be on a "strategic" or "selective" basis, such as for specified priority sites designated for project development activities. To use a CADD system on a more comprehensive level (e.g. : city-wide or governorate-wide) would require more time and manpower than is currently available and is beyond the scope of initial land management activity under the LD-II Urban Program.

Criteria for Satisfactory Completion - The following criteria is suggested:

1. Selection and installation of appropriate hardware and software.
2. Trainees' satisfactory completion of various "hands-on" assignments using the selected relevant software.
3. Trainees' satisfactory performance on a written examination covering the materials presented in class.

Time Required for Completion - The course, itself, should require four (4) to six (6) weeks to conduct. Preparation will require 1-2 months.

• Shelter Affordability Training - This course, to be conducted in the United States, focuses on helping key Land Management technical staff prepare physical development alternatives for urban settlement projects based on "The Bertaud Model - Affordability Submodel". Training materials developed by the World Bank's Economic Development Institute (EDI), will focus on shelter programs that are acceptable and affordable to low-income populations. The Model helps to examine a wide variety of project design options and includes a manual that offers a step-by-step guide for use of the Model with LD-II Urban Program MIS computer resources (IBM/PC'S) installed in each of the Governorates. Use of these computer resources is contingent on existing constraints, opportunities and priorities at the Governorates. Scheduling of this course is conditioned on these constraints.

Land Management affordability analyses of case studies unique to each Governorate should be considered in order to be meaningful. Such analyses will play a critical role in defining feasible projects to be implemented at "operating" Land Management offices that have a need for appropriate shelter development programs at the Governorate level. For this reason, Land Management Offices staff should come to this training course with relevant case study data from their respective governorates to be used in course work. Training material should be available in Arabic and English. EDI training materials should be made compatible with existing LD- II Urban Program computer technology hardware and software systems, if necessary.

Criterion for Satisfactory Completion - The following criterion is proposed:

1. The satisfactory application of the Bertaud Model-Affordability Submodel to an actual case by each of the Governorate Land Management trainee teams.

Time Required for Completion - This course can be conducted in four (4) - six (6) weeks. Preparation should require 1-2 months.

Section III

COMPUTER HARDWARE AND SOFTWARE ACQUISITION JUSTIFICATION

This section addresses the need for a planning and land management information system, as well as Governorate-related hardware and software requirements. Additional recommendations are made regarding Technical Assistance (TA) Contractor-related requirements under the LD-II Urban Program to effectively transfer this technology to the governorates. This justification is developed based on what is realistically achievable within the LD-II Urban Program.

The Need for a Planning and Land Management Information System

Primary land management issues facing each Governorate, as enumerated in the Local Development II Urban Project, Final Diagnostic Report, are as follows:

1. The long term potential for urban expansion on new lands, over which a governorate has or can obtain legal control;

2. The short term potential for early development of new lands, including sites which might be candidates for "pilot" or "vanguard" projects;

3. The need for "integrated " upgrading of seriously deficient urban communities, where due to land tenure, history, or other anomalies a low-income community has been bypassed in the provision of standard infrastructure and social services; and,

4. The need for "component" upgrading where particular urban areas are seriously deficient in one or more specific urban services (such as street paving in one area and solid waste collection in another).

In order to successfully address these issues in an effective, efficient and timely manner each Governorate Land Management office must be able to access large amounts of data on existing uses of land, land values, demographics, and other physical, economic, and fiscal considerations. In addition, because of continually changing conditions, this data cannot be in a static form. It must be dynamic, in that it can be updated rapidly and lends itself to time-series analysis of its component variables. The most efficient and effective means of accomplishing this is via the computerization of land management- related data to ensure ready and rapid access to selected variables, ease of analysis, and the understandable presentation of information to decisionmakers.

In the realm of urban planning and its implementation technology, land management, such a computerized system for managing data is known as a planning information system. A planning information system integrates several types of computer software to accomplish the management and manipulation of data necessary to track development and implement useful land management strategies. A basic planning information system should include the following minimum software components:

1. A word processing package for the preparation of text for land management reports.

2. Spreadsheet software that is capable of relatively sophisticated statistical and mathematical analysis; the generation of descriptive graphics; the preparation of "what if" statements; and the construction of macros for issuing complex commands or streamlining repetitive ones.

3. Database management software that provides a "user friendly" environment for the storage, maintenance, and retrieval of land management data. It must also have the capability of being integrated with the spreadsheet software and a thematic mapping software package. In addition, it should allow for the creation of relational databases and for programming.

4. A computer - mapping presentation package that is capable of producing thematic maps in order to enhance the graphic aspect of report preparation. The focus, here, should be on software that produces basic maps that help decisionmakers to visualize existing conditions and potential future scenarios.

All of these software packages should be linked via a basic disk operating system (DOS). It is this integration of the component software that actually constitutes a planning information system.

Governorate Related Hardware and Software Requirements

The MIS Team of the Local Development II Project is establishing a microcomputer-based system which could be used by the Land Management offices to store, manipulate, and retrieve their data, using work stations located in a central MIS computing facility at the Governorate. On its surface, this would appear to be the most efficacious approach to automating Land Management operations. There are problems with this approach, however.

The MIS system serves several different users that require varying amounts of system time and capacity. As the system grows, competition for system use will grow, as well. It has been the experience of numerous planning and land management departments, in cities and counties throughout the United States, that share centralized computer facilities, that other activities within the system tend to take precedence over their own. In particular, administration, budgeting, and payroll activities invariably superceded those of the planning agency (Standerfer and Rider, 1983). For this reason, alone, a decentralized system for Land Management is worthy of consideration. This would entail locating microcomputers dedicated to Land Management activities in the Land Management offices.

A decentralized computer system in the Land Management offices has other advantages. It permits better coordination of office activities. It also speeds up office productivity. Ultimately, a decentralized system gives the Land Management offices more autonomy in the future to select hardware and software that meets their specific needs. This does not, however, preclude the possibility for continued centralization of some functions. There may be data that is maintained by some other department of the Governorate that is useful to Land Management. By providing communications linkages between Governorate computers (modem, electronic mail, etc.), Land Management staff could readily read the data from other data files into its own. The reverse situation is also an option. This approach permits land management units considerable autonomy in its computer operations while at the same time promoting cooperation and integration of overall local development activities.

It should be noted, however, that, the rapid recognition of the value of geographic information systems (GIS) to planning and land management activities is changing computer capacity needs. While the Land Management offices are not ready, at his point, to plunge into the development and implementation of a complete GIS, they should be laying the groundwork for such a system. A GIS lends itself well to centralization because of its complexity and its utility to numerous departments. It is important that certain computer-related activities remain centralized with MIS. These include the procurement of hardware and software, hardware maintenance, and technical assistance.

Based on the above considerations, it is recommended that, with regard to Land Management, the offices eventually have decentralized microcomputer-based facilities employing the basic planning information systems described above. Each microcomputer should ultimately have a modem to allow for communication with other computer systems. Additionally, selected initial components of a GIS should be put in place with the flexibility to expand in the future to a complete comprehensive system. This GIS should be developed through the MIS office of each Governorate. The procurement of computers will be dependent on priorities and resources within each governorate and limited initial budgets set up for furnishings/equipment needs under the LD-II Urban Program for 1989. Some Governorates have been requesting computers while others are requesting the use of available MIS computer facilities for initial year operations.

The minimum hardware necessary for the proposed initial computerization of land management activities should included the following:

- IBM PC 386 (or 100% compatible machine) w/1 mb of RAM, 40 mb hard disk
- IBM color graphics adapter
- Color monitor
- Printer/plotter
- Mouse digitizer
- Laserjet Printer

(Wiggins 1986, in part)

The IBM PC 386 hardware recommended above is the minimum necessary to operate this system and provide for essential future expansion. It has become standard hardware for systems throughout the world.

The software necessary for operating the system described earlier in this section has been broadly defined above. The spreadsheet and database management software packages already used by MIS are more than adequate for building the basic planning information system. These packages include, Lotus 1-2-3 and dBASE III Plus, copies of which must be ordered through appropriate vendors in the United States. Each of these packages can be converted to Arabic by MIS.

The two pieces of software essential to the planning/land management information system that are not presently among those used by MIS in the field are the thematic mapping package, Atlas Graphics and the word processing software, WordPerfect. It is not known what difficulties may be encountered in the Arabization of Atlas Graphics. WordPerfect is already being used in the main MIS office.

The planning/land management information system described above is a very basic system. Consideration should be given to the future enhancement of that system through the addition of

two major pieces of software that are revolutionizing land management worldwide: computer-aided drafting and design for site development and geographic information systems. These two pieces of software will be considered "standard equipment" for planning information systems in the very foreseeable future. It is recommended that AutoCad/LANDCADD be used as the computer-aided drafting and design software, and that PC ARC/Info is the GIS software of choice.

In light of the preceding discussions, the recommended software for the Land Management planning information system is as follows:

- WordPerfect word processing software
- Lotus 1-2-3 electronic spreadsheet software
- dBASE III Plus database management software
- Atlas Graphics thematic mapping software
- AutoCAD/LANDCADD computer-aided drafting and design software
- PC-ARC/Info geographic information system software

Appendix A at the end of this report provides a list of the addresses of the vendors of the aforementioned software. A sample letter for requesting information from software vendors can be found in Appendix B. Finally, the recommended quantity of hardware and software is itemized in Appendix C.

The following references were used in making these recommendations:

Standerfer, Norman and James Rider. 1983, "The Politics of Automating a Planning Office". Planning 49,6: 18-21.

Wiggins, Lyna L. 1986. "Three Low-Cost Mapping Packages for Microcomputers". Journal of the American Planning Association. 52,4: 480-488.

Technical Advisor (TA) Contractor Related Implementation Requirements

Before the computer hardware and software technology recommended in this report can be effectively implemented, or "transferred", to the governorates, it must be reviewed and evaluated by knowledgeable TA Contractor staff to ensure appropriateness and compatibility. This requires that such staff be dedicated for this task and made available to the Land Management Team for the duration of the activity.

In addition, consideration should be given to the acquisition and installation of appropriate hardware at the TA Contractors'offices to permit the essential preview, testing, and evaluation of software for the Land Management planning information systems. Current TA Contractors'internal office practice would suggest that the MIS Team is the appropriate group to carry out this testing as part of its hardware and software procurement activities.

Section IV

LAND MANAGEMENT COMPUTER APPLICATIONS

The ultimate value in the computerization of Land Management operations lies in the amount of data that can be stored, analyzed, and retrieved and the speed and accuracy with which this can be accomplished. Even more specifically, it lies in the actual relevant uses to which the hardware and software can be put. With regard to Land Management, these uses are many-fold: projecting population growth, analyzing project feasibility, preparing market assessments, preparing budgets, and allocating resources, to name but a few. It is important to emphasize that Land Management Offices will likely be using available data developed by existing government planning entities, such as the General Organization of Physical Planning and other national or local official statistical data sources such as the Central Agency For Public Mobilization and Statistics (CAPMAS). Land Management offices will use this data in a planning information system to develop projects.

The key to the successful application of computers to land management is the availability and quality of the data that will be entered into the computer for analysis. Without accurate applicable data, there can be no useful computer applications. For this reason, this report begins its discussion of computer applications with a checklist of "desirable" data for land management. These data are further organized under database files, discussed earlier, as part of the training program components addressing office operations and/or project development activities.

Data Desirable for Land Management Computer Applications

It is assumed that the following data is available for each Governorate or can easily be generated by Governorate staff. The structure and organization of this data and its actual collection is considered as one of the work plan activities of land management office operations. This data would be used in development of project activities and feasibility reports to decisionmakers regarding supply and demand market considerations.

1. Population
2. Household size
3. Structure of household
4. Available land parcels (sites)
5. Site area
6. Property value
7. Land tenure
8. Site topography
9. Site soils and hydrology
10. Surrounding uses of land (around the site)
11. Location of site (street, name, etc.)
12. Government restriction or constraints
13. Sales transfer history of site
14. Land subdivision activity
15. Available services (physical infrastructure)
16. Household income
17. Distance of site from city center
18. Transportation access
19. Infrastructure costs
20. Location of employment centers (distance from site)

21. Tax collection
22. Number of available housing units

(drawn, in part, from: Forbes Davidson and Geoff Payne (Eds). 1983. Urban Projects Manual. Liverpool: Liverpool University Press, and David Dowall. 1987. "The Land and Housing Market Assessment: An Important Tool for Increasing Housing Delivery in Third World Cities". Berkeley, CA: University of California).

The preceding list of data represents that information which is necessary to a thorough initial land management study and on-going analysis. It is recognized, however, that not all of this data may be available to the Governorates. It is important to establish exactly what data is available at the Governorate level in order to determine what adjustments must be made, or actions taken, to insure useful computer analyses for the land management program. Such actions, may include survey research, substituting data for a comparable variable for data that is unavailable, and/or exploring other data sources.

Potential Computer Applications for Land Management

There are a number of uses (data storage, analysis, retrieval, etc.) to which microcomputers can be put to enhance the efficiency and effectiveness of land management operations. The following is a list of some of these potential computer applications:

Project Development Applications:

1. Storage and analysis of survey research data.
2. Storage and analysis of secondary demographic, political, and economic data.
3. Storage and analysis of topological, hydrological, and other site-specific data.
4. Storage and analysis of cadastral data including land values information.
5. Creation of database files on individual sites, including such information as location, ownership, physical characteristics, available infrastructure, etc.
6. Preparation of maps showing existing land uses, roadways, other physical infrastructure systems, future land uses, site features.
7. Preparation of report graphics, as a visual component of technical reports.
8. Possible use of G.I.S. to create interactive land management systems (a future consideration).
9. Market analysis (assessment).
10. Fiscal impact analysis.
11. Land resource protection (suitability analysis).
12. Infrastructure service extensions (coordination & scheduling new land resource studies).

13. Decisionmaking databases.

14. Capital improvements programming.

15. Population projection impacts.

16. Preparation of development pro forma analyses. (i.e.: cost amortization, revenues, and operating expense data over time).

17. Cross - impact analysis.

18. Development cost estimations and phasing.

19. Cost-benefit analysis.

20. Cost-effectiveness analysis.

21. Land value pricing computations.

22. Vacant land distribution analysis.

Office Administration Applications:

1. Pursuit and resolution of legal issues involving land ownership and regulation.

2. Inter-and intra-agency coordination activities.

3. Development of cost recovery strategies.

4. Preparation and monitoring of contracts.

5. Budgeting.

6. Project management.

Databases to be employed in carrying out these applications are discussed in Section II of this report in greater detail as training program components.

SECTION V

STAGING OF LAND MANAGEMENT TRAINING/COMPUTERIZATION ACTIVITIES

The staging of the computerization of the Land Management offices and the training of the staff is a difficult undertaking, prone to yield varying results. This is due to the fact that the various governorates are at different stages in the development of their Land Management offices. While Port Said and Suez have established their offices and hired staff as of the end of June, 1989, the others are still working through the process.

Nevertheless a general schedule for accomplishing this computerization and training can be recommended. The schedule should be viewed as an overall guideline, as opposed to a rigid timetable. It assumes a prototypical governorate Land Management office which has hired its staff and established its office facilities. The activities are staged according to a schedule that ranges from September 1989 to December 1990, a period of 15 months. This was done purposefully in an effort to complete the training of the Land Management staff well in advance of the June, 1992 project completion date.

1. Purchase and Installation of Computer Hardware - This is necessarily the first activity to be accomplished. It should begin as soon as possible.

   Begin: September, 1989.
   Complete: November 1989.

2. Purchase of Computer Software - This activity can be going on at the same time as the purchase and installation of hardware.

   Begin: September, 1989.
   Complete: November, 1989.

3. Basic Land Management Orientation Workshop - This activity can run concurrently with the hardware and software acquisition and installation, as it has no direct relationship to them. Including preparation time, this activity should be staged as follows:

   Begin: September, 1989.
   Complete: November, 1989.

4. Land Management Seminar/Workshops - This seminar should be held relatively early on in the process, as it will serve as a vehicle for generating and exchanging ideas that should prove extremely useful to the Land Management offices staff. Preparation will be extensive.

   Begin: November, 1989.
   Complete: March, 1990.

5. Basic Computer Skills Workshops - This workshop is a prerequisite to several other courses; therefore, it should be accomplished by the summer of 1990.

   Begin: April, 1990.
   Complete: May, 1990.

6. Land Management Feasibility Analysis Techniques - This course is one of three to be conducted in the United States. In order to insure maximum access to faculty and facilities, it should be scheduled during the summer months.

   Begin: June, 1990
   Complete: August, 1990

7. Automation and Computer Training of Land Management Systems - This is the second of the three courses to be conducted in the United States. It should be staged concurrently with the other two.

   Begin: June, 1990.
   Complete: August, 1990.

8. Shelter Affordability Training - The third and final U.S. - based training course can be offered concurrently with the other two, listed above.

   Begin: June, 1990.
   Complete: August, 1990.

9. Land Management Administration Procedures Workshop - This workshop is scheduled to take place in Egypt. It should follow within a reasonable period of time after the U.S.-based training.

   Begin: October, 1990.
   Complete: December, 1990.

The preceeding computerization and training activities represent the basis for preparing the Governorate Land Management staffs for their duties. If time and resources permit, it would be highly useful to train selected staff in the use of computer-aid drafting and design (CADD) software and in the use of geographic information systems (GIS). This latter training must accompany acquisition of the necessary software and will probably, of necessity, be conducted in the United States. If it is undertaken, it should be offered late in the project period (i.e.: during the final six (6) months. Figure 1 summarizes the staging of computerization and training for Land Management offices.

PROPOSED TIMETABLE FOR STAGING LAND MANAGEMENT COMPUTERIZATION AND TRAINING

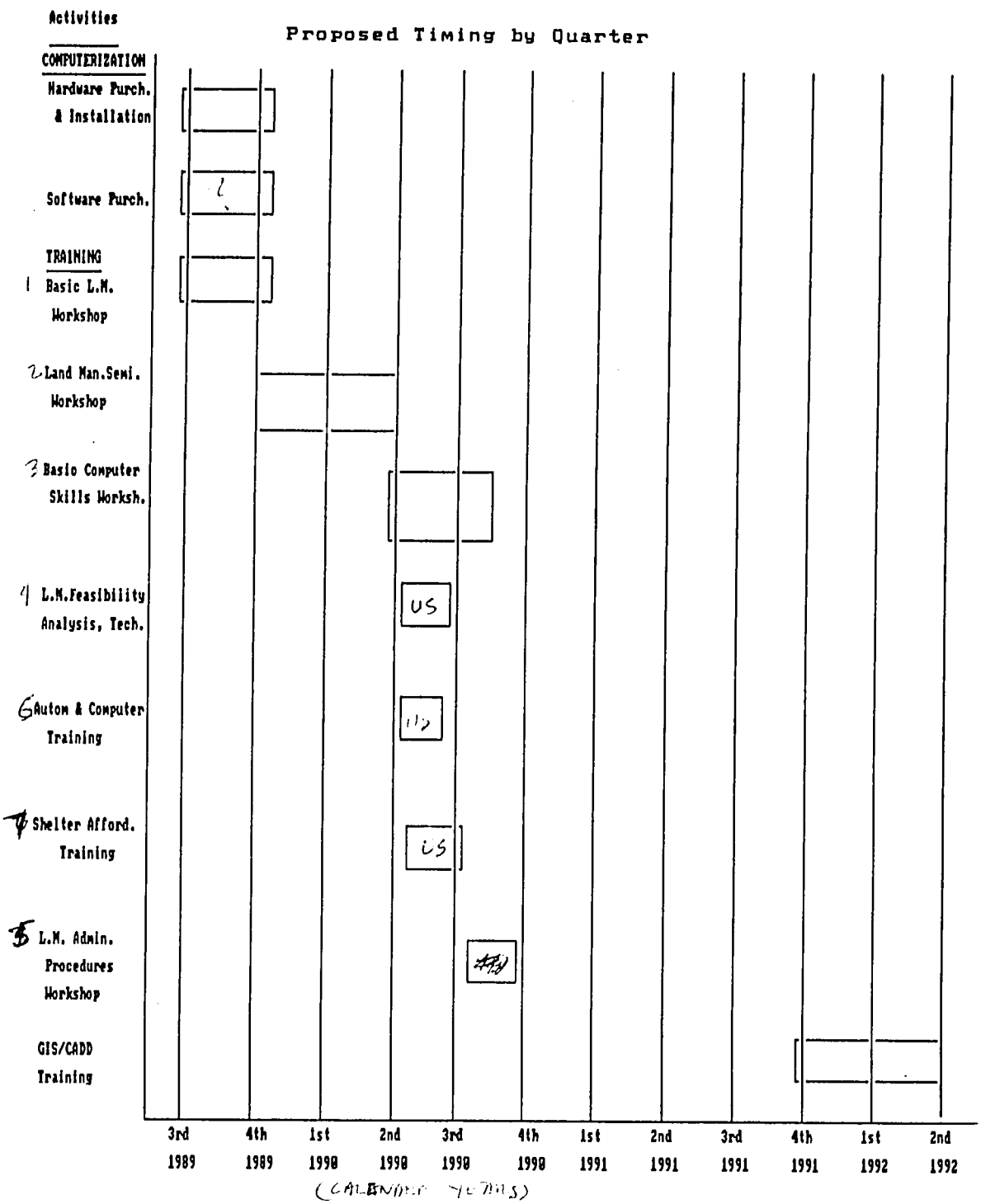

FIGURE 1

SECTION VI

SUMMARY OF MAJOR RECOMMENDATIONS

The following list represents a condensed version of the major recommendations discussed in this report. These recommendations are a product of a review of project reports and other relevant documentation and numerous interviews and discussions with LD-II staff and appropriate persons in the governorates over a five-week period. The major recommendations have been grouped according to training and computerization considerations.

Training Recommendations

a. Seven basic workshops/seminars/courses should be provided to the Land Management staff in the Governorate:

   (1) Basic Land Management Orientation Workshop
   (2) Land Management Seminar/Workshop
   (3) Basic Computer Skills Workshop
   (4) Land Management Feasibility Analysis Techniques
   (5) Land Management Administration Procedure Workshop
   (6) Automation and Computer Training of Land Information Systems.
   (7) Shelter Affordability Training

b. These seven training modules should be staged so that they are completed within the 15-month period from September 1989 through December, 1990.

c. Modules (1), (2), (3) and (5) in (a) above, should be provided in Egypt.

d. Modules (4), (6), and (7) in a, above, should be provided in the United States and should be scheduled for the summer months to insure full access to faculty and facilities.

e. If time and resources permit, training in the use of geographic information systems (GIS) and computer-aided drafting and design (CADD) should be considered for staging in the last six (6) months of the LD-II Urban Project.

Computerization Recommendations

a. It is essential to the efficient and effective operations of the Governorate Land Management offices that they be equipped with sufficient computer hardware and software to maintain a basic planning information system.

b. A basic planning information system should consist of the following software:

   (1) DOS
   (2) Word Processing
   (3) Electronic spreadsheet
   (4) Database manager
   (5) Computer-aided mapping

c. It is recommended that for packages (1), (3) and (4) listed in b, above, the software currently employed by the MIS Team, namely: MS-DOS, Lotus 1-2-3, and dBASE III Plus be used.

d. It is further recommended that Atlas Graphics be used as the computer aided mapping software package because of its multiple capabilities and reasonable price and that WordPerfect be selected as the word processing software because it is currently in --- in MIS main office.

e. The basic hardware needed to maintain this proposed planning information system should include the following:

(1) IBM-PC (386) computer
(2) Color graphics adapter
(3) Color monitor
(4) Printer/plotter
(5) Mouse digitizer
(6) Laserjet printer

f. It is strongly suggested that planning begin now for development of a geographic information system (GIS) that could be used by Land Management, and other departments in each Governorate. This planning should take place at two levels: initial planning by the TA Contractor and more detailed planning at the Governorate level. GIS should be focused on strategic project-specific activities, in keeping with the purpose of the Land Management program. Without GIS technology, however, urban development in Egypt cannot move effectively into the 21st Century.

g. Acquisition procedures for hardware and software should begin as soon as possible so that computers are in place by the time that Land Management staff have received their training.

h. It is recommended that computer activities for Land Management be decentralized in the Land Management office of each Governorate. Procurement of hardware and software, maintenance, and technical assistance should continue to be centralized with MIS initially at the Technical Assistance (TA) Contractor level and eventually transferred to the Governorate level.

i. Initial computer training in both basic skills and land information systems should be accomplished within the first year to facilitate project-based studies later in the project. On-going "refresher" and new technology courses should continue to be offered after this time.

Appendix A

VENDOR ADDRESSES OF RECOMMENDED SOFTWARE FOR REVIEW CONSIDERATION

SOFTWARE VENDORS*

Priority Software Packages For Basic Computer Applications

- Lotus Development Corp. (Lotus 1-2-3)
  55 Cambridge PKWY.
  Cambridge, MA 02124

- WordPerfect Corp. (WordPerfect)
  1555 N. Technology Way
  Orem, UT 84057

- Ashton - Tate (dBASE III Plus)
  20101 Hamilton Ave.
  Forrance, CA 90502 - 1319

- Strategic Planning Systems, Inc. (Atlas Graphics)
  15233 Ventura Blvd., Suite 708
  Sherman Oaks, CA 91403-2293

- Autodesk, Inc. (AUTO CAD)
  2320 Marinship Way
  Sausalito, CA 94965

- LANDCADD, Inc. (LANDCADD)
  10418 E. Tanglewood Rd.
  Franktown, Co 80116

Other Software Packages for Other Computer Applications

- Cadkey, Inc. (CADKEY)
  440 Oakland Rd.
  Manchester, CT 06040

- Generic Software, Inc. (Generic CADD)
  8763 148th Ave, NE
  Redmond, WA 98052 - 3483

  Software Publishing Corp. (Harvard Graphics, Harvard Project Manager)
  1904 Landings Dr.
  P.O. Box 7210
  Mountain View, CA 94039-7210

Exel Microelectronics, Inc. (MULTIMAP)
2450 Commerce Dr.
San Jose, CA 95131

Peerless Engineering Service (PCMAP)
5819 Soquel Dr.
Soquel, CA 95073

SYSTAT, Inc, (SYSTAT)
1800 Sherman Ave,
Evanston, IL 60201

Statistical Graphics Corp, (STATGRAPHICS)
Five Independence Way
Princeton Corporate Center
Princeton, NJ 08540

SPSS, Inc. (SPSS-PC+)
444 N. Michigan Ave,
Chicago, IL 60611

Mapinfo Corp. (MAPINFO)
200 Broadway
Hendrick Hudson Bldg.
Troy, NY 12180

Geo Based Systems, Inc. (Strings)
P.O. Box 13545
Research Triangle Park, NC 27709

ESRI (PC - ARC/INFO)
Western Regional Headquarters
380 New York St.
Redlands, CA 92373

Software Distribution Service (Urban Data Mgmt. System)
Center For Urban Studies
University of Akron
Akron, OH 44325
(must be member of APA Information Technology Division - $ 15 annual dues for APA members)

Source: Data Source, 1989. First Edition.

Appendix B

SAMPLE LETTER REQUESTING DEMONSTRATION SOFTWARE AND OTHER DATA

Date

Dear Sir/Madam,

We are exploring the computerization of land development information and land management office activities using IBM/PC hardware, as part of a project being conducted in Egypt and sponsored by the United States Agency for International Development (USAID) and the Government of Egypt. We are particularly interested in your software packages. We would be particularly interested in knowing if your software is compatible or can be made compatible with NAFITHA Arabic Utility or other Arabization conversion programs.

Any informational brochures, demonstration disks, etc. that you might be able to send us Would be greatly appreciated. In addition, any information you have on costs, including shipping and handling charges to locations in Egypt, would be useful. Please send all materials to my attention at the following address:

Wilbur Smith Associates
P. O. Box 2315 Ataba
Cairo, Egypt 0000

Thank you for your assistance. If I can provide any further information please do not hesitate to contact me or the individuals copied below on this letter. Our FAX number in Egypt is (202) 355-0427 or 355-1063. Please advise of your FAX number, or a local representative in Egypt, should we require clarification on any material you can provide.

Very truly Yours,

Richard E. Miller
Chief of Party
LD-II Urban Program

cc: Mr. Bruce Davis
MIS Team Leader, LD-II Urban Project
Mr. Richard Heald
Land Management Team Leader, LD-II Urban Project.

Appendix C

ESTIMATED COMPUTER TECHNOLOGY NEEDS

Hardware Description	Recommended Governorate Needs *	Recommended TA Contractor Needs
IBM - PC (386) or 100% compatible	12	1
Color graphics adapter	12	1
Color Monitor	12	1
Printer/Plotter	12	1
Mouse digitizer	12	1
HP Laserjet Printer	6	1
Software Description**		
Word Perfect	12	1
Lotus 1-2-3	12	1
dBase III Plus	12	1
Atlas Graphics	12	1
Auto CAD	12	1
LandCADD	12	1
PC ARC/INFO	12	1
Equipment/Furniture		
Writing desks	12	1
Computer desks	12	1
Voltage regulators	12	1

* Quantities are based on the assumption that each of the six urban governorate Land Management offices will procure two (2) computers: one for the development and operation of its planning/land management information system and one for day-to-day office functions.

** Procurement regulations require that one copy of each software package must be purchased for each machine at a given site. This is intended to prevent the copying of software which is illegal under U.S. copyright protection laws.

Note: This list represents a general accounting of computer technology needs. Detailed specifications of hardware requirements should be developed at a later date, as they are not within the scope of this report.