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**THE ASPECTS OF IMPLEMENTING A LEGAL LAND  
CADASTRE IN THE REPUBLIC OF ARMENIA**

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## INDEX

### THE ASPECTS OF IMPLEMENTING A LEGAL LAND CADASTRE IN THE REPUBLIC OF ARMENIA

	<i>Page</i>
ABSTRACT	i
EXECUTIVE SUMMARY	ii
I. ESTABLISHMENT OF A LEGAL CADASTRE	1
II. DISCUSSION OF THE ELEMENTS	1
A. THE NEED FOR AN ADEQUATE DESCRIPTION OF THE PROPERTY OF A PARCEL OF LAND	1
B. ADEQUATE SURVEYS OF MONUMENTATION: A REQUIREMENT FOR GOOD DESCRIPTIONS	2
C. A SINGLE LEGAL DOCUMENT SHOULD BE USED FOR ALL THREE CADASTRES	3
D. ALL INDIVIDUALS UNDERSTAND THE CADASTRE	3
E. A CADASTRAL PROGRAM MUST HAVE A SINGLE DIRECTION, ADEQUATE FINANCING, AND QUALIFIED SURVEY AND OFFICE PERSONNEL	4
III. INTRODUCTION AND BACKGROUND	5
IV. PRELUDE TO THE REPORT	7
A. HISTORY	7
B. PRESENT STATUS	9
V. SCOPE OF WORK	10
VI. IMPLEMENTATION OF THE CADASTRE	11
A. THE THREE CADASTRES	11
VII. RECOMMENDATIONS OF TASK COMPLETION	12
A. DISCUSSION OF TASKS	12
B. TASK 1 - LONG TERM RECOMMENDATIONS	14
C. TASK 2 - DISCUSSION	19
D. TASK 2 - LONG TERM RECOMMENDATIONS	21
E. TASK 3 - DISCUSSION	22

A

F. TASK 3 - LONG TERM RECOMMENDATIONS	25
G. TASK 4 - DISCUSSION	28
H. TASK 4 - LONG TERM RECOMMENDATIONS	29
I. TASK 5 - DISCUSSION	32
J. TASK 5 - LONG TERM RECOMMENDATIONS	35
VIII. SUPPLEMENTAL COMMENTS AND RECOMMENDATIONS	38
A. SUCCESS	38
B. COMMENTS	38
C. RECOMMENDATIONS	39
IX. EPILOGUE	42
X. SPECIAL APPRECIATION	43
LIST OF ANNEXES	44

## ABSTRACT

This report is a continuation and a supplement to previous reports by Richard Almy and Lynn Holstein that were directed to the creation of a fiscal and a legal cadastre in the Republic of Armenia.

It proposes recommendations relative to physically implementing a legal cadastre. Certain areas are addressed including the need for adequate base maps at all levels of the cadastre, a proposed method of indexing all parcels, and suggested methods for improving surveys and the monumentation of the land parcels surveyed.

The author recognizes there are very capable agencies and individuals within the Republic of Armenia who have given serious thought and consideration to a cadastral system, yet throughout the report the author realizes the frustration of inadequate financing and a multiplicity of responsibilities for the cadastre. This report also recognizes a United Nations-Food and Agricultural Organization study of the cadastral system in Armenia. The report is sound, but unfortunately does not recognize that at this time the Republic of Armenia is unable to undertake any serious financial commitments towards a complete cadastre.

Considering these realities the author makes his recommendations, realizing that the immediate recommendations will not achieve a perfect system at this time, but their implementation hopefully will help the Republic of Armenia to initiate a total cadastral system that can be modified at a later date when adequate funding becomes available.

## **EXECUTIVE SUMMARY**

This report is a summary and findings of a short-term technical assistance mission to the Republic of Armenia by Walter G. Robillard in July/August 1994. The purpose of this mission was to assist the Republic in implementing a Legal Cadastre. For a period of approximately three years the Republic has been in the process of distributing former Government lands to private individuals through a process they call "privatization." This mission worked in cooperation with Richard Almy, who was studying the Fiscal Cadastre, during 1993 and 1994 and supplemented work by Lynn Holstein who was advising and studying the total cadastre in 1993.

## **I. ESTABLISHMENT OF A LEGAL CADASTRE**

This report attempts strictly to address the legal cadastre. It may, however, seem in conflict with prior reports in considering the fiscal cadastre, the legal cadastre, and the multi-purpose cadastre as one unified cadastre composed of three separate elements, each with certain common elements, yet each being used for separate and distinct purposes.

Some main common elements that must be included in all of the three cadastres and which are addressed in this report are:

- a. an adequate description of the property or parcel of land.
- b. a sound legal description of land, other than apartments or condominiums, is dependent on an adequate survey performed on the ground and adequate monumentation.
- c. a single legal document should be used for all three cadastres and for future conveyancing purposes.
- d. all individuals understand the purpose and requirements of a cadastre.
- e. a cadastral program must have single direction, adequate financing, and qualified survey and office personnel.
- f. a modern cadastral system to be effective and responsive to present and future needs must employ modern technology.

## **II. DISCUSSION OF THE ELEMENTS**

### **A. THE NEED FOR AN ADEQUATE DESCRIPTION OF THE PROPERTY OF PARCEL OF LAND**

#### **1. Multiple Descriptions Found.**

The consultant found all 38 Districts, Armgeoprizem, and the City of Yerevan were each using independent systems for describing privatized parcels. In one instance it was found the same parcel number was used several times in the same district. A single identification system should be instituted for all land parcels, and each distinct unit of a building which may be separately owned should have its own reference number unique to that one parcel or unit.

All prior consultants to Armenia and to other countries agree with the aforementioned, but there is some disagreement as to the number of parcels that can be conveyed in a single

document or Certificate of Title. Legally, there is no need to provide for a separate document to convey a single parcel. If the description of the parcel is adequate and unique, legally multiple parcels, including land, dwellings, and apartments can be conveyed in the same document. At a later time the system should provide that separate conveyances may be made.

The City of Yerevan has excellent records and to convert these records, modern legal documents should be standardized and computerized for efficient and effective use for both fiscal and legal cadastral purposes.

A legal cadastral system and its descriptions should reflect the condition of the parcel at the time the Certificate of Title is granted or transferred. Descriptions must provide for the selling of property rights and the descriptions of these rights: easements, minerals, water, etc. The ultimate plan should be to show these unique parcels on cadastral maps that will be maintained where the Certificates of Title are prepared.

An unambiguous description is best provided for by a combination of field surveys, which are then identified on general maps of the area and specific maps of each parcel, and aerial photographs. There is no complete index of what maps, scales and dates are available in the Republic. Little information was available as to the availability of aerial photographs.

Whenever maps of cadastral accomplishments were shown, the maps were on "metal mounted" bases. It was fully explained that if multiple copies of these were available, but it was assumed the copy presented was the master and only copy available. No base maps were found in the villages. All maps were maintained at the Government Offices in Yerevan.

These metal mounted boards must be reproduced so copies can be made available to the field offices.

Technology is available in the country to accomplish this work, but there is a scarcity of photographic materials, reproducible mylar (plastic base film), and electricity to perform basic photographic operations.

There is an urgent need to update existing maps and to make copies available to the districts, villages, and other agencies and offices which maintain cadastral records.

It is recommended that one of the first tasks that should be accomplished is a single identification be used for each separate parcel or unit. This was discussed and will be implemented.

**B. ADEQUATE SURVEYS AND MONUMENTATION: A REQUIREMENT FOR GOOD DESCRIPTIONS**

An examination of field practices of survey crews found outdated and basic methods of completing field surveys. The Final Certificates of Title are being withheld until field surveys can be completed in the villages. This is being done so the exact area and dimensions can be placed on the State Act. There is now a five year backlog in rural areas and in some villages.

No monumentation of corners was done, and no bearings were depicted on the maps. All parcels were described by artificial features, fences, neighbors, roads, but monumentation of all corners was lacking.

These surveyors are creating the original boundaries of the parcels and as such these boundaries will forever remain the legal boundaries. As such, all corners and lines should be adequately marked.

These recommendations are made with the full realization there is barely enough funding to survey the lands, let alone place expensive monuments at all corners or at least at major corners. It is recommended the survey agencies consider the necessity of placing monuments and attempt to make funds available to place these monuments in the ground at the time of survey.

Equipment of the survey crews should be upgraded. Although modern total stations cannot be financed, the present plane tables should be replaced, and adequate small supplemental drafting equipment, survey tapes and other support equipment should be made available.

**C. A SINGLE LEGAL DOCUMENT SHOULD BE USED FOR ALL THREE CADASTRES**

A unique situation was found where two separate agencies and the City of Yerevan were using separate documents to convey parcels and apartments. The two agencies used one document for land only and a separate document for land with a dwelling. The multiplicity of documents is unnecessary. Legally the same document can be used to convey either land and/or dwellings.

Recommendations are made to design a single document that can be used by all agencies. Funding should be made available to finance the Scientific Research of the City of Yerevan to develop registration of all Certificates, which would include a suitable document for registration.

**D. ALL INDIVIDUALS UNDERSTAND THE CADASTRE**

It was found those individuals involved with the cadastral processes in Yerevan had an excellent concept of what it was the Republic was trying to accomplish in introducing the cadastre. The more removed the individuals, survey crews and villages, were from Yerevan,

the less they understood what the objectives and requirements were.

Recommendations are made to institute a public relations training program through the Yerevan agencies to present public forums for the 100+ surveyors, for the various 38 Districts and for mayors of the various villages and cities. These forums would explain the various aspects of the cadastre and the necessity for registration and adequate surveys. It will explain costs, expectations, legal requirements and responsibilities of a sound cadastre.

**E. A CADASTRAL PROGRAM MUST HAVE A SINGLE DIRECTION, ADEQUATE FINANCING AND QUALIFIED SURVEY AND OFFICE PERSONNEL**

This is a multi-directional discussion. All individuals and prior reports recommend that a single agency be responsible for the cadastral system. Presently, cadastral activities are under the direction of three agencies. This consultant does not disagree with this recommendation philosophically, but believes it is not practically feasible at this time.

A three-pronged recommendation is made. First, the present agencies should be permitted to continue as is. To disrupt their functions at this time by developing a new agency would cause additional delays in programs that are already lagging. The direction, for the present time, should be through a coordinating committee composed of those individuals who are presently conducting cadastral surveys and other interested Government agencies. This committee should set standards and give direction to the cadastral program.

Second, if a decision is made to place cadastral activities under a single unified agency, then line bases financing should be provided. Presently each agency finances its own cadastral activities. If a single cadastral agency establishes line financing, the financing of the agency should be identified and directed to cadastral activities.

Third, a sound cadastral program requires trained personnel, both field and office. It is recommended that the survey crews, especially party chiefs, be given cadastral training. It is accepted that these people are trained in surveying in general, but a land surveyor or cadastral surveyor requires a degree of training and understanding to emphasize the importance of creating land boundaries, adequate monumentation and the writing of adequate and legal parcel descriptions. Office personnel should also have training in cadastral record creation and the importance of subsequent record maintenance. These two recommendations will require purchasing adequate surveying equipment, supplemental supplies, and computers, plus training for the individuals as to proper methods of use and maintenance.

**F. A MODERN CADASTRAL SYSTEM TO BE EFFECTIVE AND RESPONSIVE TO PRESENT AND FUTURE NEEDS MUST EMPLOY MODERN TECHNOLOGY**

This recommendation is not a duplication of E, but rather a supplement to E. Yes, the cadastral program can exist using the antiquated survey equipment and the manual system of registering Certificates of Title (State Acts) or deeds. However, in order eliminate backlogs in

surveys and to provide accurate and rapid transfer of data and information to the various tax offices and registry offices, all areas must be modernized with state-of-the-art equipment.

In the survey area, it is highly improbable that the field survey crews will be able to complete their survey tasks in a timely manner because of the scarcity of equipment, trained personnel and a lack of understanding of what it is they need to do. The design and implementation of a geo-oriented land description system is the ultimate goal of the cadastre. This will require precise surveys positively placed in geographic positions. To accomplish this will require new field survey equipment, including electronic distance measuring equipment, tapes and global positioning units. It is recommended that the cadastral group consider sharing new technology with other agencies, e.g. Minerals and Forestry, to accomplish their tasks. This will be discussed in greater depth in the report.

In the office area, the need for computerization of the cadastral system in its formative stages is important. At this time, most records are manually maintained. If computerization is delayed, the cost of bringing the system into a modern format will be beyond the capabilities of the present funding levels. It is recommended that computers be provided for the various cadastral agencies and that all cadastral records be permanently filed and the system maintained.

### **III. INTRODUCTION AND BACKGROUND**

This report is the result of a one month TDY trip to the Republic of Armenia where Walter G. Robillard was asked to continue the work from previous trips by Lynn Holstein in 1993. This should be considered as a supplement to and an extension of the earlier evaluation.

This consultant elaborated on some of the same subject matters Holstein addressed, but he also included new areas which he believed were important to a cadastral system and its implementation.

The writer had the opportunity to overlap his trip and examination with Richard Almy who examined and commented on the fiscal cadastre of Armenia. The focus of this report will be on the legal cadastre and a proposed multi-purpose cadastre for the country.

The focus will consider concrete suggestions to implement the fiscal and legal cadastre within the Republic of Armenia. These recommendations are based on personal visits to various government offices and villages, discussions and comments from various agencies and ministries plus examination of several individual reports that were prepared and presented for consideration.

The remaining time was dedicated to making a more in depth examination and subject specific examination of aspects that were identified as being necessary to his specific tasks.

The Republic of Armenia is attempting to identify and to install a cadastral system for identification of all of its lands and for taxation purposes, in what they call "privatization," the granting of parcels now in Government ownership, and for subsequent transfer of parcels between private persons.

The concept of a cadastral system has the potential of becoming a major function for the Armenian government. Presently the government agencies involved in privatizing lands are the Minister of Agriculture and various city authorities. There is no one agency responsible, but several governmental agencies seem to give direction and several governmental ministers, Deputy Ministers and employees have an excellent understanding of what is wanted in a cadastre. As a result of this, there seems to be some hidden "in-fighting" or positioning for responsibilities and authority that was observed. The UN/FAO report dated June 1994 on "The Completion of Land Reform in Armenia" recommended full authority for the cadastre be designated to the Department of Agriculture (Annex 1). Holstein recommended a separate independent agency be created, yet neither recognized that an on going cadastral program was present, with no coordination among the agencies. To initiate a separate agency at this time could possibly set the programs back a significant period of time.

Walter G. Robillard, a registered surveyor, forester, attorney, educator, and author on land and boundaries, real property and related matters commenced his visit on 20 July 1994 and terminated on 18 August 1994. The first two weeks concentrated on visiting the various agencies responsible for cadastre records, surveys and the various aspects of land parcelization. This time span overlapped with Richard Almy, who was concentrating on the fiscal cadastre. This writer may seem at odds or in contradiction with recommendations or statements made by previous consultants, Almy and Holstein, but he would like to point out that he is not a specialist in tax matters nor a theorist, but his specialty lies in the areas of land descriptions, titles, mapping, boundaries, boundary disputes, and survey matters relative to land. The consultant has worked in these areas for over 40 years and served as an expert witness in numerous court litigation in the same areas as a 30 year employee and regional surveyor for the United States Forest Service. He addresses the technical legal cadastre as it relates to these areas and the legal and multi-purpose cadastre. The focus of this report and the investigation is directed with the urban approach in mind. However, by necessity some aspects of the rural areas must be addressed because the same philosophy and methods will apply to both. If methods can be perfected in the rural areas, where the parcels are less concentrated, then when perfected they can be adopted and adapted for the urban areas.

The author was also privileged to review cadastral reports prepared by a United Nations team that visited Armenia. The latest report titled Agricultural Reform Support Project, Annex 2, Completion of Land Reform, undated.

Comments will be made about this report and will be incorporated in my comments.

## IV. PRELUDE TO THE REPORT

### A. HISTORY

Under the Soviet authorities all land was deemed and considered to be in the absolute ownership of the State. The people of Armenia have lived under this concept for nearly five generations. Few individuals alive today remember land ownership prior to the Soviet era. The concept of state ownership formed the framework for the entire present land system of Armenia.

In the rural areas land was classified and divided by producing capacity into large collectives or state farms. It was these estates that made up basic units for the rural land use. On each collective estate spatial sub-units were allocated for public or private housing or gardening with private ownership of buildings being permitted.

Originally maps were prepared showing soil classification and general topography and planimetric features. All information as to coordinates were considered classified information and were held in secret. In some areas aerial photographs and photomosaics were available, but the poor quality and the questionable scale precluded their effective use. It is my understanding that the maps and aerial photographs were restricted in their distribution.

Rural villages were usually controlled by a peoples council. Apparently, there were no requirements for belonging to these councils. It was apparent that all lands are being classified according to criteria that had been established many years ago to meet the needs of the distribution under the Soviet direction. This classification is too basic to be applied to the needs of today's land classification needs.

A visit to field surveying parties was most helpful in being able to understand reasons why the preparation of the final State Acts (deeds, Certificates of Title) was delayed in most villages and other areas. Whereas nearly 90% of the rural and village parcelizations have been granted, the final documents are being delayed because of surveys not being completed. Presently it is estimated that the field survey crews are now five years behind the office documentation and final deed preparations. The field crews are using inefficient surveying and outdated equipment, simply because no better was available at the time the work started. They used what equipment and knowledge they had. Apparently no formalized or unified training cadastral training has been given to these field crews. In conducting their work, the crews were using plane table methods that produced only linear measurements and no angular measurements.

In addition, field crews conducting the field surveys in the rural and the urban areas are failing to place adequate property monuments for the identification of the surveyed parcels. This failure was highlighted by the United Nations in their Aide Memoire (Annex 3. m P.3 (6)).

No instructions or directions were given explaining the necessity of placing monuments at the property corners being surveyed and identified. This practice was universal in both the rural areas and in the cities and villages. This failure should be considered serious and should be

corrected. This was addressed by the United Nations' reports as a major deficiency or set back in implementing a sound cadastral system. It is possible that this failure will cause serious legal problems in the future. If what has been done in other societies can be considered as a prelude to the Republic of Armenia's problems, the failure to adequately identify and monument the created corners could cause serious boundary problems in the future and will certainly lead to disputes and conflagrations between neighbors and there always exists the possibility of future litigation.

All surveyors working in the cadastre originally worked in a system that did not recognize individual property rights, and as such the survey professionals are limited in their understanding of the basic requirements of the adequate and legal documentation for cadastral survey information.

Records of the land possession and new assignments are maintained on topographic maps at the scale of 1:5,000 or 1:2,000 and larger. These maps are difficult to use and to reproduce because they have been drafted on what is referred to in the profession as "metal mounts." The maps are actually drafted on a paper surface that has been glued to a rigid aluminum sheet for stability.

During the era of Soviet influence, the State delegated the right to distribute land to the municipalities. The municipalities were then granted the right to allocate the land through a land use cadastre. The allocation of a lot usually carried with it the right to construct a house which would permit inheritance and the right to sell or donate the house, separate from the land. The right to the land use was separate from the use of the house or building. Written records were maintained in the city, and maps at a scale of 1:2,000 or greater were kept as part of this official record.

From the initial stirrings of *glasnost* and *perestroika* in the 1980's to the ultimate collapse of the Soviet system in the early 1990's, the entrance of the former Soviet bloc, including Armenia, into the principles of democracy and the resulting principles of land ownership, the peoples of these former Soviet nations are having to learn the formerly unknown responsibilities and authorities that go with the private ownership of land. With the collapse of the Soviet, the privatization of land was high on the agenda of most eastern governments, including Armenia. With the desire to privatize the former communal lands (commonly owned) as quickly as possible, little thought was given to the necessary requirements and the processes needed to make the desired privatization work.

It should be noted that prior to the collapse of the Soviet system, there existed in Russia a thriving market for buildings, especially dachas, and as such the ownership of the buildings and the possession of the land was registered in the name of a person and not the location of the property. This concept has been an important factor in recent developments relative to the privatization of lands in the Republic today.

The private ownership of land with the associated rights and responsibilities with this ownership have been understood and accepted in the Western nations for centuries, but the former Soviet republics have had no background experience on which to build a "land ethic" necessary to create and implement a cadastre. Too quickly they attempted to adopt some of the Western approaches. Yet, understandably, they were influenced by and have retained some of the former beliefs associated with communal ownership.

With the collapse of the Soviet land system, the newly emerging democracies, including Armenia, went all in on privatizing land for private ownership without adequate planning or thought. They hoped to get as much land into private ownership as soon as possible. They fully realized land is a basic economic resource for their country. One of the major strengths of the Eastern approach to a scientific culture is now coming into conflict with the Western approach of general land boundary and land title principles that have for centuries been accepted principles by landowners.

Early in the process, changes must be addressed by the government, by the citizens and the involved professionals, such as surveyors and realtors.

## B. PRESENT STATUS

Many of the former Soviet states, including the Republic of Armenia, are now having problems in the privatization of former communal lands. Some of these are:

1. Difficulty in understanding the concept of land ownership and rights of retained government lands and those privatized lands.
2. Difficulty in drafting suitable legislation to meet the requirements of private ownership.
3. Difficulty in considering all land records as public records and how these records should be indexed and retained for future use for taxation and other purposes.
4. Difficulty in realizing that a proper cadastral survey includes more than just depicting that parcel or parcels on a map and creating a description. It also includes creating bearing of the lines and the setting of adequate property monuments.

## V. SCOPE OF WORK

This consultant was provided with a scope of work prior to his departure from the U.S. This was discussed with Steve Anlian and Richard Almy. To make certain that no overlaps were present or that no gaps occurred, it was slightly modified at the project site.

After analysis of the total project, the following areas were examined and will be addressed in this report. These are identified as Tasks in this report.

1. Current Status
  - a. Present Basic Plan & Options.
  - b. Universal Indexing System for the country.
  - c. Requirements & Options for Legal Cadastre.
2. Legal framework for implementing a cadastre.
  - a. Civil code.
  - b. Contract code.
  - c. 1991 Land Code.
  - d. Proposed Land Code.
3. Requirements & Options for Land Registration.
  - a. Adequacy of basic forms for privatization.
  - b. Procedures for registration.
    1. Numbers.
    2. Timetable.
    3. Access to records.
4. Registration of secondary transactions.
5. Information storage and retrieval.
  - a. Ease of use.
  - b. Fees.
  - c. Computerization of records.
6. Suggestions for universal indexing system.
  - a. Fiscal
  - b. Legal
  - c. Multi-purpose cadastre.
7. Conditions of the present cadastral system.
  - a. What is being used.
  - b. How the data will be used.
  - c. Map standardization.

8. Develop a Legal cadastre.
  - a. Sporadic v. systematic.
  - b. For an illustrative city examine
    1. Base maps.
    2. Surveyors available to do the job.
      - Training & costs.
    3. Expected difficulties for urban boundaries.
    4. Cartographic capabilities & costs for obtaining cartographic information.

Although the primary thrust of this study is directed towards urban and city parcels that compose the legal and fiscal cadastre, these cannot be separated from the rural farm parcels. All areas will be discussed, but with the emphasis directed to the urban and city areas.

## **VI. IMPLEMENTATION OF THE CADASTRE**

### **A. THE THREE CADASTRES**

The three cadastres were adequately described by Holstein. In his report, in which he went on to discuss the legal cadastre. This author accepts the definition and approached his task with that in mind.

This consultant emphasizes that the basis of all cadastres is a sound and identifiable legal cadastre. If the legal cadastre is one based on adequate and sufficient legal descriptions, the other cadastres (tax cadastre and multi-purpose) can then be implemented and all privatized parcels of land can be identified.

The four elements of a legal cadastre are worthy of repeating. These elements were part of the scope of work this detailer was directed to examine and comment on.

- (1) records of the identification of the objects of immovable property rights as well as of the owners or holders of the rights and interests in the immovable property, both state and private;
- (2) cadastral maps and plans of the immovable properties, the result of cadastral surveying;
- (3) an efficient system of immovable property transfer, exchange, or buying and selling... ; and,

- (4) an information management policy that ensures that the information in a legal cadastre is available for public use to ensure: (a) public notice of rights is available, (b) equity in the land market, a (c) efficiency in the wider function of land administration, especially the fiscal cadastre and property tax, housing, planning, and urban and rural management.

As a detailer, the scope of my proposed work or study was to augment the work of Richard Almy and to expand and to supplement the prior work of Lynn Holstein.

## VII. RECOMMENDATIONS OF TASK COMPLETION

In the Scope of Work provided the detailer, five (5) specific tasks were identified for examination and recommendations. These five areas are discussed.

### A. DISCUSSIONS OF THE TASKS

#### 1. TASK 1

In task 1, three recommendations were requested.

- a. defining options and a basic game plan for establishing a market oriented registration function;
- b. establishing a consistent property location indexing system among all agencies maintaining cadastral information; and,
- c. options and basic requirements for undertaking compilation of the legal cadastre over time.

In visiting the various agencies and villages, the detailer was able to make personal observations as to the present status of a market-oriented cadastre system. It was found that many of the individuals who have received privatized lands failed to properly record the parcels, thus inhibiting registration for future sales and for the fiscal (tax) cadastre. It is important for the tax cadastre to rely on a specific description. It is not so important that the description with all of its elements, bearings, distances, and references, be recited in the tax cadastre or tax inventory office. The important element needed is; the parcel and its recorded (legal) owner be identified to the specific parcel. Many nations rely on tax maps to accomplish this function. United with a computer indexing system, the surveyed tax parcels are drafted on a stable (plastic) material. All descriptions of each parcel are identified by number, with the parcel owner's name identified in the computer system by its unique number. The base material on which the parcels are identified or plotted can either be a cadastral map prepared by the

surveyors or on an aerial photography, with the map of the planimetric features placed on the photograph. It is not recommended that paper base materials be used for these tax maps or for the original map bases. The paper will disintegrate with extensive use and over a period of time (Annex 4 and 5).

Annex 4 depicts a portion of an actual Tax Map from the State of South Carolina. Note that the basic plan is only to identify parcels of land by parcel number in relation to the overall picture. All other information about each parcel is on a data base in the computer. A person can access the computer by parcel number, then the owner, tax value, taxes paid, etc. is retrieved from the data base. The records are maintained by the Government. All records must be considered for public use and any member of the public must have ready access for reference to any of the public records. Although Annex 4 is on a paper material, the actual map is on the type of material depicted in Annex 5.

Annex 5 is an aerial photographic mosaic (orthophoto map) that can be produced using aerial photographs and existing maps. The maps are photographed on the aerial photographic images. This makes an excellent base material for keeping original records and for making available to other Government agencies, villages and other users. The original maps can be updated very easily with reasonable costs. New parcelizations can be placed on the material by hand drafting. Periodic updating of the maps is accomplished by computer-aided drafting when a new base map is produced.

Immediate steps must be taken to stress the importance of having each land owner register each parcel. There is a great hesitancy in doing this.

Indexing the nearly 1.5 million parcels that will be developed in the rural, urban and city areas will task the various agencies. In most areas at this time, parcels are being indexed by the name of the grantor or the person receiving the land. This policy is in keeping with the practice inherited from the former Soviet authorities. This type of indexing is the least favorable for a land system registration. The concept is: "Land owners may change but land descriptions should not." After studying the problem, the detailer recommends a system based on a modification of that recommended in a report entitled "The Concept of the Republic of Armenia's Urban Land Cadastre" authored by Gourgen Moushegian and Petros Soghomonian (Annex 6, page 16). The two authors prepared an excellent and in-depth report in early 1994 which addressed the indexing system for urban lands. I agree with the system that was proposed. It has merit and can be adopted and adapted as an indexing system using existing maps. This system provides for urban indexing but the present rural indexing is primarily based on grantee names.

Unless maps are readily available for reference from rural villages to the City of Yerevan, the indexing system cannot be effectively initiated and utilized.

At the time of the detailer's visit, three separate agencies were actively involved in cadastral activities. Each had separate responsibilities for the cadastre in Armenia. These agencies are the Inventory Bureau of the City of Yerevan which handles the properties located within the

boundaries of the City of Yerevan; Armgeoprizem which directs the rural lands; and the Communal Services Ministry, Inventory Department, which has responsibilities for other lands.

## B. TASK 1 - LONG TERM RECOMMENDATIONS

Task 1 recommendations are made with the realization in mind that little or no additional funding is immediately available at the present time to enact any new programs or to finance new agencies. These recommendations are made with the hope that sufficient funding will eventually become available through direct appropriations and/or foreign grants or loans.

Several recommendations are reluctantly made, knowing full well that they are not what this consultant would consider as the final recommended approach, but they are made in order to keep the present cadastral program active and growing.

Later in this report, a listing of short-term recommendations will be identified, in hopes that the momentum that has been generated will continue.

(a) It is recommended that regulations be formulated or the Republic enact specific laws to make registration mandatory. This could be accomplished by making the cost of the initial registration very reasonable for a period of time up to one month after the privatization, State Acts, or Certificates of Title are delivered. Up to six months after delivery a greater fee be demanded, but if the owner fails to register the parcel after six months it should revert back to the Republic of Armenia.

At the present time, many of the landowners are refusing to register their newly acquired lands. The major reason given is that they are being presented with Preliminary (temporary) Certificates of Title. They falsely believe that until the Final Certificates of Title are delivered, they are not the legal owners of the land. With the delay in surveys and the completion of the final title, it will be several years before some of the landowners receive final titles to their properties. The landowners must be instructed and become convinced their titles are good and they are the owners of their respective parcels.

In order to assist in accomplishing this, it is recommended that the lead agency responsible for the cadastre prepare information sheets or booklets of questions and answers or of general information about the cadastre for general distribution to all potential landowners. These can be distributed either to the general population or to each landowner when the Certificate of Title (Passport) is delivered. This gesture should accomplish much in calming the new landowner's concerns over the delay in obtaining their final passports.

(b) As part of my study, I visited several of the small villages and some of the rural areas. I found a universal lack of understanding of the purpose of the cadastre. Most village officials saw it strictly as an opportunity of the Government to collect taxes. After an explanation was made as to the total cadastre concept, the mayors better understood that the cadastre was a means of better managing their villages and the land and resources of the Republic. Ultimately

all property, utilities and encumbrances and the value of the land would be identified to provide them with a new and better tool to manage their villages and to serve their people.

This misunderstanding also extends to the workers for the various ministries. In Yerevan I found no problems as to their understanding of the cadastre, but the further each person was removed from Yerevan, the less their understanding of the cadastre's role and the part they played in the overall Armenian cadastre.

I recommend a series of workshops and public meetings be conducted, using a training manual for employees and a handbook for the villages explaining the cadastre.

With planning, employees could meet in a cadastral training session where the respective officials of the Cadastral Committee and the staff from ICMA would explain and outline plans for the cadastre. Presently there is no universal understanding of the cadastre among the employees, the Government, or future land owners. There should be a session for staff and one for the surveyors.

This could be expanded to transcend the village and city mayors. Meetings would be held with individuals who are trained in the area, where the mayors of the villages and cities would be instructed and the system explained to them. These meetings would be held in each district or combined districts, where officials from Yerevan could present the program, indicating the real purpose of the cadastre as how to better use the lands and resources of the Republic and not for taxation purposes.

Time frame: With prior planning a large number of the Districts and villages could be instructed in a two week concentrated effort. The cost would probably be approx. \$3,000 - \$5,000.

(c) A later recommendation will discuss the management structure. At this time the recommendation is made that a single indexing system be adopted for all of the cadastres; the fiscal, the multi-purpose and the legal cadastral and that it be adapted from recommendations made in the above referenced report. As a supplemental element the name of the listed owner should be indicated in the total description as one of the elements. This will make it possible to retrieve any parcel either by parcel number or by the owner's name. This element is necessary to have a workable cadastre. The strength of the proposed indexing system is that it will utilize existing land districts now recognized and will require only indexing the existing maps.

The UN/FAO report voiced concern that multiple parcels were being conveyed and identified on a single document. The report dated 9 June 1994 (Annex 1, page 4 (6)) prepared by a study team of the UN/FAO believed the manner in which parcels with multiple plots (more than one parcel to the State Act) were being described would cause future problems. This concern was also expressed in a report, Aide Memoire, by the United Nations, (Annex 3, Page 6 Item 6).

They quoted "[t]his will create difficulties in the future when the owners wish to sell only one single plot."

I disagree. When a person has an understanding of land conveyancing and its related aspects, one will find these original multiple deeds are accepted in all countries that rely on a title system.

The major problem was not multiple parcels in the same document but the same numbers were being used for multiple parcels. That is, there could be two parcels numbered "45a" in the same village, yet each parcel could have a different owner.

Some of the State Acts examined included more than one parcel to the same grantee or recipient on the same document. This consultant also found the same problem existed. A recommendation was made to the proper authorities and the reasoning to discontinue this practice was understood. Multiple parcels could still be conveyed, but separate numbering should be used for each separate and distinct parcel of land, even though they were to be conveyed in the same Certificate of Title or State Act. In an initial State Act, it is legal and accepted in other nations that multiple parcels can be conveyed in a single document without any technical or legal problems.

In developing the basis for an adequate description it is suggested that seven elements be used to index a parcel. Such a number system will meet all requirements for rural, urban and all classifications of city privatizations.

The elements are:

- City number - if rural than 00;
- District number;
- Map number - 1:2,000 scale;
- Map number - 1:500 scale;
- Parcel number - as determined by survey or examination;
- Function - Type of land;
- Name - Name of person or persons who own the land.

The strengths of this system provide for distinct location by numbers or by name and the only words used, other than numbers, will be the parcel owner and the land use.

This system of indexing lends itself nicely to both the systematic and the sporadic system of cadastral survey completion. Task 5 will identify the need to create a database of the City of Yerevan's records.

In the future, actual surveys of the individual parcels, including those on which the units are placed, may be conducted, described and monumented. Apartments and condominiums, at a minimum, should be identified and indexed. Use of this system of indexing would permit the Inventory Office to identify all apartments and condominiums prior to the granting of any new

titles.

Excellent new computer software is now available to assist the managers in this task. The consultant witnessed such an example of the indexing of multiple storied descriptions on a single base or "footpad." Several years ago, the City of Colorado Springs, Colorado started a Land Information System. A personal examination of their indexing system for multi-storied buildings was quite impressive, because they could inventory multi-layered structures that used the same base or "footpad." The software used was commercial software that is readily available to any user. This is apparently available from The Environmental Systems Research Institute, Inc. under the trade name ARC/INFO. The firm maintains distributors world-wide. It is recommended the authorities further investigate the possibility of modifying this program for possible adoption in the republic. The firm has offices worldwide (Annex 7).

This proposed indexing system could also be adapted if and when the cadastral base maps are converted to reproducible base maps using for its base the existing topographic maps now in Armenia.

(d) In analyzing the third area, it is recommended that immediate attention be given to making the cadastral system "work." To be effective over a long period of time, land owners and potential land owners must understand the system and have confidence in it. As pointed out by all consultants and advisors, three different agencies now manage the cadastral system. Earlier consultants have recommended that a separate agency be created. At this time I disagree with their recommendation, because the three existing agencies are working effectively in their respective areas and to disrupt this would set the entire program back. It is recommended that a Cadastre Management Board or Committee be created from the existing three agencies with additional members from other ministries assigned as advisors. In the present state of financing it is probably impossible to have additional funds allocated from the Republic to fund a new and separate agency. By using those individuals who are presently assigned the cadastral duties and working in unison with the other agencies towards a common goal, would be the most logical approach to get the job done. Advisors and other members from the Ministries of Justice, Finance, Forestry and Minerals and possibly others would, by necessity, have to become involved to accomplish the task over the long run. Initially the important task is to get the private lands identified and registered, but in the overall scheme of the multi-purpose cadastral system all lands and property rights that remain the ownership of the Republic of Armenia should be numbered, identified and located. I suggest the report I presented at my closing be examined for greater details (Annex 8, recommendation 2).

There is no reason why this Committee could not be formalized immediately. During my visit, I worked with a similar Committee that could be the nucleus. This committee was composed of individuals from the three main agencies which conducted cadastral surveys. I was pleased with the professional manner in which we confronted common cadastral problems. I am convinced that if each agency put aside personal desires and differences and worked for a common goal, this committee could be an effective and efficient organization capable of completing the task at hand.

It has been reported that nearly 90% of the rural (farm) lands have been privatized, but to the best of my determination probably less than 20% has been surveyed. The big project will be conducting cadastral surveys of rural lands and any lands in the urban areas and cities that are needed to prepare the necessary plats and descriptions. Some time in the development of the cadastre all of the Republic's lands, forest, mineral, watersheds, etc., will have to be identified and surveyed. Presently there are few private land surveyors in Armenia. At this time approximately 150-200 surveyors are employed by the various ministries to conduct the necessary surveys primarily in the rural and urban areas. There seems to be little inter-agency relationships between these surveyors. Eventually a group of private surveyors will be needed to conduct the necessary surveys for future conveyancing.

It is recommended that a position of Surveyor General, or Chief Cadastral Surveyor, be established within the Republic to direct and give guidance to the entire survey profession in Armenia, both public and private. The primary duties of this position would be to develop standards and to prepare for the inspection of all required surveys by both the Republic surveyors and private surveyors. Eventually this person could act as an inspection agency to assure that all required surveys would be performed in a professional manner, to established standards. This position could act or be attached to the Cadastral Committee, but it should be an independent functioning position for technical responsibilities.

This may seem to give undue weight to the surveying aspects of the cadastre, but of necessity the key to any functioning cadastre by which individual parcels of land are being created and identified is the requirement that each individual parcel within the Republic of Armenia have its own separate unique number and description. No other parcel within the Republic of Armenia should have a similar number or description. Adequate surveying of the respective parcels is a key to the entire process for taxation, conveyancing and identification.

Throughout the report prepared by the UN/FAO, dated June 1994, numerous references are made to the surveying aspects of the cadastre. A selection is as follows:

*Annex 1.*

*Page 4: (4).* "The land holders shifted the boundary corners as required. No substantial survey marking was used, with the boundary corners being marked with whatever materials were locally available, e.g. stones, sticks and the occasional steel rod."

*Page 7: (16).* "Accurate geographic referencing of the cadastre is a key factor in building a land information system that will be used in the future."

*Page 8: (19).* "Progress on the surveying of allotments has been hindered by resource constraints and lack of experience in cadastral issues... [M]ajor constraints are lack of vehicles, petrol, surveying equipment, computers, marking materials and training."

*Page 9: (20).* "The 'land construction specialists' have 'accurately surveyed' and defined the allotments, but no survey marks have been placed. This will eventually lead to disputes as to the exact location of boundaries and impede the efficient operation of the land market, due to uncertainty of parcel delineation... ."

*Page 10: (23).* "The training that these people (land surveyors employed by the Republic of Armenia) have received in cadastral matters is limited to the former Soviet Union Cadastre. Therefore this aspect would also be a constraint to the efficient functioning of the land market."

The stated references give much weight in understanding and identifying the necessity of sound surveying principles and practices in the cadastral area.

These all add more reasoning to identifying one person or office who ultimately would be responsible for surveying activities, which should include establishing guidelines, developing methodology and conducting inspections for cadastral surveys.

The person should not only have a knowledge of surveying, but should also be trained in the legal aspects of land and boundaries. All boundaries recited or identified in State Acts (Certificates of Title) create the lines and boundaries of the parcels. They must be accurately described, adequately monumented and precisely measured. These principles apply to all real property, including rural lands, urban lands, with and without dwellings, city lots, condominiums and apartments.

If the recommendation concerning the Surveyor General is accepted, this individual should be given the authority to establish guidelines for parcel monumentation, including surveys, parcel descriptions, and determining the qualifications of both surveyors in Government service and the new nucleus of private surveyors that will be needed in the near future.

## C. TASK 2 - DISCUSSION

Task 2 was to review the legal framework for implementing the land registration system, including the contract law, civil code, and the 1991 Land Code plus the recommended code.

The detailer will not address the contract law and the civil code because this is being addressed by an other ICMA consultant, but the existing Land Code and the Proposed Land Code were examined.

It is apparent the existing land code was enacted with little thought or experience of implementing the cadastre. With the desire to privatize as many land parcels as possible and as quickly as possible, the Land Code was enacted. Many land related questions were not adequately analyzed or addressed, and now the Republic is attempting to rectify the Codes shortcomings. All comments are made to the respective articles, sections and chapters of the existing Land Code (Annex 9).

In the opinion of the detailer, the present land code fails to address many of the present cadastral problems. The cadastral system incorporates many aspects of land ownership and usage that initially

were not considered. Now in a effort to rectify these problems, a revision to the land code is proposed, but its adoption is meeting with much resistance.

## Comments and Recommendations as to the Existing Land Code:

### *Chapter 1*

Article 2 fails to identify that all lands are in the ownership of the Republic and any title or rights that are granted come from the Republic and all other land rights that are retained become the sole and exclusive power of the Republic.

Article 4 is very limiting, but is being expanded, by necessity, under the proposed land code.

Article 7 limits temporary land usc to ten years. This factor will make an effective cadastre difficult, in that there should be a longer duration of time. Land parcels will be constantly changing and the maintenance of the records will become difficult.

Article 8 fails to identify where the funds that are collected will be used. They should be designated to be deposited either into the general treasury or into the cadastre to finance that program.

### *Chapter 2*

#### Article 11:

Line 4 places the operation of the cadastre system with the Council of Ministers. The present council has not taken active participation in the cadastre. This should be delegated to the Cadastre Committee with sufficient instructions to permit them to effectively commence the operation of the cadastre.

#### Article 12:

This article addresses the Local Council of People's Deputies. Many responsibilities are given to this group, yet it was my observation that these important individuals have received little guidance or help in understanding or being able to apply the cadastre within their respective villages.

Part VIII Article 70 also addresses land disputes. An examination of this article indicates to the consultant that the disputes should be categorized into three areas; questions of land boundary, questions of title or land ownership and a combination of the two.

Article 75 fails to address a very important right that must be available in any Republic or democracy, that of the right to be represented by legal counsel.

Any land code must provide for a representation of the individual by consul in the event legal questions arise.

The cadastre must be predicated on adequate and correct descriptions of the property being conveyed, accompanied by adequate and accurate surveys properly monumented. In the cities, most land records by which the lands are being privatized are prepared by very basic methods, usually by simple measurements with a measuring tape. In the urban (villages) and rural areas, plane tables are the means used by surveyors to determine the boundaries of the respective parcels. If these parcels are conveyed at a later date or if they are subdivided into smaller parcels, these surveys will be totally inadequate. Legislation or regulations should be prepared to set minimum standards for surveys of all parcels. They should include such requirements as survey closure, type of survey equipment used, types of monuments to be set at corner points, and standards of maps that are to be prepared. These could be accomplished by directives from the individual who has authority to establish, to evaluate and to ultimately enforce minimum survey standards.

The consultant found that no land (parcel) corners were being identified using permanent monuments. Any monuments set at the time of the creating surveys legally identify the parcels surveyed, described, and for which the Passports (Certificates of Title) were prepared and transferred. Both the UN/FAO report and this consultant are in agreement that placement of permanent monuments would reduce possible future land disputes. This fact was also pointed out in the initial UN/FAO report (Annex 1, p. ), as well as in its later report. In the later report, a recommendation was made that concrete monuments be set at all corners and these could be made in the country as a "make work" project.

#### D. TASK 2 - LONG TERM RECOMMENDATIONS

(a) A recommendation is made that the Cadastral Committee or some other qualified agency or individuals prepare outlines and materials and present a series of workshops for the Local Councils as to the fiscal and legal cadastre and their responsibilities under the Land Code. This will be very helpful in attempting to standardize approaches as to responsibilities as to the disposition of the lands, the completion of reversions of land parcels and the analyzing and adjudication of land disputes. The Code should provide for an avenue of appeal through the Justice Department from the decisions of the Councils.

Surveyors and government administrators should be active participants in these workshops. If future surveys are going to be conducted, it is important they become known to landowners in the urban areas as well as in the villages and the rural areas. It is equally important that each "footpad" of apartments and condominiums be monumented as it is that for rural parcel. Placement of steel rods with metal or plastic caps identifying each parcel is recommend as the ultimate desire. Samples of these are shown in Annex 10. The consultant accepts this as the ultimate desire, but he fully accepts the fact that the immediate needs cannot be totally met due to lack of funding. Plans should be initiated for limited monumentation of the most valuable properties, and ultimately and gradually the total monumentation can be phased in as funding becomes available. Legislation should provide for accepting these later monuments as original for legal purposes.

(b) Although a technical recommendation, the consultant considers this recommendation to be more in the legal area, and which may in the future become a legal problem.

As was stated, I saw no monuments being set for land parcels, either in the villages, cities or the rural area. Whereas in apartments and condominiums the actual monuments are the walls of the individual units, it is imperative that the land parcels on which each unit is placed also be identified, described and monumented as well as being placed on a cadastre map.

It is recommended that all parcels being surveyed have physical monuments set at the corners and they then be referred to and identified in all subsequent Certificates of Title.

This recommendation will require additional funding and planning. The monuments can be produced from local businesses in the Districts, with the caps being purchased for import.

### E. TASK 3 - DISCUSSION

Task 3 addressed aspects of forms used, legal descriptions, procedures for registration, storage of records and computerization of records.

The consultant found that a minimum of four forms were being used by the three offices responsible for cadastral activities to grant the privatized lands. Each form was retained by that agency. The ultimate plan should be to have the original form retained at the local level and have a copy of the form filed in a central agency, with a copy being delivered to the parcel owner. When perfected, all of the forms should be similar in design.

No one central agency was found to have total responsibility for cadastral and registration activities in any of the cities or villages.

Areas of Responsibility were found as follows:

#### *(a) Rural Areas*

Surveys in rural areas are the responsibility of surveyors employed by Armgeoprizem in the Ministry of Agriculture. Most of the rural lands have been privatized and temporary certificates granted based on a limited number of surveys. The granting of the final certificates is being delayed because the surveys in the rural villages and rural lands are behind the projected completion dates.

Apparently the surveying delays are a result of two factors. First, there is a lack of sufficient and proper equipment. Second, there is a lack of trained surveying personnel and support staff. Estimates given by various managers at this agency has a five year backlog of surveying of the rural lands.

Surveying equipment being used consists of plane tables and metal tapes. All surveys are measured with obsolete meter chains and the final plats are drawn on plane table sheets. Usually the parcels in an entire village will be placed on one or more sheets. The parcels surveyed and identified are then

referred to in the State Acts or Certificates of Title. Although not actually observed, I believe the survey crews are not placing property monuments at the land parcel corners. A recent UN/FAO report, Annex 1, made an evaluation of available equipment at government agencies. This report indicated that much of the equipment was obsolete and/or unsuitable for use. To have a viable cadastral surveying program, this problem must be discussed.

Armgeoprizem was asked to present a "need list" so a suitable number of survey crews could be adequately equipped. This was requested because the equipment examined was old and badly in need of repairs and maintenance. Annex 11.

The survey equipment requested is basically for replacement of worn equipment and for staffing other crews. I point out that the survey equipment requested, plane tables, is the most basic of survey equipment that no longer is used in other countries, nor is it available for purchase. Manufacturing of plane tables has been discontinued by the major equipment firms.

Annex 11 also lists such needs as basic rulers and scales that are used by office staff in producing the office documents.

#### *(b) Small Villages and Urban Areas outside Yerevan*

The Inventory Board of the Communal Department under the direction of Gagik Bajargian produces surveys and completes the necessary State Acts (Certificates of Title) from 38 district offices. The smaller villages are being served from the nearest survey and registration office, usually located in the largest city in the district. Most records are considered confidential and available only to the landowner and the government. These urban offices were staffed with a chief surveyor, a survey crew, and office staff. Most surveys were conducted by measurements, in that no angles are being turned and no monuments are being set or established at the property corners that are being created. The same problems were found here as in the rural areas. I was told the survey crews did use directional surveying equipment, not plane tables, but none were shown to me. The same problem of the scarcity of equipment was related as being a major factor in delays causing the failure to complete State Acts in a timely manner.

Original records are maintained and stored on open shelves in each district office. These are subject to damage and destruction from weather and fire.

The Registry Office uses two forms in completing state acts. One form is used for land with dwellings and the second form for land without dwellings. No reason was given for this procedure, but it probably is a result of the philosophy fostered by the Soviet system where a dwelling unit was considered separate and distinct from land.

#### *(c) City of Yerevan*

In the City of Yerevan, all records are maintained in the Municipal Record Office. Insertions and data are added and maintained by individuals, without the aid of any mechanization. The record files

of the City are impressive. They maintain nearly 500,000 records of apartments, condominiums and individual parcels that are situated within the city limits.

This agency offers a fruitful opportunity for modernization of its records. Presently all records are maintained in an environment that is subject to possible destruction. Records are manually filed and updated by hand and then filed by the address of the parcel on a shelf in a room without fire protection.

The historic records of the city are voluminous. Many of the records predate 1900 and, if destroyed, can never be replaced. They are one of a kind and when identified and cataloged will form the basis of the modern city cadastre.

Of all of the records observed and examined, the greatest concentration is in the City of Yerevan. The other two agencies maintain their own records and operate independently.

As previously stated the registration of all lands is the responsibility of three agencies. Each of these agencies use their own form or forms for parcel registration. Two of the agencies use separate forms for land with dwellings and for lands without dwellings.

Once the initial privatized parcel (State Act) is presented, it should be registered to perfect the Fiscal Cadastre for tax purposes.

Most countries which provide for the registration of land transactions to reflect the current owners of land parcels rely on deed books and maps. Indices of Grantor and Grantees are maintained, usually by manual insertion or correction. There are some jurisdictions that do have totally computerized registration. There are a few states and some countries that provide for computer indexed systems of land registration.

Secondary transactions should be given equal standing with the initial State Acts, in that they should be required to be registered in the same depositories. At the present time, little thought is being given to future transactions.

It was determined that the rural surveys and registration is being financed through direct funding from the Ministry of Agriculture, through its support of Armgeoprizem. If the cadastral functions were removed from this office, its source of funding would probably be terminated.

The cadastral activities under the Registry Office are apparently financed by a user fee. No direct answer was ever given as to the source of funding.

Unfortunately, no one has any estimate as to the actual cost of operating a cadastral system.

## F. TASK 3 - LONG TERM RECOMMENDATIONS

(a) A sound, feasible, workable and applicable cadastral system cannot meet the needs of any country unless there is a centralization of the records. At the present time there is no central record office. To solve the problem there are two alternatives: a centralized record system at a District level or one centered in Yerevan. At the present time there are no facilities available for registration in Yerevan, except the City records. When the records are computerized at the District level, it would be a simple process to transfer the cadastral data, electronically or by computer disk, to the central record office. This would not eliminate the need for records at the District or urban level, since the majority of the use will probably be in the areas away from Yerevan. People will use records if they are readily available. If long travel distances are required, then the records will probably not be used. There seems to be a universal trend that consolidation into larger units is better. This may be so for management purposes, but in larger districts supervision of field crews may become a problem.

It is recommended that the entire registry system be filed in data banks from computer generated data at the place of survey or State Act preparation. This task will require the purchase of a sufficient number of computers, with staff. Since my recommendations are to retain the present districts, this will require a minimum of 38 computers for the districts, and possibly three for the City of Yerevan. The computers can be made available for the survey crews to plot their surveys and to place them into data files from which the office people can extract the information for preparation of the Certificates.

The UN/FAO report recommends a fewer number of Districts to eliminate multiplicity. To do this would remove many of the survey crews from technical support and to be effective, the crews must be close to the work that is being performed. Excessive travel time is nonproductive.

Having districts with modern computer technology will also provide the opportunity to input data that has already been completed.

(b) Recommendations relative to the location of the responsibility of the cadastre have already been made. At this time, the Republic of Armenia is probably unable to support a new government agency. The current three functioning agencies are financed either by appropriation or by consumer generated income and as such are working rather independently of each other.

All prior consultants, including the UN/FAO report, Annex 1, recommend a central cadastral agency. I agree in principle, but I disagree in application. There is no additional funding or staff available to finance and staff a new cadastral agency. In order to form a new cadastral agency, separate funding plus staff is required. At the present time to form a new agency would require one to hi-grade those present agencies which now conduct cadastral surveys. It is suggested that once the Cadastral Committee is established and functioning that it be permitted to operate until sufficient funding is available to establish and finance a new agency. It would be excellent for this to happen, but to do so would take the understanding of those who will be affected and possibly new legislation.

This committee should plan for future development by designating individuals for overseas study at universities either in Europe or the United States. These people would become proficient in cadastral

management and would guide and direct a cadastral program. Presently I recommend either the University of Florida or the University of Texas-Corpus Christi as suitable short- or long-term study organizations.

Preliminary contacts with the University of Florida, School of Surveying, indicates they would be receptive to engaging in an Articulation Agreement with the Technical University in Armenia for cadastral development, which would include the exchange of students and teaching staff.

Funds to finance this training should be sought from the United States Agency for International Development, from United Nations or from the World Bank.

(c) It is recommended that all agencies who have responsibilities for the distribution of land parcels design and agree to use a single form for all privatized lands. With a properly designed form all real property and dwellings, including apartments can be identified and placed both in the fiscal cadastre and the legal cadastre. Once additional data is available then those parcels can be incorporated into a multi-purpose cadastre.

The recommendation that one form be designed and used for all privatizations is important. This task could be accomplished by the suggested Cadastral Committee. These forms should be referenced to or supplemented by cadastral maps that have been adapted from existing maps. When these are completed, it is recommended that each individual receiving privatized land be given a copy of the State Act for their personal records.

Software suitable for the registration of the State Acts must be developed. This can be developed after the Cadastral Committee has agreed upon a suitable common form for use by all agencies. A single form should be developed for lands, regardless if dwellings are present or not. The same form should be suitable for apartments and condominiums, as well as vacant land. There should be space on the form for either a complete description and/or a map of the parcel or structure.

Time frame and cost: The office of the Scientific Research Center of City Management Systems, Yerevan City Executive Committee, under the direction of Artashes Arakelian, is capable of producing such software. I have examined the capabilities of this office and believe this could be written and debugged in one week. A grant of \$2,000 should be suitable to produce this.

It is recommended that these parcel descriptions be made available for public examination by public registration. Although there seems to be a consensus among the agencies that these records should remain private, examination of these records by the general public is necessary to provide individuals to research records for future transactions. Public records and map should be modified or corrected to reflect any subsequent transactions relating to the parcels.

It is recommended that once an original State Act for a parcel is filed and registered, the data should be entered into a computer based system for filing and storage.

(d) At this time the majority of the people employed are in the surveying phase of the cadastre. Until this task of the cadastre is completed, this phase will probably remain the largest. When the original surveys are completed, only a small nucleus will be retained. Ultimately rules and regulations should be made to provide for a cadre of private surveyors. These private individuals will have the survey duties on the resales of land parcels and locating parcels for which no surveys were ever conducted. This may not apply to apartments or condominiums. In each district office, in addition to the surveyors, at least two clerks will be required to create and to maintain the land records. The District Supervisor should have surveying experience so as to be able to give technical direction to the survey crews and to create the necessary guidelines.

(e) It is apparent that the present cadastre cannot be implemented or operated without some positive funding from the Republic of Armenia. Although some financing can be generated from user fees, this is only a remote possibility until the cadastre is operating efficiently. It is understandable the Republic should be involved in the financing, because in the overall picture, the Republic still retains approximately 40-50% ownership of the land area in federally-owned lands.

(f) Unless automation is initiated in the early phases of the cadastre, it will become more difficult to initiate it as progress is made. It is recommended that a moderate number of computers with the needed support and training be made available to initiate a property indexing system. To keep the integrity of the ICMA mission, the major thrust of responsibility should be directed to the urban and city cadastre. It is suggested that a test project be designed and initiated in a village as well as in one designated area within the City of Yerevan for analysis and evaluation. (In these two test areas, automation would be initiated using the proposed indexing system, the maps references, including the base maps and the filing through a computer designed system.) This should be designed to place the original data into the system, to reference the map data to the parcels and to provide data for taxation purposes and for the possible resale of parcels. Of course, in the village there should be very few sales of privatized lands. The majority of the parcels should be located in the cities. Provisions should be made to transmit this data to the Tax Inspectorate Office, so they can in turn create or update the tax records.

A cost analysis should be maintained in order to make a determination as to actual costs of operation of the entire cadastral operation.

#### G. TASK 4 - DISCUSSION

1. Although requested that only Tasks 1, 2, and 3 be addressed in the final paper, not to address tasks 4 and 5 would leave the report incomplete. With understanding and approval of the officials for whom this report is prepared, these two tasks are addressed.

Task 4 consists of:

- (a) addressing an indexing system for all cadastral purposes. It asked that a brief options paper be developed setting forth indexing options for unique identification of properties by location for all cadastral purposes; and,

- (b) undertaking an analysis of the conditions relative to Cadastral Mapping standards within the context of both knowledge of what is currently in place relative to real property and mapping information and a vision of how all of the information should ultimately be used.

Recommendations for a program for standardization of maps and other information, and options for indexing systems in order to develop effective systems that can readily assist in the systematic and efficient transmission of information and facilitate the development and maturation of property markets.

This consultant recognizes that land records for the fiscal (tax) cadastre are necessary as soon as possible after the State Act has been finalized. This is needed so that the Republic of Armenia can implement the fiscal (tax) cadastre and the collection of taxes be started. Both legally and practically, all parcels must have a finality of identification and location if the legal and fiscal cadastre are going to be manageable and become interdependent.

The consultant believes a sound workable cadastre must be based on usable base mapping. In discussing the mapping phases of the cadastre, it was found that the present available maps were being used by several agencies. Initially, the main thrust must be in the area of identification of the original land parcels as they are being surveyed. At this time Armgiprozem is identifying most parcels that are surveyed by them in the rural cadastre. These new parcels are being identified on their base maps on file in their office. I was unable to determine if all of the rural surveyed parcels are being identified as they are surveyed.

The process of placing these parcels on the base maps is slow and the locations are of questionable accuracy. The base maps that are being used are at a scale of 1:5,000 or 1:2,000. They are on rafting paper and glued onto "metal mounted" bases. That is the base maps are drawn on a drafting base that is an aluminum core covered with drafting quality paper. This type of drafting base does not readily permit reproduction. All parcels that fall on a map are hand plotted or drafted directly on the paper base. Each parcel is visually placed on each map base by distance measurements of the parcel, without the benefit of precise or accurate geographic positioning. Thus, each parcel has some error of positioning. Each parcel is field surveyed either using plane tables or by measurements of lines of the parcel. Then the parcel is "fitted" to agree with an adjoining parcel(s). No directions or compass bearings are indicated. No individual base maps of the areas of the villages were found outside of Armgiprozem. When asked to see the reference map for a village, the mayor showed me the only map available, a Russian map that depicted soil classification. This is unsuitable for cadastral purposes.

In considering cadastral mapping, two specific areas must be considered; (1) the actual field surveys and (2) the availability of adequate mapping for the villages and the urban areas and the placement of the individual parcels on these maps. An examination of the products being produced indicated there are no written standards for cadastral surveys or for survey map standards. The cadastre must be established on adequate and accurate maps that depict sufficient information on which to maintain records of all the parcels that are surveyed, and described and for which Certificates of

Title (State Acts) are prepared. Now all available maps at the various scales are topographic maps, showing contours which are not necessary for cadastral purposes. Also the metal mounted maps do not permit versatility for use because they are difficult to reproduce and cannot be readily duplicated. In order to have an effective cadastral system there must be adequate maps on which to locate the parcels that are conveyed to the individuals. At this time none were seen at the district or the village levels. In keeping with this, the parcels identified on the maps must first be surveyed and identified for the Certificates (State Acts). At this time, no standards have been developed for surveys or for the monumentation of the individual parcels. One of the main purposes of any cadastre is the positive identification of each parcel for immediate and future identification. This one purpose requires adequate mapping and adequate surveys of the individual parcels.

The UN/FAO report (Annex 1, P. 6 (11)) indicated the Republic of Armenia is adequately covered by maps of various scales. This was found to be true, but these maps are not readily available to local villages or other urban areas, in that the ones examined are unsuitable for local use.

#### H. TASK 4 - LONG TERM RECOMMENDATIONS

(a). As earlier discussed, the availability of adequate base maps suitable for varied cadastral purposes by the various government agencies, and then providing for mass production and ultimately for public distribution is a prime necessity. With over 5,000 of these "metal mounted" base maps of several scales and filed in the archives of several government agencies, a short term project probably is not possible. Yet it is necessary that all of these base maps be collected and filed in a single location that shall be determined. It would not be feasible to collect and file the "metal mounted" original maps. It is recommended these maps be photographically reproduced and then multiple copies made. Copies of each original could then be distributed to agencies who require them.

A firm that specializes in this process was consulted and cost figures obtained to accomplish this. There are two means, depending on the wishes of the Republic and on funding available (See Annex 12).

Accepting one of the two suggestions will maximize utilization of local labor and specialists with all of the work being accomplished within the Republic; the second will utilize local labor in one phase only within the Republic of Armenia while the second phase will be accomplished in the United States.

The first recommendation is that all of the "metal mounted" base maps be photographed in Armenia using high-intensity and high resolution film that is capable of photographing color and pencil details. The process would be controlled so that the maximum detail can be retained from the original base maps. Upon completion of this phase the original maps would then be placed in the Republic's archives for safe storage. This phase would be completely accomplished within the Republic of Armenia. It would be expected that space would be made available to accomplish this in one of the Government offices. Technical specialist(s) from America would supervise the entire project using Armenian help. Maps that are now in various offices would be brought to this centralized location for completion.

This photographic phase will require a copy camera capable of holding the original base maps. The proposal made by the American firm approaches this from two directions. First, a suitable camera is available in Armenia for their use and second a suitable camera would be purchase in America, shipped to Armenia and after completion of the project it would be left in Armenia for future use.

After this phase is completed, the second phase would then be attempted. The negatives would either be sent to the United States for further work or a separate group of specialists would go to Armenia and supervise making copies of these negatives. The copies would be on a stable base material suitable for making additional copies and suitable for drafting and drawing. One master copy would be produced for the cadastral records. On this copy all additional drafting, indexing, numbering and cadastral information would be completed. From this master copy, additional copies of the completed maps would then be sent to the interested villages and government agencies which would require them for their records.

Both alternates are presented for consideration. After study, the alternative that would be most advantageous to the Republic of Armenia should be adopted.

(b) A typical village and a heterogeneous neighborhood in Yerevan should be selected that would best represent typical cadastre needs and a feasibility study be made as to costs.

Selecting these two areas would give an understanding of the general nature of the major diversities of the Republic. One could expect a concentration of people with a fairly rapid turnover or sale of property in Yerevan; yet in a typical village the opposite would be true. There would be less congestion of people and few, if any, sales or transactions of the property.

Since most of the cadastral surveying activities are concentrated in Yerevan, the villages and the smaller cities, provide these surveyors with suitable equipment to perform the needed cadastral surveys and monitor their progress and costs. Provide training or performance manual as to standards and required performance.

In the same village provide a single computer, with a trained operator to input the survey data and State Acts using the software prepared above.

Make available to the Tax Inspectorate and/or Registry, either by computer disk or by hard copy of all records.

Note and indicate these parcels on the cadastral maps that will be made available.

**Time Frame and Cost:** This project should be run for approximately 1 month after it is once set up and functioning. I envision that it would take approximately one week each to get the system functional after the software is developed. Cost for the proposal would be both equipment and labor.

- 3 Computers plus 3 printers \$ 8,000.
- Labor \$600- 1,000.
- A one time expense of \$3,000 for surveyor training.

In the UNFAO report, Annex 1, recommendations were made for equipping a cadastral program with computers. I agree with the recommendation, but I question prices quoted in the UN report on the Armenian cadastre.

A second independent study was made and the following prices noted are based on current market prices, excluding shipping, Atlanta, Georgia.

As an alternative, or as a supplement, to the following is recommended to staff a study cadastral office:

The suggestion is made that two computers be made available to the City of Yerevan for starting input of cadastral data and for the preparation of State Acts for distribution to private landowners and one to a district office.

The following equipment is suggested, with prices indicated:

<ul style="list-style-type: none"> <li>● 3 each 486, 33 or 50 mgh computers, with 14 inch SVGA monitors. 420 mg hard drive, 2 floppies, DOS 6.00 and windows or IBM, 486, 340 mg hard drive, DX 2-50, or up graded version. \$1,600 each</li> </ul>	\$ 4,800
<ul style="list-style-type: none"> <li>● 2 each Laser plotters, A-E capabilities, 1 to be used by survey team up to 1 m x 1 m. 1 to be used with the survey. \$2,300 each</li> </ul>	4,600
<i>If needed:</i>	
<ul style="list-style-type: none"> <li>● DOS software for plotting surveys</li> </ul>	1,300
<ul style="list-style-type: none"> <li>● Miscellaneous needs</li> </ul>	700
<b>Total Office</b>	<b>\$ 11,400</b>

Plans should be made to have the cadastral software developed by a grant to the Yerevan City Scientific office. Estimated time of development 5 days.

Estimated cost	1,000
Office + cadastral software	10,800

## I. TASK 5 - DISCUSSION

1. Task 5 summarizes all of the previous tasks that address the Armenian cadastre. This task should be addressed in relation to developing a continuing program directed towards urban areas. The legal cadastre relative to an illustrative city should be analyzed. Any responses can apply to all urban areas, including the City of Yerevan, for both the sporadic and the systematic approach of the cadastre. It is apparent the cadastre of the urban areas is in the sporadic mode, because Certificates of Title, or State Acts, are being prepared only on an as needed basis. This basically applies to urban areas and within the City of Yerevan. On the other hand, in many of the villages, the Registry is systematically surveying smaller villages and rural areas. In larger cities and villages, the work is being completed on an as needed basis, or as requested.

The tasks identified in the request addressed the following areas for an illustrative city:

- (a) the availability of existing base maps at the appropriate scales.
- (b) the availability of trained surveyors and other skilled personnel, the adequacy of their training, and typical labor costs for such personnel.
- (c) the general difficulties to be expected in defining boundaries for different categories of urban property as needed to make preliminary estimates of the likely productivity of survey adjudication teams.
- (d) the availability of cartographic capabilities, and approximate costs for obtaining cartographic information.

Based on results of the above initial strategy recommendations were requested addressing the sporadic and the systematic methods. Items that are to be addressed are land boundaries, ability to subdivide parcels, increasing cadastral survey skills, and the engaging the Institute of Cartography and Geodesy to conduct cadastral surveys on an as needed basis.

2. Both sporadic and the systematic cadastres need to be conducted simultaneously to have an effective cadastre. One system cannot exist without the other. Each will play definite and important role in the completion of any cadastre. If time were not of the essence, the most logical approach would be to survey each area, each village and each city on a planned systematic basis. It should be realized each of the two will have a definite place in any cadastre. We know this is not feasible.

- (a) Funding for survey crews is not designed for the systematic approach.
- (b) Many areas would be surveyed that are of a low priority. The systematic approach to surveys and cadastral activities is being conducted by Armgiprozem in many of the rural areas and villages. This is accomplished by issuing preliminary Certificates of Title (passports) and later completing the final certificates as the village or the rural

area is field surveyed. Presently the survey crews have a five year backlog of work. This is not expected to improve in the immediate future. Several causes were identified. One is the lack of surveyors and second is the fact the present survey crews are ill equipped with inadequate or antiquated equipment. Adding the fact that the methods of conducting the field surveys are basic and probably will not improve all add to the problem. However the problem is not unsolvable. The fact remains the initial or original surveys are the first steps on the history of each parcel. Is apparent that many of the parcels will require re-surveying when a they are sold or transferred in the future. In all probability little activity will be encountered in buying and selling rural parcels. They will probably be retained for generation in the same family. Since no monuments are being set at the property corners of the parcels, it is likely when any parcel is sold at a future date monuments will have to set to identify the exact boundaries of the parcels that are being sold.

This philosophy also is being applied to the city and urban parcels. The corners monumented will affect a greater number of ownerships. From a monumented parcel scores of descriptions of a single building will be referenced.

Properly described and monumented tracts of land are an absolute necessity when it comes to being able to identify a single-unique parcel of land for description in a Certificate of Title (passport) or for future re-sale. At this time this basic requirement of monumentation is not being done at the time of survey. The positioning of boundary monuments at the corner points of the land parcels may be done when a land parcel is subdivided at a later date. There is no requirement for monumentation of apartment units or of condominiums in the cities, but the requirement for monumentation still is necessary.

Base maps are available for the entire country. I was unable to find a complete index map depicting what is available, the scales and the date of issue. I did ask for such information but it was not available at the time I was in the country. Until this is accomplished no proper evaluation of the Republic's needs can be determined.

Examination of the field surveyors who were conducting the surveys for both the Registry Office and Armgiprozem revealed a staff trained in the technical aspects of surveying, but lacking in understanding the legal aspects and duties of cadastral surveying. Without explanation or additional training in cadastral surveying methods it will be difficult for these crews to understand their role in the overall process.

In order to determine the magnitude I asked Armgiprozem for a list of needed equipment. Annex 11. The equipment listed indicated a tie to the past, and no plans for the future. All surveying activities are being conducted with out dated equipment. For field surveys plane tables seemed to be the basic items. Yet these instruments are no longer made by any equipment firm. I asked for the same information in several of the villages I visited, yet no equipment was ever shown to me. I do not have personal knowledge of the situations, so I can only speculate. I have been informed that many of the traditional transits and theodolites will no longer be manufactured after 1994. When the

equipment is modernized this will force survey crews in Armenia immediately progress to use electronic equipment, which will take additional training and cost. The traditional upgrading of the present survey equipment in use would be to transits and theodolites with separate electronic measuring equipment.

In the City of Yerevan I examined a sample of the approximately 500,000 records in the files. These records are perfect for input into a computer based system of registration as are the land records in the villages. Land records are an intimate part of the surveying process.

Each agency conducting and supervising their own surveys. There is no single approach.

My evaluation of the survey profession indicated there is no nucleus of private surveyors to conduct any subsequent surveys after the State Acts have been granted. Nor did I notice uniform direction within the government agencies. There should be a unified approach, both in the private sector and the government sector for survey direction. The original survey that created the land parcel and identified it is as important as a new survey of a parcel that is to be sold. One creates the description and the corners and the second identifies and locates the original corners and lines. At this time there is a scarcity of Government surveyors to do just the original surveys and prepare the maps, and if a sizable number of private surveyors are needed they will probably come from this pool of professionals, which will inhibit the completion of the field surveys in a timely manner.

The boundaries that are being defined are shown on plats by distance measurements and limited references to natural boundaries (roads, streams, etc). In some cases calls for adjoining landowners are present. In the cities diagrams of the apartments or condominiums are drawn on the State Act, which represents the parcel to be conveyed. Separation of sleeping areas and other private areas are noted. This method was employed under the former governments, but in a practical free economy are unsuitable for a title registration system. The entire apartment or occupied area of the condominium should be described. Boundaries of apartments and condominiums are defined by spatial relationships or the walls and referenced to a street address or a "foot pad" of the land. Once the initial plan of the area is placed on record and recorded, then reference can be made the indexing system to define the property.

In an urban area when the parcel is a single family unit, not an apartment or condominium, the same basic survey principle applies as would apply to a rural area. The parcel should be identified by monuments placed on the ground at the corner positions and the lines between them defined by reference to distances and courses.

One can see the City of Yerevan has the best cartographic coverage so far as detailed maps are concerned. The maps available are limited in number for general use. Copies are not readily available. Each time I was shown a cadastral map, it was the topographic base quadrangle. There were no maps specifically delegated for cadastral use. Contours add very little on cadastral maps, in fact in some areas the contours may be a hindrance.

## J. TASK 5 - LONG TERM RECOMMENDATIONS

a. It is recommended all agencies which produce and maintain cartographic maps and/or aerial photographs make a complete inventory of what maps are available, their scales and dates of publication.

b. It is recommended all agencies which employ surveyors and office support staff identify and make an inventory of the numbers available, their expertise, all equipment available for use, and identify the training needs for them. and other expected needs.

A concentrated effort should be made to provide unified training in the cadastral area for surveyors and office staff. A continuing training program should be initiated to employ young people in training positions. This could include scholarships to universities, either in the Republic or foreign, for promising students to study cadastral management, including cadastral surveying.

c. It is recommended that the surveying practice in the minor urban areas (villages) and all individual parcels in the cities be expanded to include the placement of permanent monuments at all property corners and these corners be called for and identified in the Certificates of title. Only then will the parcels be permanently identified and placed with permanency.

This recommendation will be difficult to undertake. The U.N./FAO report, Annex 1, also encouraged this recommendation be adopted. The UN team recommended concrete monuments that would be made with the country and then distributed. My recommendation is in agreement with the UN/FAO suggestion, but I also recommend steel monuments that can be manufactured within the country with plastic caps that can be purchased. Annex 10.

In order to determine adequate cost figures, a test village should be selected and the procedure initiated providing the village with adequate surveys, monumentation and the preparation of the final certificates and maps. Accurate cost figures should be kept and then those officials in authority will better be able to make sound decisions.

This should include providing a computer for inserting survey data and for the preparation of the Certificates of Title (passports) for registration.

The office should be totally modernized. An estimated cost for this project would be approximately \$20,000- 40,000.

d. There is sufficient information now on record in the files of the Inventory Office of the City of Yerevan to meet the needs of having an adequate identification of apartments and condominiums, probably without having to do a large number of additional surveys. This will require that all urban descriptions be placed into computer data files and the present apartment plans be "scanned" with an electronic scanner or redrawn using a CAD program. The City of Yerevan should be provided with possibly a minimum of 5-6 computers and a scanner. The records can be placed into a computer data base and made a matter of public record and filed according to the agreed system. Once this is accomplished then the original computerized record can be referred to either for the original State Act or in any subsequent transactions. All building "foot pads" will be numbered, this should make all

computerization of these original records relatively easy. This is a labor intensive project and should be accomplished at a relatively reasonable cost. After a limited training program on compute data entry, I would like to see at least four people assigned to a data input of the City of Yerevan records. Even though no Certificates of Title may be completed, it is important in the urban and city that the initial records be identified and placed into a data bank. After training a staff of at least four and possibly six people could be assigned the task of placing all of the Yerevan records into a data bank that will form the basis of the legal cadastre and can be used for the fiscal cadastre when the Certificates of Title are issued. An estimate of time and possible costs to accomplish this task is approximately \$100,000.

e. There are three categories of urban properties: apartments, condominiums and individual lots with and without dwellings. The least amount of trouble will be with the apartments and condominiums. This task will lend itself to a systematic identification of the parcels.

The most difficult category will be the individual parcels, in that requirements for surveys and corner monumentation will be the same as with all other individual parcels. Surveys will be required, monuments set at the parcel corners and descriptions must be prepared. These type of parcels do not lend themselves readily to a systematic type of surveying, even though this is the most efficient and cost effective. The survey crews assigned to this task will need additional training from that of conducting rural surveys. I do not see how a systematic survey of these parcels can be accomplished, but they will be surveyed on an as needed basis.

f. This consultant has repeatedly pointed out the necessity of providing a detailed, modern cartographic map base for the cadastre. Until an inventory is completed there are no positive records of the number of base maps available and at what scales. As was presented to this consultant, the maps are not available to other individuals or to lesser government bodies (villages). Since all I have knowledge of are the metal mounted base maps, these need to be adapted so that they can be reproduced and copies given to the various villages. I estimate there are approximately 5,000 topographic maps of various scales covering the Republic of Armenia. There are multiple different reproduction alternatives available to make the maps suitable for cadastral purposes.

A photographic specialist would visit Armenia. Using photographic equipment available in the Institute of Geodesy or equipment sent from the United States, a frame would be built to accommodate the metal mounted base maps. Using high quality film, each map would be photographed. The film would either be developed in Armenia or would be returned to America for developing. On the negatives or on a positive print made from the negatives, all contours would be deleted leaving only planimetric features. From these negatives mylar reproducible base maps would be produced and returned for use by the various Government agencies and the villages. Using either existing aerial photographs or newly flown aerial photographs aerial mosaics would be made of each map base and would be available for records and for pictorial purposes.

The estimated cost, exclusive of new aerial photographs, would be approximately \$300,000 and would take approximately 4 man years. (ANNEX 12)

g. The UN/FAO report stated the Geodesy and Cartographic Institute, P 6 (11), is responsible for the creation of a geodetic network. This consultant visited this office and examined maps depicting the control established and found it to be quite concentrated in some areas but lacking in some of the remote areas.

Overall it should be considered as being suitable for cadastral purposes at this time and in the immediate future. The staff was quite knowledgeable and is capable of playing an important role in the base mapping. The basis of adequate precise maps is good horizontal and vertical control. Using this control this agency should be given adequate funds and staff to prepare orthophoto mosaic maps of those areas in which the cadastre is being conducted. Using the base maps and the supplemental control, and then rectifying available aerial photographs to the control and the base maps, aerial photo mosaics can be used for identifying base data for taxation and for general cadastral purposes in the villages, and possibly in Yerevan. An estimate of producing these orthophoto maps would depend on the quality of the aerial photographs available and the quality of the base data information. Using Armenian staff with some foreign technical advisors to help supervise the project this could be accomplished possibly for \$250,000.

## **VIII. SUPPLEMENTAL COMMENTS AND RECOMMENDATIONS**

### **A. SUCCESS**

The success of the cadastre in the Republic of Armenia is dependent on many variable elements. Among these are

- (1) availability of capable, trained adequate staff;
- (2) using past experiences and other nations experiences from which to learn;
- (3) being open and willing to adopt new ideas;
- (4) adequate financing;
- (5) and, support from the international community.

With these in mind I would like to make some recommendations that were not covered by the specific tasks.

### **B. COMMENTS**

Comments relative to the five areas are:

Headed by the Cartographic Institute with its geodetic capabilities and including the field surveyors employed by the Inventory Bureau, Armgiprozem and the capable staff of the Yerevan Inventory Office I was very impressed with the professionals. I see no reason why the staff now available, with guidance and direction, will not be able to accomplish the task before them.

Armenia is isolated in its present situation. The isolation is not only political but it carries over to the professional areas, including surveying, mapping and cadastral activities. Expansion is needed so that the professionals who are responsible for any phase of the cadastre will be able to meet the needs of the 21st century and an expanding population.

In all my contacts with Armenian Government officials and employees I detected feelings of frustration and perhaps despair that it is impossible or near impossible to get anything accomplished. This was brought home to me when I was given the list of needed equipment by Armgiprozem. They requested only the older types of equipment that was being employed, and did not feel they would be able to improve what they had. My detached and independent evaluation is that the Country is capable of far greater accomplishments than they think they can accomplish.

As the cadastral program becomes more mature adequate financing is a must. Until then loans, grants and other possible sources for equipment purchase, paying support staff and for the general management of the cadastral program must be found. At the present time some funding is available for the various agencies, but there are no surplus funds to provide for expansion of the program.

The Republic of Armenia is not unique in its professional isolation. Many of the former Eastern countries are having difficulties in relating, professionally, to the Western world. Decades of Soviet influence can not simply be cast aside in one or two years. The Soviets did have a high regard and did give excellent recognition to their professionals. Seeds must be planted to foster growth in these areas. This is what I would like to see in the cadastral and surveying areas.

### C. RECOMMENDATIONS

These recommendations are made to supplement those already identified in the previous text. Several of which can be directly related to areas of comments.

(1) As previously stated the Republic must strive to attract young capable people to continue the cadastre that has been formulated and designed by the present professionals. It is a well thought out cadastral system. It must be maintained. All ministries have important parts to play in this cadastral system. All resources, both personnel wise and individual capabilities, from the Geodetic Institute to the Inventory Bureau of the City of Yerevan have responsibilities in the program.

The Geodetic Institute must make certain that all of the base maps are adequately controlled and drafted to standards that meet the cadastral needs. They have photogrammetric equipment that can produce aerial maps, aerial photo mosaics, and can provide the needed aerial photographs for use by the other ministries. This report has stated before the entire foundation of a good cadastre is its base mapping. This Institute should be given adequate funding and staff and made a priority agency to receive resources.

I recommend the other ministries seek common guidelines and make plans for a unified approach to the cadastre. This is the time to do this.

(2) The Western professionals can learn as much from the professionals of Armenia as the Armenians can learn from the West. In my contacts with professionals in America I offer the following recommendations for consideration.

(a) Several of our cities and urban areas have initiated successful cadastral (GIS) systems. The City of Colorado Springs has offered to receive any visitors from Armenia to study their computer managed cadastral (GIS) program. I have examined this program and find it a modern, viable progressive program. I recommend a professional who is associated with the City of Yerevan cadastre be designated and arrangements be made with the City of Colorado Springs for a visit and training as to their cadastral program. This visit will provide an excellent opportunity to exchange ideas and for a learning experience.

(b) The University of Florida, Gainesville, Florida has an excellent program in cadastral studies and the Corpus Christi State University, Corpus Christi, Texas has a newly initiated program in cadastral studies. It is recommended several young professionals who are assigned to the cadastral program in Armenia be designated to receive additional and studies at either of these two universities. Funds may be available through the United Nations to finance such a program.

(c) The Ministries of Armenia which are involved with the Cadastre should seek membership in Federation International Geographic (FIG). This international organization is composed of the professional societies of nearly 100 nations. Many of the former Soviet satellites have sought membership in several of the various nine Commissions. Several of these commissions are directly involved with cadastral activities and land management. This international exposure will add great insight to those people who are guiding the Armenian cadastral program.

This same recommendation was made the UN\FAO study team that visited Armenia in June, 1994.

(d) One can understand why a feeling of frustration could be found with many of the professionals who are engaged in the cadastre. With a major job to be completed and with limited funds available the majority of the people I worked with had a difficult time seeing how the job can be accomplished in a reasonable period of time.

After serious reflections on the problems and after talking with the people involved I am certain they are up to completing the task. Although specific equipment was requested by Armgiprozem. It is now certain the majority of this request cannot be obtained because the equipment is no longer manufactured. The detailer would like to offer the following suggestions which may be considered as recommendations.

The only equipment available for general surveying are what the industry call "total stations." This equipment has both electronic angular measurements and electronic distance measurements combined in the same instrument. I do not believe the surveyors would feel comfortable making this major change in technology. Secondly if one element of the instrument ceases to work, then the entire instrument must be sent for repairs. I did not see any facilities available for repairs in Armenia.

Based on these observations I recommend USAID or ICMA make an appeal to American surveyors for donations of out dated and surplus survey equipment for transport and use by Armenian surveyors.

In America most survey firms are now totally automated with total stations and they have abandoned their old transits, plane tables and theodolites. Working through the American Congress on Surveying and Mapping and the various state surveying organizations, the detailee would seek donations from American surveyors of outdated surveying equipment. After making necessary repairs and adjustments the equipment would then be sent to Armenia for distribution and for use.

To do this would require ICMA, AID and the various Armenian ministries to work in unison for the common good. First assurances must be made that funds would be available for the necessary maintenance and repairs. Then arrangements must then be made for shipping this equipment, either by commercial carrier or by U.S support to Armenia. Then assurances must be made that this equipment would not be subject to Armenian duty or customs.

As past president of the American Congress on Surveying and Mapping, the detailee has made contacts to implement this suggestion. He did find an interest on the behalf of American surveyors to come to the aid of their fellow surveyors in Armenia. If successful, the requests for equipment can be met.

The amount of field surveying required in the villages and rural areas can be reduced and the process speeded up by employing some new technology in the cadastre. The use of Global Positioning Survey units (GPS) can effectively be used for positioning large and moderate size tracts or parcels. Annex 13.

While on his earlier TDY, the detailee made contacts with other Armenian ministries and several TDY specialists concerning their use of such GPS units. The present GPS units are portable (some hand held) and can locate positions within 1 meter or less. In cooperation with the Minister of Mines and Minerals, the Minister of Forests and other Ministers several of these units should be purchased for joint use. Training would be provided to all jointly. Each would contribute to the purchase of the necessary GPS units. These can be used to locate mapping control, mineral deposits, forest reserves, rights of ways, parcels of land and many other land uses.

An investment of \$200,000 should provide for obtaining 12 to 15 of these units and to provide training for a nucleus of trained individuals.

(e) During visits to the Yerevan municipality records and several village offices, the consultant was shown the records of immovable property now being filed. Those records that were examined were found to be subject to destruction at any time from fire or water. This is totally unacceptable since the foundation of a cadastre is the use of these past records in assembling the new information.

**RECOMMENDATION:** Realizing that it will be very expensive to solve this problem, it is imperative that all offices in which records of immovable property are stored, they should place these records in fire proof storage. Also this information should be stored in data files in computer. It also would

be possible to electronically scan this data for storage.

(f) While visiting the Minister of Agriculture the Consultant was informed that there were recent (1989) aerial photographs and maps available at Novocherrassr in Russia. These maps and photographs could be of much use in the cadastre. If these could be obtained they would identify land uses at or near the time of the establishment of the Republic.

**RECOMMENDATION:** It is recommended that someone, either the Consultant or some person qualified in aerial photo interpretation visit Novocherrassr in Russia to examine any and all aerial photographs available to determine the suitability for use in Armenia, especially the cadastre, and for other management purposes.

If they are suitable and usable, then arrangements should be made to obtain their purchase. Money should be made available to purchase the film and whatever copies of aerial photographs are available.

At the time of the visit in Russia the visitor should examine those maps and other aerial photographs available and determine if they are suitable for use in the cadastre or for other related activities by other Ministries.

## **IX. EPILOGUE**

Some people dream to be present at the birth of a cadastral system. To see the Republic of Armenia's cadastre flourish and grow would be a benefit to not only the Republic but to the entire free world.

Freedom to own land and to use land is a right recognized and given under both natural law and Christian law. One of the greatest joys a country can have is to see a land system that is living, viable, dynamic and one that is benefiting all of the citizens of the Republic.

The greatest joy a land owner can have is to know his labor, toil, and sweat is for his benefit and the land he develops is his own, to pass on to future generations.

I found a group of interested Armenian officials who, With patience, understanding, and a sense of dedication are capable of accomplishing the task and who will, with proper guidance make the Armenia cadastre one that can be held out as a credit to the entire world.

## X. SPECIAL APPRECIATION

When one leaves his native land to offer his technical and professional capabilities to a group of strangers, often one encounters difficulties because of differences of customs, language and backgrounds. The reception one receives is very important. I would like to extend my personal thanks and deep appreciation to two very special Armenian citizens. These two people made my stay in Armenia enjoyable and left me with a reluctance to leave and a sincere desire to return.

I would first like to thank Melik Karapetian, ICMA/USAID, for his kindness and being a right hand man when one was needed. He was always able to open a door or to meet a schedule. It is people like Melik who makes such assignments enjoyable.

Then last but not least my deepest thanks go to Nellie Malkhasian for her ability to use the right word, at the right time and in the correct language. Her translations kept this TDYer from having to eat many words and kept him from getting that age old travel malady for which there is no known cure, the ability to put ones foot in ones mouth in several languages or "foot and mouth disease."

Walt Robillard

October 1994-February, 1995

## CONTACTS FOR ICMA ARMENIA PROJECT

The following individuals played an important role in the completion of this study. Of course, some were more intimately involved than were others, but each was important in giving help and guidance. I worked very intimately with many of these individuals while others were only involved infrequently or simply in passing. Regardless, each and every person contacted played an important role in my study. My deepest thanks to each.

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Petros Sogomonian, AURI  
Levon Unanian, Min. of Economy  
Henry Vardanian, Director, Giprozem  
Martoun Yeranossian, Deputy, Ministry of Finance

I offer my apologies to any individual who provided guidance and help and whom I failed to identify. Please consider it as an oversight and not intentional.

Without the help, guidance and assistance of Steven Anlian, I would have been completely lost.

## LIST OF ANNEXES

ANNEX	DESCRIPTION	PAGE REFERENCE
1	1994 UN/FAO Armenian Cadastral Report	02
2	Agricultural Reform Support Project	03
3	Aide Memoire	05
4	Portion of Reproduction of A Tax Map	11
5	Stable base Material For Maps	12
6	Concept of the Republic of Armenia's Urban Land Cadastre	12
7	ARC/INFO Computer Software Information	17
8	Robillard's Closing Report	18
9	Existing Land Code	21
10	Corner Monument Listing	24
11	Armgirozem Equipment Request	27
12	Digital-Link Map Proposal	37
13	Global Positioning Information	42

COMPLETION OF LAND REFORM

CONTENTS

A. INTRODUCTION ..... 1

B. BACKGROUND ..... 1

C. INSTITUTIONS INVOLVED WITH LAND REFORM ..... 5

D. MAJOR CONSTRAINTS ..... 8

E. NEED FOR COMPLETION OF THE LAND REFORM PROCESS ..... 12

F. PROPOSED SOLUTIONS ..... 13

    Awareness Training ..... 15

    Organizational Restructuring ..... 16

    Review of the Legal Framework ..... 17

    Assistance with Personnel ..... 17

    Provision of Equipment ..... 20

    Assistance with Technical Training ..... 20

    Project Management Arrangements ..... 21

    Alternative Technical Approaches ..... 21

G. ESTIMATES OF EXPENDITURES ..... 23

H. FOLLOW-UP ACTION ..... 27

TABLES

1. List of Areas for Privatization
2. List of People Interviewed in Armenia

## ANNEX 1

### COMPLETION OF LAND REFORM

#### A. INTRODUCTION

1. This Technical Annex briefly reviews the progress with land reform (or land privatization) in Armenia since its commencement in 1991. Major constraints to the completion of land reform have been identified and arguments advanced for support to complete the land reform process. Solutions to the major constraints have been outlined, and indicative estimates of costs prepared. Where relevant and important information was not available to the Mission, this has been identified and requested from the Ministry of Agriculture before the next Preparation Mission visits Armenia in September 1994.

#### B. BACKGROUND

2. In January 1991, Armenia started a comprehensive agricultural land reform programme that has made commendable progress up to the present time. About 87% of all land to be privatized had been completed by January 1994<sup>1</sup>. Latest estimates provided by the Privatization and Land Reform Department indicate that 461,400 hectares of privatised agricultural land are scheduled to be measured over the next five years, ending in 1998. Refer to Table 1 for details of the regional areas involved. This equates to about 16% of the total surface area of Armenia or 100% of the privatised arable land. Certificates of Title will be prepared from these surveys and issued to land holders. It has been estimated by the State Soil Construction Design Institute that is performing the survey work and the preparation of Certificates of Title, that the total number of individual agricultural land parcels will be in the range of 320,000 to 350,000 with some further 1,300 Collective Peasant Farms (CPF). However, the Director of the State Soil Construction Design Institute who is responsible for this aspect of the work has advised that 60 villages out of a total of

<sup>1</sup> Draft Armenia Agriculture and Food Sector Review, Natural Resources Management Division, Country Department IV (4 February 1994).

890 have been surveyed (about 7%). These CPFs are conceptually different to the previous Collective or State farms since they are voluntary cooperatives with democratically elected leadership. Many are groupings of relatives.

3. The legal basis for land reform and the privatization of collective and state farms had been established by four laws: a) The Law on Peasant and Peasant Collective Enterprises (Feb 20, 1991); b) The Land Law of the Republic of Armenia (Feb 20, 1991); c) The Law on Privatization (June 1992); and d) The Law on Enterprises and Enterprise Ownership (Mar 24, 1992). Land privatization was implemented at the village level by commissions formed by the local village councils, under the overall supervision of Regional councils. The distribution of land ownership rights was guided by four principles:

- (a) **Priority to village residents.** This principle was established with the objective of distributing land first to those who had been living continuously in the village and who had the possibility of directly using the land by working on it. Although all village families had a home garden plot previously, and many would have undertaken seasonal work on collective farms, only a relatively small proportion of the rural population has been permanently engaged in agriculture. Residents of other occupations, for example teachers, construction workers, drivers etc. were also eligible to receive land. Former inhabitants of the village and other citizens resident in Armenia have the right to apply for remaining land after allocations to the village residents.
- (b) **Quantity of land allocated according to family size.** Families with three or fewer members received "one unit" of land; those with four to six members, "two units"; and those with seven or more members, "three units". The land available for distribution in each village was divided by the total number of "units" to arrive at the size of a unit for

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that village. This exercise was performed for four categories of land: arable irrigated, arable non-irrigated, perennial crops and mown grassland. Pastures for extensive grazing have not been privatized. Depending on the number of units to which they were entitled, each family received units of different categories of land. On average, each family received two to four units of land. Each of these units is in a different category and at considerable distance from the other land unit(s) obtained. The average total size of all the land units obtained per family is about 2 ha.

(c) **Location of individual units decided by lottery.** After it was determined who would get what quantity of land in each of the four land categories, the actual location of the land units received by each family was decided by lottery.

(d) **Land charges.** Land received has to be paid for, and the amount the new owner paid for the plot varied by land classification. The price was set at 70% of two years annual "net profit". This net profit was more or less a net rent to land, as calculated under old measures. The new owners took possession of planted crops and often the crop revenues from the sale covered the purchase price. The land was paid for in two instalments, each due at the end of subsequent calendar years.

4. The process of subdividing (or "privatising") the land had several distinct stages. Initially, a Village Commission marked out the general shape of the sub-division as determined by family size and land category. This process was approximate only, with "boundary marks" being placed by farmers themselves and not by surveyors. The land construction specialists from the State Soil Construction Design Institute had the responsibility for measuring this initial break-up of the land with surveying equipment and

then adjusting the boundaries to meet the exact area measurements. The land holders shifted the boundary corners as required. No substantial survey marking was used, with the boundary corners being marked with whatever materials were locally available, e.g. stones, sticks and the occasional steel rod.

5. The State Soil Construction Design Institute advised that when the land was surveyed after the preliminary break up of the land, they also "valued" each allotment. This valuation was done on the basis of potential soil productivity. This information was recorded along with land classification, soil type and the area of each allotment. The State Soil Construction Design Institute also advised that they had 35 valuation specialists in their organization.
6. The State Soil Construction Design Institute is also responsible for the preparation of Certificates of Title. Land parcels are being uniquely identified (Region; Village Council and Individual Allotment Number) but unfortunately each landholders' total holdings are shown on the one Certificate of Title. Land parcels are therefore being uniquely identified but this is not being reflected in the Land Registration System under the present approach.
7. Temporary Certificates of Ownership have been issued by the State Soil Construction Design Institute to all landholders. Unfortunately, the rate of surveying, preparation of Certificates of Title, registration and the issue of these Certificates of Title has not been satisfactory. Progress on this aspect of the land reform process will be addressed later in this report.

### C. INSTITUTIONS INVOLVED WITH LAND REFORM

8. The agricultural land reform process in Armenia has involved many Government agencies at both the national and local government levels.
9. The Government of Armenia proposes legislation to the Parliament (Supreme Soviet) and the President issues decrees to implement legislation that has been adopted by Parliament. Relevant laws that have addressed land reform are listed in para. 3. In addition, the Government in Decree No. 179 (6 March 1991) has given the Ministry of Agriculture the following responsibilities:
- to register land-owners and land-users, as well as to carry out cartographic, soil-science and geobotanical tests which assist in the maintenance of the land cadastre and in surveys on the state of land;
  - to elaborate and approve the instructions and directions for the State registration of land owners and land-users, for the evaluation of the land, for cartographic measurements, and for conducting various tests;
  - to set up a system of long-term and short-term data to be included into the National Land Cadastre and to permanently improve the latter, updating it, and making it consistent with the current requirements of the national economy;
  - to ensure the periodic compilation and publication of the National Land Cadastre and of the results of surveys on the status of the land.
10. Land in this context means all the lands of Armenia including those which are occupied by waters, forests, buildings, structures, public utilities and fixtures. In short, the entire land stock of Armenia, not just agricultural lands which the land reform process has

initially focussed upon. Other national government agencies involved in the land reform process include the Ministry of Economy for overall macro economic policy, the Ministry of Finance for budget preparation, implementation, modification and control and the Ministry for Justice where notaries operate at regional and village council centres in reviewing property transfers for legal sufficiency.

11. At a Local Government level, land allocation was exercised through Village Councils. The Village Councils established ad hoc Village Commissions to facilitate the initial break up of agricultural land. Once this work was done, the Village Commissions were disbanded. Responsibility for the measurement of the land, preparation of Certificates of Title and issuing of the titles rests with the State Soil Construction Design Institute within the Ministry of Agriculture. The land reform programme as a whole is the responsibility of the Privatization Department, also within the Ministry of Agriculture. As mentioned earlier, notary offices in each Village Council and Region are responsible for verifying and registering all transactions in land ownership. Another organization that has contributed to the land reform process is the Geodesy and Cartographic Institute. They have been responsible for the creation and maintenance of the geodetic network throughout the entire country. As well, they have compiled a comprehensive and current topographic mapping coverage of the Republic at a scale of 1:10,000. Towns are mapped at scales of 1:2,000 or larger. This land information has been utilized by the Village Commissions in the initial break up of agricultural lands and could be applied in the future for the delineation of land parcel boundaries in urban areas.

12. It should be noted at this point that another Government agency is involved in the privatization of houses and apartments. In urban areas outside of Yerevan, this happens in each Region and Village Council through the Registration and Inventorization Department. In Yerevan, this function is undertaken by the Building Inventory Department of the Yerevan City Council. It is understood that for urban dwellings, Certificates of Title will eventually

be issued once the process is regulated. In the meantime, Certificates of Ownership are being progressively issued.

13. It is apparent that many separate agencies have contributed at the governmental and local levels to the land reform process in Armenia. However, several shortfalls can be identified within this institutional framework which if left uncorrected, will cause major problems in the future.

14. As has been previously mentioned, the Ministry of Agriculture has been given the responsibility for the creation and maintenance of the National Land Cadastre, which will include all land parcels. To this point in time, the Ministry of Agriculture has focussed entirely on agricultural land and no attempt has been made to include privatised urban land parcels. This is a major shortcoming which needs to be addressed if a modern Land Registration System is to be established in Armenia to facilitate an active land market.

15. Notary offices within the Ministry of Justice are responsible for the checking, validation and recording of transfers of ownership in land. As the Notary Offices are within the Ministry of Justice and not the Ministry of Agriculture, there is considerable scope for errors, omissions and poor coordination between these agencies to occur. In the long run, this will lead to a lack of confidence in the Land Registration System on which the land market must be based. This problem is further exacerbated by the multiplicity of regional offices that undertake the above mentioned functions, leading to poor standards and service delivery.

16. There also needs to be a stronger linkage between the State Soil Construction Design Institute that is performing the surveying work and title preparation and the Geodesy and Cartography Institute that is responsible for the geodetic network and the topographic mapping series that covers Armenia. Accurate geographic referencing of the cadastre is a key factor in building a land information system that will benefit the nation in the future. Other

benefits of closer ties between these agencies relate to sharing of equipment, training and personnel.

17. In short, the Mission strongly believes that a major institutional rearrangement is necessary to clearly focus activities in the building of the National Land Cadastre and the Land Registration System to enable the land reform process to continue successfully. The reason for this is that it is necessary to establish confidence in the land registration system by its users to facilitate the efficient operation of the land market.

#### D. MAJOR CONSTRAINTS

18. Although the Government's resolve in the privatisation of land and the pace of its implementation has been commendable, the process is not complete. The privatisation of land will be considered complete when all land parcels are surveyed and marked, titles prepared, examined, validated and registered by an authority entrusted to be responsible for land registration.

19. Slow progress in surveying and preparation of titles. Progress on the surveying of allotments has been hindered by resource constraints and a lack of experience in cadastral issues. Although there appears to be an adequate supply of 'land construction specialists' within government agencies to undertake fieldwork, major constraints are lack of vehicles, petrol, surveying equipment, computers, marking materials and training. Surveying work has involved the measurement of 21,000 land parcels in 18 regions. Based on an estimated 350,000 parcels in total, this represents 6% completion. The Director of the State Soil Construction Design Institute has forecast that by 1 July 1994, some 28,000 to 30,000 land parcels will have been completed (about 9%), with the production of Certificates of Title at around 10,000 titles (about 3%). The Mission is not convinced that this progress will be achieved and has requested a current situation report to assess the validity of these

forecasts (refer to Section H of this report). Clearly, at this rate of progress, the 5-year programme is extremely ambitious and unlikely to be achieved without a major injection of additional resources and capacity building.

20. **Inadequate procedures.** The present procedures being adopted by the State Soil Construction Design Institute also restrict the efficient utilisation of the land registration system. This has occurred in two areas. The first involves the complete lack of allotment marking. The 'land construction specialists' have 'accurately surveyed' and defined the allotments, but no survey marks have been placed. This will eventually lead to disputes as to the exact location of boundaries and impede the efficient operation of a land market, due to the uncertainty of parcel delineation in relation to dimensions indicated on the Certificates of Title. The second constraint is that each Certificate of Title contains the total holdings of each farmer. In other words, up to three or four widely dispersed allotments can be shown on the one Certificate of Title. If this approach is continued the Land Registration System will, in effect, become a Register of Farmers' Holdings and not a Register of individual land parcels, which modern Land Registration Systems are based upon. Clearly, this approach will impede the efficient buying and selling of land as each title, of both the buyer and seller, will need to be amended every time a transaction takes place. Under a modern Land Registration System, each allotment has a separate Certificate of Title and the transfer of ownership details are recorded on the Certificate of Title and registered.

21. **Lack of an appropriate institutional framework.** Another major constraint to the efficient functioning of a land market is the absence of an appropriate institutional framework within which a land market should operate. Although the Certificates of Title are being prepared by the State Soil Construction Design Institute, the examination, validation and registering of proposed sales of land is to be undertaken by the Notary Offices in each Region. As mentioned earlier, the Notary Offices are part of a separate Ministry, the Ministry of Justice. Clearly, under the present arrangements there is significant scope for errors, omissions, variable standards and lack of coordination. All of this will affect the

integrity of the Land Registration System with a consequential negative impact on the land market.

22. <sup>Lack</sup> ~~Land~~ of Land Valuers. In addition to this institutional problem, there are no qualified land valuers or real estate agents, a necessary element to make a land market function. There are no courses available to train these professionals and therefore the land market will not function effectively. It is understood that the legal profession is present in Armenia, who could prepare contractual agreements and transfers between parties if the Government decided that this work could be performed outside of the Notary Office structure.
23. **Lack of Cadastral Experience.** Regarding the presence of land surveyors in Armenia, this work has been performed by 'land construction specialists' within the State Soil Construction Design Institute. The training that these people have received in cadastral matters is limited to the former Soviet Union Cadastre. Therefore this aspect would also be a constraint to the efficient functioning of the land market.
24. **Incomplete coverage of land registration system.** All the discussion on a Land Registration System to this point has focused on the registration of privatised agricultural land. This is only a small component (16%) of the total land area of Armenia. To be fully effective, the Land Registration System to be established should cater for all land parcels in Armenia. This includes other privatised property such as residential dwellings, dachas, apartments, as well as reserves and State property. A recent study by a Consultant "on Land Information, advocated that a registration system in Armenia should be:

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"Aspects of the Legal Cadastre in Armenia", December 1993 Lynn. C. Holstein, Consultant, on behalf of the US Agency for International Development.

- uniform throughout the nation for use with all types of land, (eg agricultural, urban, residential and industrial);
- able to deal with all types of tenure (full property rights, use rights, leases), and different types of parties or owners, whether private citizens, enterprises, public or private;
- able to handle single plot or dwelling arrangements, as well as apartment and courtyard developments owned in condominium arrangements, or in standard single owner arrangements;
- operate in an agency independent from the fiscal cadastre, as both have different objectives, purpose, priorities, and the financial framework of operation of each is very different;
- decentralized and operated in convenient city locations throughout Armenia to provide services to property owners; and
- paid for by those who will most benefit from the operation of the system - the property owners themselves and those who most use the services on a professional basis - the notaries and in the future "surveyors".

The study also suggested that a new land registration authority could reside in the Ministry of Justice, as this group is decentralized throughout Armenia and maintains court records in all of its district offices. As well, the Notaries are employees of the Ministry of Justice and in notarizing land contracts and transactions, they retain copies in their local and central archive. Another possibility suggested was the Registration and Inventorization Department that has 38 branch offices across the country.

25. This conceptual framework is fully shared by the Mission. The Land Registration System for Armenia should not just focus on the registration of privatised agricultural land but should be established to cater for all land parcels in the Republic. If this recommendation is not accepted, Armenia will face a situation where the Land Registration system is not fully representative of the total land and property market in Armenia. It is worth reiterating that the Land Registration System needs to be the responsibility of a national land registration agency, dealing with all lands in any use.

#### **E. NEED FOR COMPLETION OF THE LAND REFORM PROCESS**

26. Experience in other countries has indicated that several distinct benefits emerge from the land privatisation process. These are:

- landholders should be able to obtain more easily credit from lending institutions when they hold a recognised legal title to their land;
- landholders who have a legal title to their land are more likely to invest money, time and effort in developing their land and activities related to it;
- the cost to the nation of providing legal titles to rural land is far exceeded by the resulting greater value of the land and the productivity derived from it, and
- land titles lead to a reduction in land boundary disputes

27. The initial land reform process in Armenia has not been advanced enough to generate these benefits at this stage. However, the good work that has been invested in land privatisation to this point in time will lead to the attainment of the above objectives.

28. The privatisation of land will only be considered complete when titles are prepared and issued for each land parcel, all plots are properly marked on the ground, the survey work and title has been examined, validated and registered by an agency responsible for land registration. The present system of preparation of Certificates of Title where groups of plots are shown on the one document coupled with the absence of boundary marks will inhibit the emergence of a land market and will slow down the consolidation of small holdings. The advantages of a market oriented economy will be difficult to realise unless steps are taken to establish a modern land registration system by reorganizing, equipping and training personnel to carry out urban and agricultural property registration.

29. The need to establish a comprehensive land registration system based on an accurate cadastre with correct ownership details is urgent. Unless this is done this will limit the marketability of the lands, make mortgages difficult to acquire and possibly increase disputes over ownership and land boundaries. The security of tenure required for the level of investment that Armenia needs will be difficult to achieve. Moreover, without a systematic and comprehensive system for incorporating rights of land changes, the present fragmentation of land parcels will remain a constraint on the consolidation of land ownership and thereby reduce the farmers' ability to benefit from economies of scale.

## F. PROPOSED SOLUTIONS

30. It would be beneficial to outline in broad terms what elements comprise a functioning land market before recommending proposals for change to existing arrangements.

Professor Ian Williamson<sup>11</sup> in his presentation to the Department of Land Management, Ministry of Agriculture in Lithuania described a land market as having the following characteristics:

- property rights in land are secure, open and protected by law;
- property rights in land are available to majority of people;
- system designed for people (users), not the government;
- can buy, sell, mortgage and lease;
- ease of use and access to data;
- buildings are part of land;
- involves banks and finance;
- investment and development based on mortgages;
- involves private professional lawyers, surveyors, land agents, valuers, bankers, developers.

31. This model is directly applicable for use in Armenia. A Registration of Title to land system, as distinct from a registration of people or houses system that is currently in place, is recommended for Armenia. The Registration of Title system has been the predominant choice in countries where new systems have been implemented. Also, looking with an eye to the future, the Registration of Title systems lend themselves to computerization and become the basis for sophisticated Land Information Systems and Geographic Information Systems.

32. The Armenian Government requires assistance and guidance in four key areas to satisfactorily continue its land reform activities. These are:

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<sup>11</sup> "A Land Information System for Lithuania: International Experiences and Local Issues" 16 September 1993. Professor Ian Williamson, University of Melbourne.

- . completion of surveying, preparation and issuing of Certificates of Title within the scheduled five-year programme;
- . establishment of correct procedures and new methodologies for the completion of field and office operations and the creation of an efficient land registration system;
- . creation of an appropriate institutional framework within which an efficient land registration system can operate in support of an emerging land market, and
- . review of the legal framework to support the above activities.

33. Presently the above-mentioned key areas form the major constraints that are impeding further progress on land reform in Armenia. Assistance is therefore recommended to overcome these constraints and allow the Armenian Government and its people to gain the full benefits of the land reform process. Estimates of the cost of this support are shown at Section G. The thinking behind each element of proposed assistance is now outlined.

#### Awareness Training

34. The Mission proposes that a Workshop be held in Yerevan under the auspices of the International Federation of Surveyors (FIG) to outline present worldwide thinking and experiences in different countries, including those of the former Soviet Union. It is estimated that twelve representatives will attend a seminar of one-week duration. FIG is an international non-governmental organization registered with the United Nations whose aim is to ensure that the practice of surveying throughout the world meets the needs of the communities it serves. A similar workshop was recently held jointly between the Food and Agriculture Organization of the United Nations (FAO) and FIG in Melbourne in March 1994

to explore ways for future cooperation between these organizations. Armenian Government officials from all areas that are currently involved in land privatization, land titling, land conveyancing, real estate, land valuation, surveying, law and the academic institutions should attend. FIG participants for such a workshop can be decided upon after discussions with them. As a follow up to the FIG workshop, it is suggested that key personnel likely to be in the new Agency responsible for land matters in Armenia, should visit several suitable countries to view at first hand the systems in place.

35. The benefits from exposure to current international experiences and thinking through the suggested Workshop and Study Tours is to accelerate progress in land reform. This will be achieved by increasing their awareness of the successes and the mistakes of other countries and gain their commitment to the process of change that is recommendable.

### Organizational Restructuring

36. The Armenian Government will need assistance in developing the most appropriate model from within the existing institutional framework for land reform, the cadastre, land registration, conveyancing etc. It is recommended that a single agency be responsible for the management and administration of these functions within Armenia. A land and property registration system will perform an important role in the execution of that responsibility. The structure of the new organization will need to address the extent to which decentralization of responsibility is to be devolved. It is suggested that the present 38 regional office structure is excessive. A lesser number of regions, perhaps say 5 or 6 may be more appropriate to reduce administrative costs and improve standards of service delivery. In regard to the issue of fewer regions, it is noted that in a recent study by Consultants "Crédit Agricole" that it was the Government's intention to reduce the number of regions

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<sup>11</sup> Feasibility Study of an Agricultural Cooperative Bank for Armenia, Final Report, March 1994.

to six. The rearrangement of these regions should be guided by the present location of the users of the land market system.

37. The Mission proposes that a Working Committee be established in Armenia of key groups that are currently involved in the land and property reform process to design and implement the new organization. These include people from the Privatization and Land Reform Department (MOA), the State Soil Construction Design Institute (MOA), Notary Offices (Ministry of Justice), the Registration and Inventorization Department, the Land Utilization and Architecture Group within the Council of Ministers, the Yerevan City Council's Architecture and Construction Department and the Geodesy and Cartography Institute. An experienced overseas advisor should also be involved in these negotiations to facilitate the process of organizational redesign. The benefits of the creation of a single agency within the institutional framework of the Government of Armenia was discussed earlier in Section C.

### **Review of the Legal Framework**

38. It was not possible to examine translations of all the relevant legislation whilst the Mission was in Armenia. Copies of some of these documents have been translated by the US Agency for International Development, within the Department of Economic Reforms. These have been examined but what is needed is a comprehensive analysis of all relevant existing and proposed draft laws by a legally qualified expert in land title law, conveyancing law, mortgage law and property valuation law. This analysis should identify any inconsistencies in the law and any missing legislation in the context of how the land market system for Armenia will operate in the future. Without appropriate legislation, a land market cannot operate properly. Recommendations for amendments and new draft laws should be proposed by this legally qualified expert.

### **Assistance with Personnel**

39. It is recommended that an Armenian Land Titling Project Team comprising overseas experts in surveying, land titles, computing and education/training be established on site in Yerevan for 3 years. One of these experts would also perform the duties of Team Leader.

40. The Armenian Land Titling Project Team will work initially within the Ministry of Agriculture. The individual tasks of each of these experts would be as follows:

**Surveying Expert.** The surveying consultant will work with the State Soil Construction Design Institute to facilitate the completion of surveying, cadastral plans and preparation of Certificates of Title on the balance of privatized agricultural lands in Armenia. He/she will closely liaise with Armenian staff from the existing Notary Offices to ensure that the process of examination of surveys, creation of Certificates of Title, ratification of ownership details and the acceptability of proposed changes in ownership accords with modern land registration practices. Assistance and guidance is to be provided to create a comprehensive land registration system. He/she will also be responsible for amending those areas that have not been properly marked so that the physical delineation of allotments is in accordance with prepared Certificates of Title. Where Certificates of Title have been prepared for more than one piece of land, these will be redrawn when time permits. This surveying expert will also be responsible for the incremental purchase and introduction of new surveying and computing equipment which he/she will undertake in close consultation with other members of the Armenian Land Titling Project Team. In addition to items of office and field equipment, a large purchase of vehicles will need to be made as this is one of the major impediments to progress in completing the programme of field activities. Another responsibility of this consultant will be to

design with the computing expert a methodology for the delineation of non-agricultural land parcel boundaries, especially for privatized urban land in major cities such as Yerevan. All towns in Armenia are covered with up to date topographic maps at scales of 1:2000. Ten towns have coverage at scales of 1:500. These maps have been produced by the Geodesy and Cartography Institute. Once this methodology has been designed and tested, the incremental building of a comprehensive land registration system for Armenia to cover both agricultural and non-agricultural land parcels can commence.

**Computing.** Lack of computing equipment and knowledge has meant that there is little understanding and training available within existing agencies to expedite production work. The computing consultant will review all office and field based activities to assess the appropriateness of introducing new technology and training into the newly created land agency. He/she will need to assess whether proposed equipment purchases can be adequately maintained in Armenia given the lack of private sector support and the fluctuating power supply. The computing expert will also work closely with the educational consultant in the evaluation of existing courses at the academic institutions and develop recommendations for changes.

**Education/training.** The education/training consultant will need to undertake an initial evaluation of all relevant existing courses and training programs at the Agricultural Institute, the Geodesy and Cartography Institute and the State Soil Construction Design Institute, and the Hydromeliorative Technique. He/she will then recommend changes to courses to enable training to commence as soon as possible in support of the Armenian Land Titling Project. Where courses are not

available (for example real estate, land valuation, etc.), the education and training consultant will prepare curricula for those courses. Another responsibility of the education/training expert will be to personally design and carry out intensive short courses for staff where these are more relevant for their needs. This for example could be courses in cadastral surveying, the basics of land registration and conveyancing, and introductory computer courses. Traineeships should be offered to say 8 students per year at overseas institutions for attainment of qualifications in courses such as surveying, computing, valuation and cartography.

41. The benefits of the assistance to be provided by the presence of overseas experts, new equipment and an extensive training programme are to establish correct procedures for the building of the cadastre and the land registration system to ensure that they provide correct, comprehensive and relevant information to enable a land marked to operate efficiently. This has been discussed at some length in Section E.

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#### Provision of Equipment

42. New equipment will form a significant component of assistance to the Armenian Government. Until such time as the Armenian Government can provide details of their equipment holdings, its condition and age it is not possible to say exactly what equipment needs to be purchased. The estimates of expenditure are based on the premise that their present stock is old, in poor serviceability and in short supply. Details of forecasted equipment purchases for the duration of the project are shown at Section G.

#### Assistance with Technical Training

43. The Mission was advised that all staff from the State Soil Construction Design Institute and the Geodesy and Cartography Institute were capable of performing land surveying functions. This fact will need to be tested, as well as the content of existing courses at the academic institutions. Apart from conducting short courses for existing staff, the Education/training expert will design new courses where these are needed but are not available - for example in land valuation and real estate. The education/training consultant will also arrange for eight overseas traineeships at selected institutions in surveying, computing, land valuation and cartography commencing in the second year of the five year programme. The exact composition of these traineeships will depend on the level of competence of the existing staff and the trainees' special requirements.

#### **Project Management Arrangements**

44. Discussions and negotiations concerning the creation of the new single agency responsible for the management and administration of land and property functions should proceed concurrently with the land reform activities. The Mission proposes that whilst those decisions are being made, the Ministry of Agriculture take overall responsibility for managing all operations connected with facilitating the land reform process that have been proposed in this Section.

45. The Privatization Department would have responsibility for the implementation of the project as it affects the Ministry of Agriculture, as well as budget control for that component. In regard to urban land parcel definition, the Registration and Inventorization Department would take on responsibility for implementation of their project recommendations. The new agency that will be created to administer the land registration system would likewise have responsibility for implementation of the project recommendations that are relevant to them.

#### **Alternative Technical Approaches**

46. One of the first tasks of the Team Leader would be to decide on the most appropriate approach to be taken for the surveying, urban parcel definition and preparation of Certificates of Title. The Mission firmly believes that substantial boundary marking is a prerequisite to any approach. This will mean that the boundary corners need to be marked with possibly concrete markers in agricultural areas and other appropriate marks in urban areas.
47. The next decision will involve how the marks placed should be measured. On this point, highly accurate methods used in developed countries are not warranted in Armenia and would prove to be costly and slow. Another method could involve the placement of several accurately surveyed marks (control marks) in each Village area from which less accurate, but adequate methods can be used to fix boundary corners. The Mission was advised that there are three control marks in each village but this needs to be confirmed. As well, the areas of survey could be photographed by an aircraft and if appropriate, rectified photographs or orthophotomaps prepared upon which the boundaries of allotments can be identified and measured.
48. The Geodesy and Cartography Institute has advised that they possess all the photographic records previously held in Moscow archives which they claim are recent. These photographs would need to be examined carefully before a decision was made on their suitability for use in rectified photography, if that was the approach to be used. Otherwise new photography would have to be acquired. As has been previously mentioned in this report, urban areas that are being privatised are being handled by the Registration and Inventorization Department. An appropriate methodology needs to be developed to undertake the marking, measuring and preparation of titles as well.
49. The estimates of costs that have been prepared in this technical annex have been based on the assumption that all agricultural and urban allotments will be substantially marked in the first instance. In the case of agricultural lands, it has been assumed that less

accurate ground methods will be used, based on accurate control marks placed in all Village areas. In the case of urban allotments it has been assumed that the Team Leader will be able to use a digitizing technique based upon the existing topographic maps at 1:2000 or larger scales to define urban allotment boundaries. This technique will need to be developed in conjunction with the computing consultant.

### G. ESTIMATES OF EXPENDITURES

50. The following estimates have been compiled on the basis that an Armenian land Titling Project Team will stay in Armenia for 3 years, and a new organisational structure with six regions will be established in Armenia to continue the land reform process. As well, it has been assumed that all present resources presently involved in the land reform activities will be available to continue this work. Armenian government costs (eg salaries, accommodation costs, depreciation etc.) have not been taken into account. All dollars shown are US\$. Indicative costs are as follows:

#### FIRST YEAR COSTS IN DETAIL

##### 1. WORKSHOP/SEMINARS/STUDY TOUR

- FIG attendees at Workshop in Yerevan (based on say, twelve people for one week)	US\$ 72,000
- Study tour to two countries for three people	US\$ 13,500

##### 2. ORGANIZATIONAL RESTRUCTURE

- Overseas advisor for three months in Year 1 (3 months at US\$ 15,000 + ticket)	US\$ 48,000
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### 3. REVIEW OF LEGAL FRAMEWORK- . .

- Legal advisor for 3 months in years 1, 2 and 3  
(3 months at US\$15,000 + ticket) US\$ 48,000

### 4. ASSISTANCE WITH PERSONNEL, EQUIPMENT AND TRAINING

#### Personnel Component (Years 1-3)

- Surveying/titles/land registration expert for 12 months only US\$ 180,000
  - Computing expert " " US\$ 180,000
  - Education expert " US\$ 180,000
- Sub-total (1) US\$ 721,500**

62

7. FIVE YEAR PROGRAMME COSTS - - -

Assistance	Year 1	Year 2	Year 3	Year 4	Year 5	Total
.....(US\$'000).....						
Workshop/study tour	85.5	-	-	-	-	85.5
Organizational restructure	48.0	-	-	-	-	48.0
Review of legal framework	48.0	48.0	48.0	-	-	144.0
Personnel	540.0	540.0	540.0	180.0	180.0	1,980.0
Equipment	1,793.3	185.5	185.5	1,018.5	185.5	3,368.3
Miscellaneous	25.0	304.0	304.0	304.0	304.0	1,241.0
10% Contingency	254.0	107.8	107.8	150.2	67.0	686.8
	2,793.8	1,185.3	1,185.3	1,652.7	736.5	7,553.6

H. FOLLOW-UP ACTION

51. There are three major issues to be resolved by the Government of Armenia to ensure the successful preparation and implementation of the land reform project. These are:

- Confirmation of the need to establish a new single organization to administer land related issues, including land registration;
- Confirmation that land titles will be issued as a single plot of land; and
- Confirmation that the Government of Armenia will create a land registration system that embraces all land in Armenia.

## 5. MISCELLANEOUS ITEMS

- Follow up project management visits to Armenia (three in first 12 months) and two each year after year 3		<u>25,000</u>
	Sub-total (3)	<u>US\$ 25,000</u>
Total of (1) + (2) + (3)		US\$2,539,800
10% contingency		US\$ 254,000
<b>* ESTIMATED TOTAL COST IN FIRST YEAR</b>		<b>US\$2,793,800</b>
	<b>SAY</b>	<b>US\$2.8 M first year only.</b>

## 6. ADDITIONAL COSTS

**Personnel.** It is assumed that after the first 36 months, visits of key personnel will be required to review progress on project activities in their area of expertise. Each visit would be say 2 months in duration, twice a year. That totals 12 man months per year for years 4 and 5. (US\$ 180,000 per year).

**Equipment.** It has been assumed that <sup>some</sup> same equipment (with the exception of the vehicles) will need to be replaced in Year 4 of the 5-year programme. Fuel/spare parts and consumable are an on-going annual cost of US\$185,500.

**Miscellaneous.** Eight traineeships at overseas during years 2, 3, 4 and 5 have been assumed for trainees in surveying, computing, cartography and valuation. Based on eight trainees at US\$36,000 p.a. this equates to US\$288,000 per annum.

Equipment and Training Component

ITEM	NUMBER	UNIT COST (US\$)	TOTAL COST (US\$)
GPS Receivers	3	100,000	300,000
Long-range EDM	6	15,000	90,000
Total Station Instruments	6	12,000	72,000
486 PC's	30	3,000	90,000
Cadastral Software	6	9,200	55,200
Plotting Software	6	4,500	27,000
Plotters	6	12,000	72,000
Digitizer boards and supporting computers	6	18,200	109,200
Consumables (pens, inks, paper etc.)		10%	51,500
Training equipment			
- Video )			
- O/H projector )	6	5,000	30,000
- 35 mm projector)			
Portable computers	12	3,700	44,400
Vehicles (4WD)	20	33,000	660,000
Spare parts )	20	3,700	74,000 p.a.
Fuel/services ) (per annum)		(assume 35,000 km per vehicle per year and consumption at 15 ltr/km and US\$0.5 per ltr.	60,000 p.a.
Training materials			20,000
Fax machines	6	500	3,000
Photocopiers	6	2,500	15,000
Dyeline printing machine	1	20,000	20,000
		Sub-total (2)	1,793,300

52. In addition to these issues, a number of information requests were left with the Ministry of Agriculture to compile and forward to FAO within two months. These were as follows:

1) Progress on Privatization - at 16 May 1994

No.	Region	Estimated area (ha)	No. of plots	(1)	(2)	(3)	(4)
1	Kotaik	16,625					
2	Vaik	7,162					
3	Amasia	7,613					
4	.....						
		-----					
		461,393					
				* Estimated at 320,000 to 350,000			

Explanation of Columns: (1) Number of Temporary titles issued. (2) Number of allotments surveyed. (3) Number of final titles prepared. (4) Number of final titles issued to farmers.

2) Comparison of Estimated Areas of Survey to Final Areas of Accurately Surveyed Land, by Region.

No.	Region	Estimated Area (ha)	Final Surveyed Area (ha)
1	Kotaik	16,625	
2	Vaik	7,162	
etc.	.....	.....	.....

3) Copy of Director of State Soil Construction Design Institutes' Five year Forward Program. X

4) Break up by Land Type Table

## ANNEX 2

### I. INTRODUCTION AND BACKGROUND

#### A. INTRODUCTION

This Report focuses on land registration systems in their role in support of the operation of land markets and assure property rights. The Report seeks to make suggestions for the improvement of property rights, the registration of property rights, and associated matters, all in support of the dynamic changes commenced by Armenia in 1990. While the registration of land itself is new to Armenia having started only since 1991, the function of registration of property itself, is not new. The registration of privately owned residential dwellings and apartments has been possible since the 1950s and two Armenian agencies have significant experience in undertaking such tasks. However, the objects registered were the buildings and not the land upon which the buildings stand or surrounding it; before 1990/91 it was not possible to have land rights in Armenia. Thus this building registration experience has served as one of the points of departure for this work.

Between November 1 and November 15, 1993, Lynn Holstein, a land administration and registration consultant, at present based in Virginia, USA, undertook a study visit to Armenia. The purpose was to follow up the work of consultant Mr Richard Almy from his July-August 1993 mission, and that of Mr Robert Joseph, in June 1993. Holstein's study objectives were as specified in the terms of reference issued in October 29, 1993, by ICMA and contained in Annex 1. In summary, the objectives were to continue investigations into the legal cadastre of Armenia and suggest improvements including in associated methodology, institutional aspects, and implementation aspects especially in support of the housing development tasks of ICMA. A secondary objective was to make some suggestions for the development of support urban information systems for Armenia.

During his mission, Holstein held meetings with a state minister, several department directors, and many professionals and administrators, as listed in Annex 2. Appreciation is expressed to those representatives of the Government of Armenia consulted for their patience and cooperation. Holstein is also indebted to the ICMA/USAID housing representative in Armenia, Mr Steven Anlian, for his assistance and hospitality, as well as to his staff members, Mr Melik Karapetian, and translator Ms Nelly.

On the last working day of the study November 12, 1993, Holstein and his colleague, Mr Richard Almy, property tax, valuation, and cadastre specialist, held a wrap-up or de-briefing meeting, chaired by Mr Andranik Andrezian, Real Estate Section, GOA, which was attended by about 14 government officers. A note was prepared and distributed during the wrap-up meeting as attached in Annex 2.

Immovable Property rather than Land To avoid confusion and indeed to strive for clarity, in this Report the term "immovable property" is used, rather than "land." Immovable property includes such items as lands, buildings, and constructions of all kinds attached to the soil. Such a definition is important for Armenia with its separation of the ownership of buildings, from the ownership of land and associated rights; one of the features of Armenia's last 70 years.

This Report places the topic of immovable property rights and registration in the framework of a legal cadastre. It defines the legal cadastre framework and then distinguishes it from a fiscal cadastre. Chapter 3 discusses Armenia's immovable property rights introduced in 1991 followed by

Chapter 4 which is concerned with the registration of the rights and suggestions are made for the introduction of a registration of title system. Chapter 5 looks at implementation issues. The rest of the Report is concerned with conveyancing, a brief consideration of dispute settlement, and finally of urban development information systems.

## B. BACKGROUND

In late 1993, ownership units of the immovable property in Armenia broadly consist of seven different types, privatized farms, privatized collectives, privatized single family dwelling units, apartments, industrial and commercial properties, and state apartments and state lands. At present it is estimated that there are 650,000 "ownership" units including 250,000 plus agricultural farm units of land which have been privatized (though as yet not registered) with another 100,000 units remaining under a possible second stage of agricultural land privatization. Also there are at least 243,000 apartments in Yerevan (in about 4,000 apartment buildings) as well as an estimated 45,000 single family dwellings in Yerevan. Figures were not available for outside of Yerevan as many villages are not registered or fully inventoried. Also industry and commercial undertakings are being privatized though figures were not obtained. (see Annex for a Table ). These figures give the magnitude of the task before Armenia in organizing its land markets and associated recording systems.

## II. THE THREE CADASTRE TYPES EXPLAINED

### A. Fiscal, Legal, and Multiple Purpose Cadastre

In land administration, in theory there are three types of cadastre, the fiscal cadastre, the legal cadastre, and the multiple purpose cadastre. As there are several definitions and different understandings of the scope of these cadastre, the definitions as used in this Report are hereby presented. In this report, the focus is on the "legal cadastre," especially as the fiscal cadastre was one of main considerations of Mr Almy's July/August, 1993 report.

#### 1. A Fiscal Cadastre

This is complete inventory of immovable property or real estate objects (land and structures) - tax objects - of an area or jurisdiction; and the associated people - tax subjects - responsible for the payment of taxes on that immovable property. Such a fiscal cadastre is used in support of the property taxation, both recurrent and periodic, and often for compensation in cases of expropriation. In institutional terms, a nation's or local government's fiscal cadastre may involve several agencies at different levels of government: e.g., a state taxation department and a valuation office, and a local government land tax collection agency. Theoretically, a fiscal cadastre should strive to be complete to help ensure equity in taxation but in practice this is not always possible; difficulties arise because of an administration's lack of recognition of so-called "illegal" occupation of lands and buildings constructed without local government permission, or that local governments just do not wish the land tax system to be efficient as they are politically exposed especially at that level.

#### 2. A Legal Cadastre

The author considers a legal cadastre to be a series of systems rather than an just an inventory of immovable properties across a jurisdiction (the European definition). Thus, a legal cadastre consists of a system of property rights, associated contract law and procedures for efficient and secure conveyancing, and an effective justice system to resolve legal conflicts which arise from time to time over property rights and contracts. In support of property rights, an immovable property registration system is necessary which consists of:

- (i) records of the identification of the objects of immovable property rights (land, buildings incl. houses, structures) as well as of the owners or holders of the rights and interests in the immovable property, both state and private;
- (ii) cadastral maps and plans of the immovable properties, the result of cadastral surveying;
- (iii) an efficient system of immovable property transfer, exchange, or buying and selling, sometimes called a conveyancing system; and
- (iv) an information management policy that ensures that the information in a legal cadastre is available for public use to ensure: (a) public notice of rights is available, (b) equity in the land market, and (c) efficiency in the wider function of land

administration, especially the fiscal cadastre and property tax, housing, planning, and urban and rural management.

The actors and institutions involved in the legal cadastre are several and can involve both the private and public sectors depending on a country's traditions, laws, and incentives. Involved are the policy and law makers, a land registration agency, supporting lawyers or notaries, land surveyors, and in some countries, a cadastre agency. In Brazil, all functions except policy, regulation formulation, and the court system are undertaken by the private sector, which is marked contrast to Thailand where the public sector undertakes all functions including the provision of a monopoly notary or lawyer's conveyancing service.

### 3. A Multiple Purpose Cadastre (MPC)

This is a cadastre which comes from the notion of information science whereby a complete inventory of real estate and associated features in an area is undertaken and maintained up-to-date and used for multiple uses including: property tax, land registration, land administration, and sometimes for infrastructure operations. In most countries, MPC is a concept rather than a reality as institutionally and practically they are difficult to establish. However, MPC holds promise if considered as a wide area network of individual agencies, each responsible for their own data though contributing data to the MPC on demand. MPC particularly urban information systems are discussed in Chapter .

#### B. Legal and Fiscal Cadastre Distinguished

The differences between a fiscal and legal cadastre are several and include that of purpose, institutional involvement, and speed of compilation. In the long-term when both cadastre are fully developed and complete in their own terms, the legal cadastre will contribute greatly to the fiscal cadastre. However, in short- to medium-terms, the initial formation of the fiscal cadastre cannot wait for the slow pace of establishment of the legal cadastre. In fiscal cadastre establishment periods of four to five years are common, yet with the initial compilation of a legal cadastre periods of 10 to 30 years or longer are the norm depending of the size of the jurisdiction, its resources, terrain, and the law.

Recent cadastre compilations in Thailand and Indonesia confirm that the two cadastre are not practically well established together. In both countries the legal cadastre is less than 40% complete, (Thailand 40%, Indonesia 20%) while the fiscal cadastre are an estimated 90% complete, at least to the satisfaction of a simple property tax system. Many theorists would argue that the information value of undertaking both together is justifiable but they forget that a major objective of the fiscal cadastre is revenue and therefore establishment must be done quickly.

So it is in Armenia. With compilation of the fiscal cadastre perhaps five times as fast as the legal cadastre it is recommended that a joint approach not be taken; also the functions are undertaken in different agencies. This conclusion is supported by OECD experience as well. Nevertheless, technical and informational linkages should be always maintained between the two cadastre.

In summary, experience in the OECD countries and more recent experience in developing countries indicate that the compilation of a fiscal cadastre (including property tax) should proceed at its faster pace of establishment (which can be up to five times as fast), not waiting for the

compilation of the legal cadastre. However, technical and informational linkages should be always maintained between the two cadastre. This is the recommendation for Armenia.

C. Benefits of a Legal Cadastre including Secure Property Rights and an Immovable Property Registration System

Secure long term immovable property rights supported by an efficient immovable property registration system contributes to:

- \* improved productivity in agricultural lands;
- \* better land resource and environmental management;
- \* more investment by citizens in improved housing in urban areas, often improved health through investments in first bathrooms and kitchens;
- \* the stimulation of land markets;
- \* a lowering of transaction costs in the buying and selling of land;
- \* the availability of more credit using land as collateral, at cheaper rates from formal financial institutions;
- \* support for resource mobilization in the national economy, (i.e., resources formerly in the informal markets after registration can contribute to the formal financial markets);
- \* lessening of property disputes with fewer going to court;
- \* a greater willingness to pay property tax and the availability of information in support of that property taxation; and
- \* support for improvements in town planning, and improved land information management overall.

1. Secure Property Rights and Efficient Registration not a Panacea

However, property rights and immovable property registration systems by themselves are not a panacea or cure for all land issues or for poor quality land. They are not in themselves land reform but they can support land reform. Extension services, credit, materials, training, policy changes, and other inputs are necessary for better housing and improved farming. Property rights and registration systems are just part of the necessary support structures for improvement.

### III. PROPERTY RIGHTS DISCUSSED

#### A. Introduction

The current legal framework for immovable property rights in Armenia stems from the Civil Code 1964 to 1986, the Armenian Property Law of 1991, the Armenian Land Code of 1991, and other decrees issued since 1991.

Since 1990 Armenia has made great progress in re-defining immovable property rights. Under the new laws and new property rights to-date much agricultural land has been privatized, apartment privatization has been commenced, and much more is being considered including single family housing. Also appreciated is that the Civil Code is from the Soviet period and all concerned agreed that it should be revised, however all consider that this is a significant task.<sup>1</sup>

While appreciating that Armenia moved very quickly in formulating a Land Code in 1991, property rights are still under constant evolution and consideration with the Land Code at present reflecting the quickly changing circumstances in the country. Part I of the Code was under review during the visit of the author. Thus the following observations are made as a contribution to the on-going revision of property rights and related matters at present taking place in the Ministry of Justice and elsewhere.

#### B. Some Lessons from Consideration of International Immovable Property Rights

Typical considerations in immovable property rights concern the following elements: the term/ or period of the right, rights of assignment, mortgage rights, inheritance rights, right of lease rights, use rights, and extent of use rights or restrictions. The highest or most complete rights would entitle the holder to inalienable and exclusive entitlement to all of the above elements, i.e., to enjoy them without interference, to dispose of them at will, and use them to the exclusion of others. Some countries allow none of these rights - as during the former Soviet republics - others countries allow them all, except for the right of government to take a property into public use (expropriate the property) under certain conditions. Worldwide, governments over the last 100 years in considering immovable property rights have restricted rights in some or many of the following ways:

- \* land use restrictions especially non-agriculture use restrictions;
- \* limits on the maximum or minimum size of land holdings or number of apartments
- limitations:
- \* the right to buy and sell;
- \* inheritance restrictions;
- \* no right to lease;
- \* no right to mortgage;
- \* no absentee ownership;

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<sup>1/</sup> The revision of the Civil Code in the Netherlands completed in 1990. This Code Napoleon based Civil Code took at least ten years to complete and involved a team of professionals to draft.

- \* loss of land if non-use say for two years; and
- \* no foreigners or even non-local people.

These restrictions clearly limit the use and actions landholders can take on their lands or use they can put the land to and means an enormous task for governments to monitor such restrictions. In many OECD countries most of these restrictions have been removed or dropped over time with the realization that the economic and social justification for them are difficult to justify, and that citizens will ultimately put the land to its best use if the other productive factors are in place. However, government regulation is needed to protect selected environmental factors and to ensure health considerations are taken into account. With these items in mind the Armenian Land Code was inspected.

### C. Property Rights in the Armenian Land Code, 1991

Four types of immovable property rights are specified in the Land Code when state land is allocated - (i) immovable property as "property" (as in full rights or fee simple); (ii) in permanent use; (iii) in temporary use; and (iv) under lease conditions. For each of the four types of property rights, various uses are specified. Also for each of the four, various types of citizens and parties are specified who are able to hold those rights.

The Code specifies the roles of the various levels of government, and the order of land allocation.

The Code specifies that lands held as "property" and in "permanent use" should be confirmed by a state act given and registered by the Local Council's executive committee of People's Deputies. Lands held by "temporary use" and by "land rent or lease" should be held under contract and registered.

The rights and obligations of "property," owners, permanent use owners, temporary use "owners" and land rent owners are given. There are provisions covering the solving of land disputes which are stated to be addressed by three agencies - the local council of peoples deputies, the Court, or by State Arbitration.

Finally, there is also a provision for a comprehensive "State Land Cadastre" consisting of topographical, legal, fiscal, geological, land use, botanical and other information. While there are many other provisions they will not be discussed here as they are generally beyond the scope of this Report.

### D. Comments on the Armenian Property Rights in the Land Code and elsewhere

The four property rights specified in the Land Code 1991, basically freehold, leasehold, permanent use, and temporary use, while adequate are too much associated with the uses land can be put to and the parties who can use the land. These restrictions will create many new bureaucratic procedures, cause delays, constrain land transactions, and investment.

Land can be allocated as "property" (i.e. freehold) only for three uses: agricultural, residential, and gardening uses, while other uses such as industrial and commercial uses are not specified to be able to be allocated as "property," only as "temporary uses" or "lease."

Industry and commercial users will be constrained by the limited property rights available to them, and this will clearly limit their investment in plants and buildings, and therefore increases in productivity and the generation of employment in Armenia. Another consequence of this is that it would be very doubtful whether any financial institution would advance credit for such a short term.

Property rights are also attached to various parties for various uses. Such legal provisions will create difficulties in terms of future land use changes and future sales.

Covenants or rights of the immovable property rights are not given in the case of permanent use (Article 6) and temporary uses (Article 7) including: inheritance rights, building rights, right of using as a collateral in a loan, right of disposition or sale or exchange (see Rights given in Article 28). However, it is clear that those that have "property" in land have all of these things (Article 24).

Definitions in the Land Code are not given of such fundamental elements such as: "land", "property," temporary use," "permanent use," and "land rent". These should be defined at the front of the code.

There is also restricted ownership and use rights for non-Armenian citizens, even former CIS citizens.

#### E. The Property Rights of Non Nationals

According to Article 7, other states, international organizations, and joint ventures can only be allocated land on a temporary use, meaning for periods up to 10 years. Apparently according to those interviewed, this period can be extended (not mentioned in the Code). Clearly, such a limited period will constrain investment in Armenia by investors from any nation.

These Land Code restrictions on non-nationals holding land as property appear to be conflict with the Property Law, 1991, especially with Article 4, 57 and 58. Never-the-less, it is not being argued here that freehold rights are essential for attracting investors; necessary is a long term lease for a term of years long enough to allow an investor to capitalize on their investment, and for a non-national to be able to use the land for the approved purpose. The term must be long enough for ventures to become profitable and allow an investment to be sold or a mortgagee to take over possession in the case of failure. This amounts to at least 30 years or more. In OECD countries often 50, 60 or 99 year leases are used.

#### F. Institutional Responsibilities

Some of the responsibilities of the various levels of government (Art 10 through 12) appear to be unclear and overlap with each other.

Also the responsibilities between the three dispute settlement groups (the courts, the local council of deputies, and state arbitration) are not clear and indeed they are confusing. However, the concept is very clear and the notion of several levels of agencies is correct.

The Land Code is very focused on agricultural uses and regulations. Considering that over 70% of the country's production is focused on manufacturing and industry, this is clearly unsatisfactory.

#### G. Other Matters

The Land Code does not mention access rights for lands cut off from road access, rights of way, easements for infrastructure services between public sector and private lands, and between lands owned by citizens.

The Land Code does not mention rights to minerals or associated mineral reservations to the state, property boundary rules, and spatial limits to properties.

A land code should mention the structure of leases, mortgages, usufruct, property, unless mentioned elsewhere, and conveyancing, etc

The "state land cadastre" mentioned in Part VI of the Land Code, while appearing reasonable is clearly unaffordable to most countries developed or undeveloped. The amount of information required is very significant, but the question is, how to keep all that information current or up-to-date after initial establishment, and to insure that it is available to the agencies and citizen that want to use it.

#### H. Recommendations

In general, it is recommended that land use regulation and management should not be regulated from a land code but from local council decrees issued by local communities or governments. Local communities are better informed of local needs and demands.

If a system of leases (Art 3) is to be established in Armenia and with terms or periods of say 20 to 60 years long then it is recommended that they become statutory leasehold tenures with their covenants set out in decrees and registered with the other property rights documents.

In general, it is recommended that the Land Code objectives should be more concerned with actual ownership rights, and the specification of rights associated with that ownership and restrictions, rights of way, easements, contracts, conveyancing, and setting policies for protection of the land resource especially considering environmental matters and health considerations.

Overall, it is recommended that support could be given to GOA in this whole area of strengthening of property rights especially supporting the re-drafting the land code and supporting a first stage of the large task of re-drafting of the civil code.

well as others. Moreover, ROT systems are very suitable for computerization and as a basis for land information systems.

XXXI. The main report presents suggestions for improvements to the existing registration systems in Armenia, and states that ROT systems can be considered as a set of principles which can be introduced selectively or in parts. It is not recommended that Armenia introduce large sections or parts of legislation from other countries without careful consideration. Therefore the main report presents concepts and principles which can serve to improve the present systems in Armenia.

#### Conceptual Level Improvements Recommended for ROT

XXXII. At the conceptual level the registration systems in Armenia are recommended to embrace flexible systems that are:

- \* uniform throughout the nation for use with all types of land, (e.g., agricultural, urban, residential and industrial);
- \* able to deal with all types of tenure (full property rights, use rights, leases), and different types of parties or owners, whether private citizens, enterprises, public or private;
- \* able to handle single plot or dwelling arrangements, as well as apartment and courtyard developments owned in condominium arrangements, or in standard single owner arrangements;
- \* operate in an agency independent from the fiscal cadastre, as both have different objectives, purpose, priorities, and the financial framework of operation of each is very different;
- \* decentralized and operated in convenient city locations throughout Armenia to provide services to property owners; and
- \* paid for by those who will most benefit from the operation of the system - the property owners themselves and those who must use the services on a professional basis - the notaries and in the future "surveyors."

#### Recommendation for Registration System Assistance

XXXIII. It is recommended that assistance be made available to Armenia to help in the improvement of their immovable property registration systems to be able to better address new requirements imposed by having to address land matters and not just buildings, all within a framework of a ROT system.

#### Institutional Settings for a National Immoveable Property Agency in Armenia

XXXIV. The main report discusses the options for the institutional location of the immovable property registration functions. Criteria are suggested for this purpose. After much discussion the Ministry of Justice and the Union of Community Services appear to be the most suitable locations. The Ministry of Justice is de-concentrated throughout Armenia and has to maintain court records in all of its district courts, for all court cases. Also the notaries in Armenia are employees of the Ministry of Justice and in notarizing land contracts and transactions, they retain a copy of every transaction they notarize in their

local and central archives. However, the Union of Community Services has the experience of its Technical Inventory Department and has 38 branch offices up and down the country.

XXXV. It is recommended in the medium term that the immovable property registration function stay with the Technical Inventory department of Community Services, and the Yerevan Building Inventory. However, both should form stronger linkages with each other especially technically. Both of the agencies recognize that they need strengthening especially in survey and mapping, and in the abilities of their systems to handle mortgages, liens or pawns, easements, and rights of ways. Both groups need support and development to do a satisfactory job.

XXXVI. Also, it is recommended that as Giprozyom completes surveys and title documents for the privatized agriculture plots, that the title documents should be registered in the appropriate local office of the thirty eight branch offices of the Technical Inventory Department, Union of Communal Services. Investigations for this should be made by a Committee of the Ministry of Justice, Agriculture, and the Union of Communal Services, Giprozyom and others.

#### Other Land Registration Recommendations

XXXVII. In the medium term it is recommended that the two urban registration agencies carry on their present mode of operations, i.e., using the "sporadic method" (see main report), reflecting the difficult times Armenia is experiencing. This is actually the operational mode required for the privatization of apartments at present.

XXXVIII. Both agencies should investigate how to best commence increasing or acquiring cadastral survey skills, including building up their own capabilities, or engaging the Institute of Cartography and Geodesy to work on land registration surveys on an "as required basis" or under some permanent arrangement.

XXXIX. In the longer term, it is recommended that a national immovable property registration agency be formed, based on the skills and experience of the agencies mentioned in the Report. It should be staffed with professionals with strengths in the law and cadastral survey, as well as with some with modern records management experience. To this end a working group should be formed under the Chairmanship of the Ministry of the Economy, including of representatives of all relevant groups. The option of only one national registration agency, dealing with all lands in any use, with multiple branches up and down Armenia should be the goal.

XL. That while the above steps are taking place, a start should be made with the re-registration and registration as necessary, of single family houses and lands, (as proposed by the Armenian Urban Research Institute and its working groups) and continue with other immovable property (e.g., multi-family residential buildings) as the legislation and resources become available. This would be done working on a partial systematic/ sporadic method. In making such a recommendation, it is recognized that the formation of a legal cadastre consisting of all immovable property parcels and apartments of all uses would be most quickly and cost effectively be compiled on a systematic basis. But even in the mid term, full scale systematic registration is beyond the resources of the country due to the economic crisis, the capacity of the agencies, and the want of all legislation and procedures.

#### Workshops and Study Tours

XXI. It is recommended that, the immovable property registration experience of Eastern Europe, and other international experience, should be studied by Armenia specialists especially for concepts, lessons and principles. In this regard, the holding of a regional workshop should be investigated, coordinated by ICMA and the Department of the Economy. Also, it is recommended that short term study tours to selected countries of Europe to assess their land registration systems be arranged – e.g. to Netherlands and England would be useful. The Directors of the Building Inventory, Yerevan (Mr A. Bagratian) and the Technical Inventory, Union of Community Services, (Mr B. Gagik) would be most suitable candidates for such study tours.

### CONDOMINIUM LAW AND LAND REGISTRATION

XLII. The current draft condominium law at present under development needs a wide review from a multi discipline team, or at least from the view points of a lawyer, a banker, an experienced managing agent of a condominium or association head, a registration specialist and cadastral surveyor, and a representative of unit owners. It is considered that the draft law (dated September 8, 1993) is in need of further significant development and consideration. Recommendations are made in the Main report for improvements.

XLIII. It is considered that a condominium law should march the immovable property registration system in use in the country. Also that condominium apartments or units should be conveyed in the same manner as other immovable property. Clearly, this is the basis of Armenian law at present in terms of apartment sales as regulated in the Civil Code and in the Decree "Law ...about State and Public Housing Stock Privatization," 1993.

XLIV. Mr Miller's comments on the condominium foundation document in his August 1993 Report, apply equally to the above mentioned draft law, and it is recommended that his comments be incorporated in the new draft.

### CONTRACT LAW

XLV. The present contract law used in land market transactions comes from the Civil Code and is in need of revision to better address land matters rather than just buildings. Overall, though contract law as in use in Armenia is workable, (1500 immovable property transactions per year are made at present) it needs to better deal with mortgages and other aspects as listed in the main report, and as reported by Robert Josephs, June 1993. It is recommended that contract law be investigated in parallel with the other recommendations made in the Report.

## DISPUTE SETTLEMENT AND THE LEGAL CADASTRE

XLVI. While a detailed coverage of the court and other dispute settlement mechanisms was beyond the scope of this mission and report, a brief investigation was undertaken, as it is an important function of a legal cadastre.

XLVII. The court system in Armenia appears to operate quite well for immovable property. However, at present while cases are certainly being heard, there appears to be some problems between the jurisdiction of the Courts and that of the State Arbitration Court. Also there are some operational problems in the daily functioning of the courts because of the non-availability of funding for the sitting on the court of the people's deputies; cases are being postponed because of this.

XLVIII. The new Land Code envisages three means of dispute settlement - the local councils, the Courts, and the State Arbitration Court - which overall appears most suitable, but the relationship between the three is not clear in the Code.

XLIX. It is recommended that this settlement of disputes function of legal cadastre, important for the operation a land market especially when a mortgage market is in operation, be further investigated by a specialist in such matters.

## OPTIONS FOR THE DEVELOPMENT OF AN URBAN INFORMATION SYSTEM

### Recommendations for Improvement

L. The Armenia Urban Research Institute's (AURI) proposal for the establishment of urban information systems with the objective of improved city development and management, is supported. It is clear that the information will come from, not only from the local councils, but many other branch offices of the agencies of the central government. These include those data available from: the Gas supply company (they have maps for most town and city areas) and other utilities, legal information from the building inventory agencies, and building and permit information from the local government branch of the central government's Architects Department, and other sources.

LI. In the longer term, information systems on a city wide basis, would be established on a network system of agencies working together to form the information system. It could be lead and organized from the office of the mayor. However, much technical assistance would be needed. Leadership is necessary for such systems and AURI has suggested the State Committee of Architecture. This topic should be further investigated during a future possible mission.

## ARMENIA

## AIDE MEMOIRE

**Introduction**

1. A mission<sup>1/</sup> from the FAO/World Bank Cooperative Programme (CP) visited Armenia from 29 April to 18 May 1994 to assist the Government in the identification of an agricultural development project. The central theme of such a project was expected to be the advancement of the privatization process in the agricultural sector, and would be submitted to the World Bank for financing. The mission worked closely with the Ministries of Agriculture and of Food Supplies, as well as with institutions and enterprises related to these two Ministries. It also held discussions with the Ministries of Economy and Finance, the Central Bank and other financial institutions, the State Commission for Privatization, the Privatization Board, the National Financial Investment Corporation, donor agencies, private enterprises and farmers in Yerevan and in the Regions. The mission's preliminary findings and recommendations are presented below.

**Background**

2. **General.** Armenia is facing serious economic and social difficulties as a result of several unfavourable circumstances. These include: a) economic disarray following the disintegration of the Soviet Union; b) delays in re-orientating the economy to reflect the socio-economic changes; c) negative political and economic effects of the war in Karabakh; d) the legacy of a destructive earthquake of 1988; and e) the difficulty in communications by land with the rest of the world as a result of the war and political instability in the region. Because of the difficulty in land communications, which is referred to in Armenia as the "blockade", the most reliable means of transport is by air. The destruction of the main gas supply pipeline has further aggravated the country's difficulties by increasing its energy deficit, which was already lowered by the closure of its only nuclear power plant. This had a disastrous effect on the economy and brought about major hardship to the population as a result of shortage of energy for heating homes and working places in winter.

3. **The Economy.** As a country with scarce natural resources, but with an important human resource base, the Armenian economy concentrated on producing industrial commodities as an integral part of the Soviet economy. Manufacturing depended primarily on imported raw material from within the Soviet Union. Manufactured goods were exported to the Republics and commodities required by the country were procured

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<sup>1/</sup> The mission consisted of Messrs: P. Kidane, (Mission Leader); A. Bartholomai, (Agro-industries Specialist); M. Fantinet, (Agricultural Economist); J. Barker, (Input Distribution and Marketing Specialist); T. Lamrock, (Financial Analyst) and I. Sutherland, (Land Reform Specialist).

under the overall allocation system directed by the regime. The collapse of the Soviet Union invalidated the bases for that economy, and resulted in its rapid deterioration. The shortage of imported raw material and power and the lack of market outlet, have crippled the industrial sector leaving many enterprises idle or under-utilized, hence resulting in massive unemployment, estimated at 30% in 1992.. The Net Material Product (NMP) has declined by 56% from 1988 to 1992. Major macro-economic difficulties include serious balance of payment problems, trade deficit (estimated at 130 million in 1993), budget deficit (over 30% in 1993) and high inflation, running at 40-50% per month during the first four months of 1994. The Government of Armenia (GOA) is now endeavouring to reform the economy by introducing measures for liberalizing the economy.

4           **Privatization.** In the Armenian context, the privatization process consists in the divesture of state owned assets to the private sector. This is expected to take place by allocating a portion of the values of assets to employees; issuing vouchers to the public that can be subscribed to the state enterprises; and by disposing of the remainder of the assets at public auction. The privatization process involves three institutions: the Privatization Commission, composed of 20 members appointed by the Parliament and the President of the Republic, which is a normative body making decision on the implementation of privatization; the Privatization Board, which implements the decisions taken by the Commission; and the National Financial Investment Corporation, established in early 1994 to assist commercially viable enterprises with at least 51% private ownership. The first major working programme for these institutions has been drawn up in 1994 and is expected to become a test case of their performance.

### The Agricultural Sector

5.           **General.** After independence the prominence of the agricultural sector within the economy has been growing markedly, although this could not compensate for the decline in other sectors. The main reason for the recovery in the agricultural sector lies in the attempts made to respond to the new situation by introducing policy reforms and by reorienting resource utilization. The growth in agriculture and the simultaneous decline in the other sectors have placed agriculture as the major economic sector. In 1992 it accounted for 45% of the NMP and for about 30 % of total employment, as opposed to 18%, in both cases, before independence. The growth in agriculture was spearheaded by the privatization of agricultural land which commenced 1991. In that year alone agricultural output grew by 15%.

6.           **Land Reform and Agricultural Production.** Following a major policy decision, 80% of the agricultural land was privatized in early 1991, the remaining 20% being reserved by the State, partly for future expansion of the villages. This policy created from the collective farms some 320,000 to 350,000 smallholders, most of whom own between 1 to 2 ha of land. Although about 20% of the farmers have decided to operate in cooperation collectively, the bulk of the farming community is engaged in private farming.

Simultaneously the privatization of livestock was also carried out under which farmers were given animals against a modest fee. The land distributed generally consisted of several plots located at various locations, since the allocation in a village took account of the type of cultivation/land. The land parcels, for which farmers have been given temporary titles, were not to be sold before three years had elapsed from the time the land was distributed. The temporary titles were issued on the basis of each farmer's total holdings, instead of a single plot. This will create difficulties in the future when owners wish to sell only one plot. The Ministry of Agriculture (MOA) is now continuing to accurately survey all the land in order to create final titles, and proposes to accomplish this task within five years. This appears to be too ambitious to attain, unless the present constraints in the availability of qualified staff, equipment, material, transportation facilities and paucity of operational funds are removed; and an institutional framework for the registration of land is provided.

7. The privatization of land coincided with increased deterioration of the agricultural sector. Farmers had, therefore, decided to secure their livelihood as a matter of priority and opted to change their cropping pattern in favour of the staple crops, particularly wheat and potato, at the expense of fruits, vegetables and fodder crops. This trend continues, and is proving the farmers' decision correct. Presently, the agro-industries do not purchase sufficient quantities of raw material since they no longer have orders from the former Soviet Union (FSU) and they lack operating funds. Unfortunately, the lack of sufficient fodder, and the inability to obtain previously imported feed additives and veterinary products, has adversely affected the livestock sub-sector which is now in decline. Production at farm level is now focused primarily on self sufficiency and to a minor extent on producing surplus of those commodities that can be sold directly on the open market, such as vegetables and dairy products. Although production of the staple crops has increased, this is mainly due to area expansion. Lack of agricultural inputs, farm machinery and extension services has hindered the ability of farmers to improve their yields. An improvement in the availability of these services and reliable market outlets would rapidly raise the current yield levels. The extension service is particularly important in this respect, as farming independently under smallholder conditions is a new venture to many farmers, and for some farming is a totally new experience.

8. **Agricultural Services and Marketing.** Provision of agricultural services is still the responsibility of the public sector. These include Armagroservis, for supply and hire of farm machinery and fuel supply; Armplodorodie, for the distribution of agro-chemicals and fertilizers; Armcooperation, for providing market outlets for farmers' produce; and Agro-Bank, for the provision of credit. These public enterprises have not been able to provide the services required by the independent farmers, since they attempt to deal with them as they did with the state farms. For instance, they pretend to procure agricultural produce at a price lower than that of the market, but are not able to deliver inputs and services at reasonable prices. The inability of the public enterprises to respond to the needs of the farmers and the resistance of the latter to conform to the enterprises' wishes, has highlighted the incompatibility between the two, and deepened further the

crisis in the agricultural input and service delivery system. In addition, the existing infrastructure and service network as well as the type of farm equipment, are not suitable for servicing smallholders as they were designed to serve larger farms and markets. This situation calls for rapid correction by privatizing the state enterprise and creating conditions for the emergence of entrepreneurial undertaking.

9. **Agro-Industries.** Most of the agro-industries are now in serious crisis, suffering from the effects of the economic dissociation from the FSU and from the blockade. They have not been able to adjust to the fundamental market changes that took place after the collapse of the FSU. Excess produce from private farmers is being marketed in fresh produce markets or traded informally due to lack of confidence in the payment from state-owned enterprises. Traditional markets for the processed products and supply of external raw materials and process inputs have been lost not only due to the blockade, but also due to the collapse of the central supply planning within the FSU. With the exception of enterprises involved in fish farming and production and of brandy, most of the agro-industries are now operating far below their design capacity - as low as 5%. The processing infrastructure is characterized by old and inefficient equipment, some below international sanitary standards. Shortage and the unreliable supply of power and fuel have made operations difficult. Although the present macro-economic difficulties have adverse effects on the industry, by inhibiting business activities, commercial management thinking is not developing within the agro-industries, which are state owned. Little or no progress has been made by the management towards the establishment of market oriented linkages, and there appears to be a conviction that everything will be resolved once the blockade is lifted. This misconception will certainly delay the adjustment process and needs to be addressed through a well planned information/training programme.

### Major Constraints

10. At present the blockade and the consequent difficulty in undertaking efficient trading and in planning business programmes is the most serious factor hindering development in the agricultural sector. This situation has not only crippled the agricultural sector by impeding the inflow of agricultural inputs and the outflow of agricultural commodities, but has also hindered the sector's process of adjustment to the post-Soviet system under a market based economy. Sustainable economic activities are believed to take place only after the blockade has ended.

11. Although Government's resolve in the privatization of land and the pace of its implementation have been commendable, the process is not yet complete. The privatization of land will be considered complete when titles are issued for each plot; plots are properly marked; and the survey and title are examined, validated and registered by an authority for land registration. Otherwise, no smooth and serious land transaction can take place. The present titling which groups several plots together will inhibit the emergence of a flexible land market and will not be conducive to the much needed consolidation of land. As the

three year embargo on the transaction of land is expiring, there are indications of farmers negotiating to sell their land. This becomes problematic in a situation where proper boundary marking has not been carried out, final registered titles are not available and land market and valuation processes are yet to develop.

12. Another constraint is the delayed privatization of agricultural services in spite of the privatized lands. This delay has hindered the emergence of a new system that understands the requirements of smallholders and accordingly redesigns the provision of services. At present not only are farmers not served, but the state service enterprises are in disarray not being able to impose their wishes any more or to obtain financial support from GOA. In the meantime, farmers are left to themselves without adequate support services, and most have resorted to hand cultivation with no use of fertilizers and other agro-chemicals. Many are relying on third or fourth generation seeds. Farmers explain that there are no readily available inputs, and in case they are available, they are beyond their financial means. The availability of credit to small farmers is limited as the Agro-Bank is geared to service large state enterprise.

13. The situation in the agro-industries sub-sector is even more problematic. In spite of the availability of skills and appreciable experience in the processing of agricultural products, it is unlikely that the industry will emerge without a major re-structuring and organization. Serious efforts should be made to address the present problems concerning plant over capacity, obsolete equipment, lack of modern enterprise management capabilities and lack of expertise in commercial undertakings and financial management.

### Development Policy and Approach

14. **Development Policy.** Government policy is to continue with the economic reform programmes in order to achieve a fully functioning market economy. Important progress has already been made to support the reform programme including price liberalization, drastic reduction of subsidies and the promulgation of laws that support the reform process. Following the privatization of land, GOA is also proposing to enhance the privatization process in the industrial and services sectors. Within the agricultural sector, agro-industries and enterprises providing services to the sector have been earmarked for privatization. In 1994 alone, about 160 agro-industries, Armagroservis and Armplodorodie are planned to be privatized. Privatization of these enterprises is expected to bring about competition within the sector and lead to an efficient distribution of inputs and to the provision of prompt services. At the same time GOA is attempting to attend to smallholder needs by initiating an agricultural extension service with the assistance of the Government of the United States of America. The Government is also planning to establish within 1994 a rural financing mechanism, based on farmers' cooperative, with the assistance of the European Union.

15. **Development Approach.** Given the situation described above, it is necessary that early attention is given to the agricultural sector, if increased production is to be achieved rapidly. This should include support to smallholders through the provision of adequate and timely agricultural inputs and services as well as the creation of conditions for the development of markets that ensure remunerative prices for their produce. Under a situation where the state enterprises are privatized, the provision of services could be contemplated to be given by four entities: the regional organizations of the privatized enterprises; private individuals and companies; farmers organized into cooperatives; and by the Government. The latter would be limited to provide services which by their nature go beyond the private interest, viz., the provision of extension service; research; vaccination and other nonclinical livestock services; production of stock seeds and organizing for seed multiplication and inspection; agricultural education; and training of staff and farmers.

16. Under the prevailing conditions of Armenia, privatization of enterprises alone could not be expected to induce the prompt development of an efficient agricultural servicing system, unless it is strongly supported. Such support must encourage the emergence of service cooperative and other private agricultural service initiatives. Apart from an improvement in the overall macro-economic conditions, important elements for the emergence of such entities are market based free competition, provision of credit as well as training in the areas of organization and business management. Privatization of the enterprises will create a free market environment. However, support programmes that follow should enhance development by directly assisting deserving enterprises and organizing willing farmers into cooperatives with a view to providing and or receiving services. The services of the cooperatives could also be conveniently directed to marketing of produce. Completing the privatization of land by carrying out the necessary plot marking and registration of land would also be required, so that farmers can use their land as collateral for obtaining credit, and to enable them to confidently consolidate their holdings by the sale and purchase of fragmented plots.

17. With regard to agro-industries, hard decisions have to be taken given the unsuitability of most of the processing units to operate as commercially viable units. Those enterprises that lend themselves to subdivision into smaller units, such as some milk processing plants or wineries, should be divided and operated as private profit centres. These could be supported through the provision of credit and technical assistance if required. Other enterprises which do not lend themselves for subdivision, or could not operate on commercial basis, are bound to remain as loss making enterprises, and hence should be liquidated under an auction system.

18. If the above development approach is followed, it is believed that a trend will be set to enhance the realization of Armenia's development potential. Although the improvement of food self sufficiency appears to be the dominant objective now, this should be considered only a short term one. The country's diversified altitudes and the availability of irrigation provides a considerable potential for producing high value horticultural crops

for both the domestic and export markets. The foundations for an efficient agricultural sector should therefore be laid now, based on private initiatives and market economy.

### Development Proposals

19. Against the above background, a project that addresses the main problems of the agricultural sector is being proposed. The proposed project would comprise :

a) Support to the development of input supply, farm machinery services and produce marketing by promoting and assisting : i) the regional units of the privatized enterprises and other private ventures; ii) private individuals; and iii) farmers to be organized into cooperatives. The assistance that would be provided would include credit for investment and for working capital purposes, technical assistance and training. Credit would be channelled through the Agricultural Cooperatives Bank to be established within the year 1994, with the assistance of the European Union.

b) Completion of the land reform programme by undertaking accurate plot marking, examination, validation and registration of land and issuance of titles. To this end, the project would provide survey and office equipment, vehicles, additional operational funds, technical assistance and training. The project would also provide an institutional setup for the administration of all land, as well as training for surveyors in cadastral processing, valuers and for would be real estate operators.

c) Support to agro-industries by providing credit, through the National Financial Investment Corporation, to the privatized units whose prospects for commercial success has been proven; and provision of training for managers of agro-industries and business related organizations as well as for technical personnel to update their skills.

d) Strengthening the MOA services in the areas of livestock production and veterinary services, extension and seed production and multiplication.

20. At present, project activities fall within the competence of the Ministries of Agriculture and of Food Supplies. The latter is, however, planned to be incorporated within the MOA shortly. This leaves the MOA to take overall responsibility for the project. Hence project organization and management would be developed within the MOA's institutional framework. The proposed project would be implemented over a period of 5 years. It is premature to estimate project costs, as the mission is still in the process of collecting information and assessing costs. However, on a tentative basis project costs would be of the order of US\$ 25.0 million.

## Issues and Follow-up

21. **Issues.** The following issues are most important for the successful preparation and implementation of the project and need to be addressed by GOA as soon as possible.

- ✓ Confirmation on the need to establish a new single organization to administer land related issues, including land registration.
- ✓ Confirmation that land titles will be issued based on a single plot of land.
- Confirmation that the Ministry of Food Supplies will be merged with the MOA
- Confirmation that the Agricultural Cooperative Bank will be established before the end of 1994.
- Removal of credit subsidies to state enterprises.
- Dissolution of the national agricultural service organization and related agro-processing Associations, after their operational enterprises are privatized.
- Clarification on the position of Armcooperation in the context of the privatization and market reform.
- Agreement on privatizing agro-industries and agricultural service enterprises by splitting them into viable units.
- Liquidation of commercially non viable enterprises.
- Removing the responsibility of registering licences for handling agro-chemicals from Armplodorodie to a government agency.
- Demonopolising brandy production so that the private sector could manufacture brandy from its own produce and or from purchased inputs.

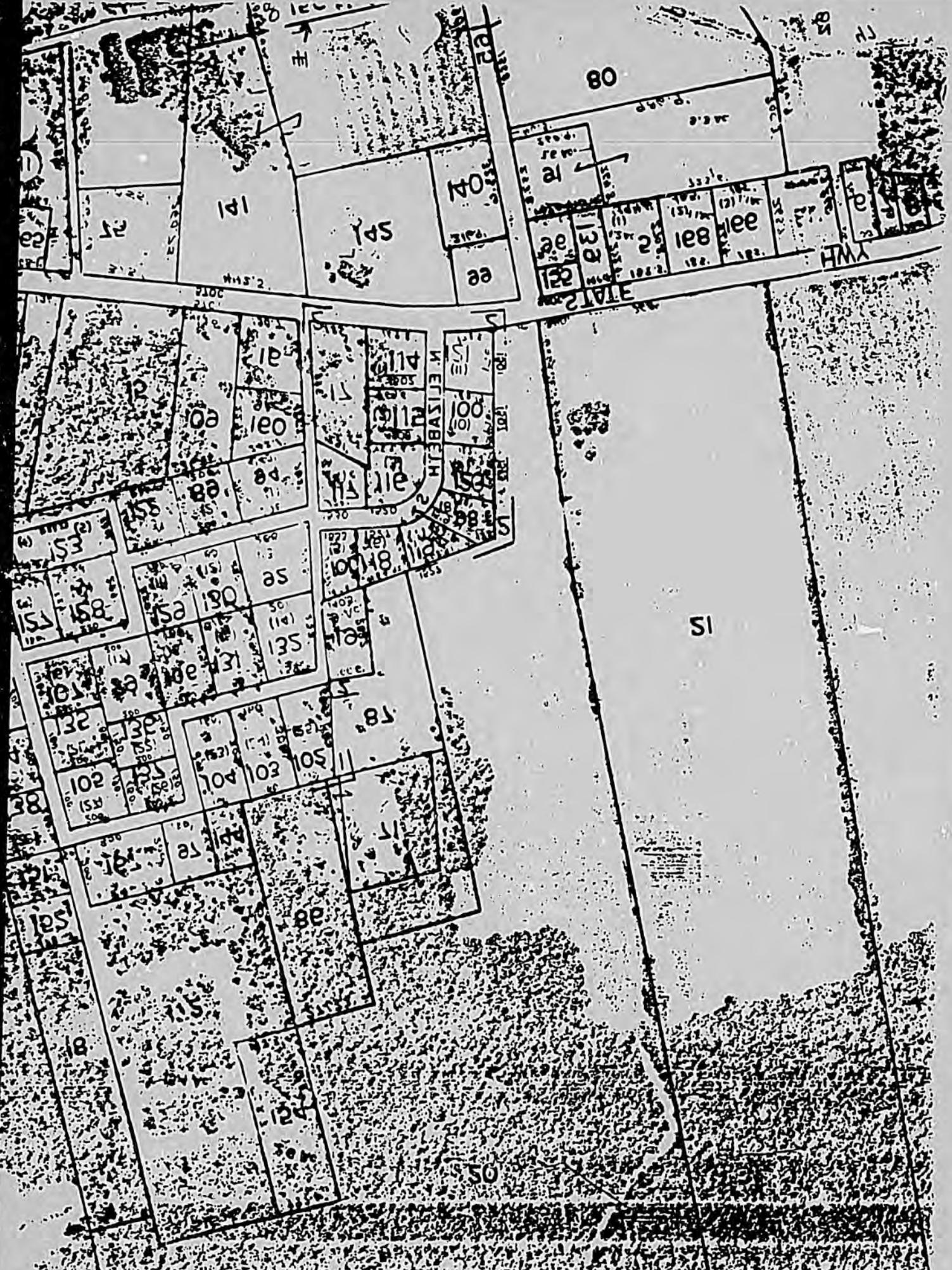
22. **Follow-up.** Upon return to Rome, the mission will prepare an identification report for submission to GOA and the World Bank by mid-July 1994. A second mission is tentatively scheduled for September 1994 to undertake final preparation. In order to enhance project preparation, the mission has left guidelines with the MOA for collecting information necessary for complete preparation. This information should be collected and assembled within the next two months by the counterpart team that has been working with the mission. The MOA will send the information to the CP in early August 1994.



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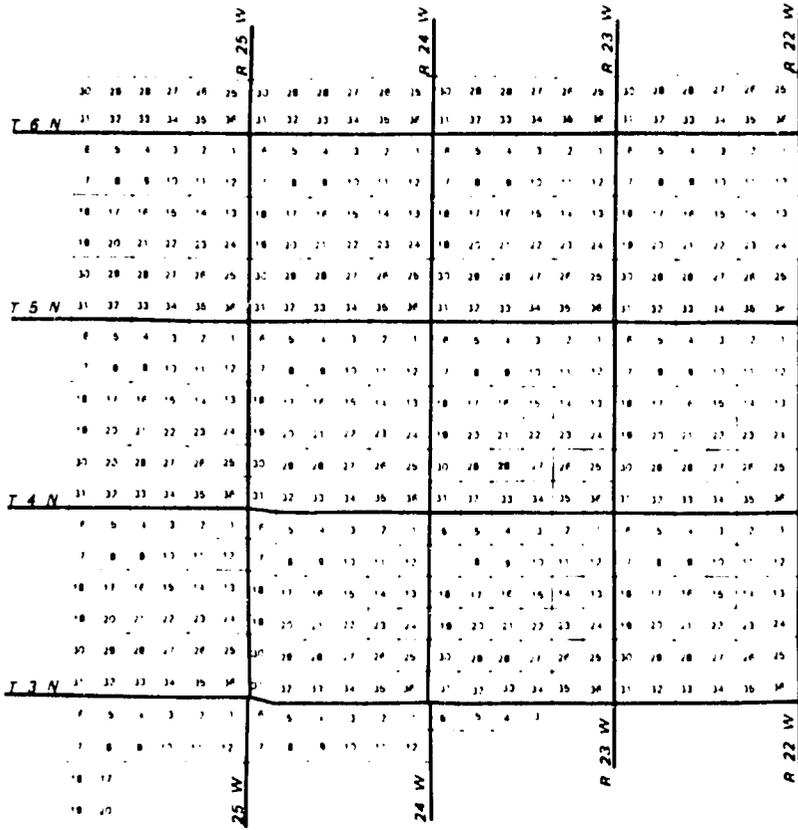
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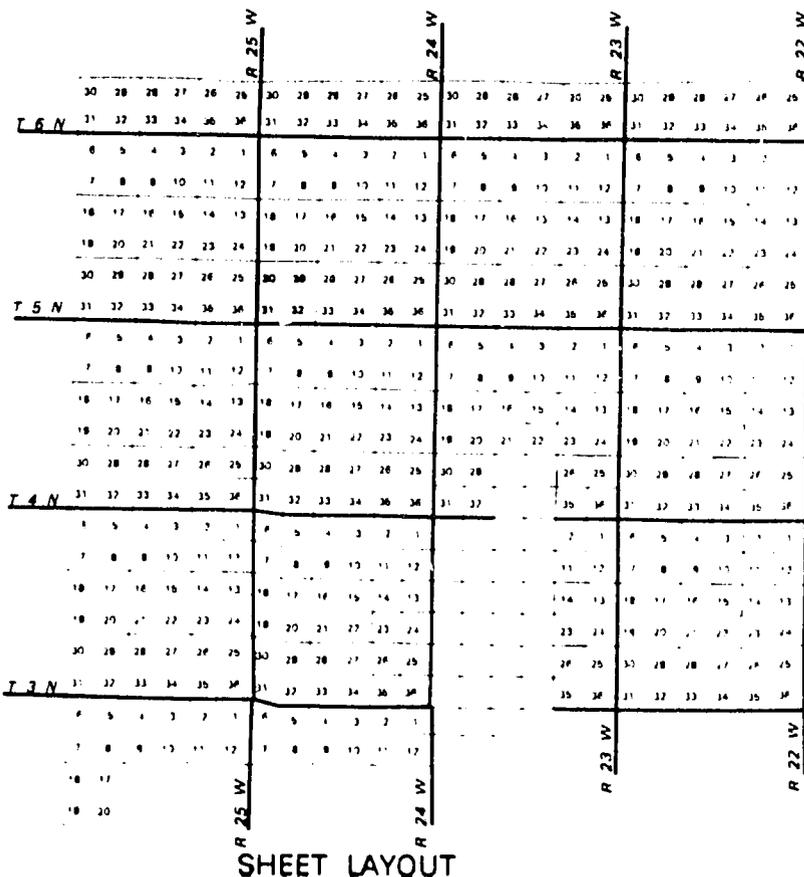
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**THE CONCEPT OF THE  
REPUBLIC OF ARMENIA'S  
URBAN LAND CADASTRE**

**Prepared by: Gourgen Mousheghian  
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**Yerevan  
1994**

## **Table of Contents**

1. INTRODUCTION .....	2
2. EXPERIENCE OF FOREIGN COUNTRIES .....	2
2.1. Experience of Russia and Ukraine .....	3
2.2. Consultations of USAID/ICMA .....	5
2.3. French Experience .....	8
3. THE STATE OF THE URBAN LAND ISSUE .....	9
4. URBAN LAND CADASTRE. PRIORITY OBJECTIVES .....	10
5. CARTOGRAPHIC BASIS .....	12
6. CADASTRE SURVEY AND INFORMATION .....	13
6.1. Actual Use of Land .....	14
6.1.1. Cadastre Survey .....	14
6.1.2. Cadastre Information .....	15
6.2. Codification of Land Plots .....	15
6.3. Registration of Lands .....	16
7. JURIDICAL CADASTRE .....	18
7.1. The Right to Registration .....	18
7.2. System of Registration .....	19
7.3. The Scope of Activities and Sequence of Actions .....	20
8. FINANCIAL CADASTRE .....	21
8.1. The Main Working Principles at the Initial Stage .....	21
8.2. Assessment of Immovable Property .....	22
8.2.1. Assessment of Land .....	23
8.2. Assessment of Construction .....	24
8.3. Organizational Issues .....	25
9. TERRITORIAL CADASTRE .....	25
10. ORGANIZATIONAL STRUCTURES .....	26
10.1. The Cost and Deadlines of Cadastre Implementation .....	29
11. CONCLUSIONS .....	29
REFERENCE LIST .....	31

## **1. INTRODUCTION**

This work is the continuation of studies of the problem /1/ being conducted under the program of USAID/ICMA to assist the Republic of Armenia in carrying out the housing reform.

During the last three months the authors, relying on the available information, studied the experience of foreign countries regarding the organization and conduct of a land cadastre, as well as consulted foreign experts. Along with that Gourgen Mousheghian made a visit to France.

The structures and possibilities of some agencies and organizations of ROA, which are intended to be involved in conducting the cadastre, have been studied as well.

Simultaneously, monitoring of the housing and land market in the city of Yerevan have been continued, and it will be possible, on its basis, to make conclusions regarding the market assessment of real property and the manner of registration of transactions.

Unfortunately, the bills on taxation of land and property, and the regulation for sale of land parcels to the ownership of private citizens are not adopted yet, as well as the base prices for urban lands, and the registration procedure of land parcels transferred to private citizens during privatization are not approved. Acceleration of activities related to the urban land cadastre vitally depends on the adoption of the above mentioned legal and normative acts.

This concept is primarily devoted to the problem of urban land cadastre, since the cadastre appraisal of agricultural lands is already approved and land survey agencies continue to issue acts certifying the right to land ownership. However, taking into account the necessity of establishment, in the Republic, of a uniform system of land cadastre regardless of the type of land use, the mechanisms for real unification of agricultural and urban land cadastres shall be considered.

The following may constitute such a mechanism:

- uniform systems of cadastre documentation;
- registration of all lands regardless of the form of ownership and the type of land use; and
- implementation of a uniform tax policy.

The main attention shall be paid not to the methodology of cadastre, but to the principle and organizational issues on which the selection of methodology and the sequence of realization of the program shall vitally depend.

## **2. EXPERIENCE OF FOREIGN COUNTRIES**

The experience of former Soviet Republics which have taken the road of market reforms and have come up with similar problems as Armenia, as well as the experience of developed countries which have passed all the stages of development and formation of land cadastre, are of great importance for Armenia.

Obviously, taking into consideration the specific features of ROA which was the first among the Republics of the USSR to start a wide scale land privatization, as well as its small size, lack of land, and critical state of economy, it is unacceptable to completely copy the foreign experience, and, the more so, to implement without changes any methodology.

The subsequent analysis will allow to come to necessary conclusions and outline optimal versions for the resolution of the problem.

The studies of foreign experience had been conducted in three directions:

1. Experience of the countries of CIS, having as an example Russia and Ukraine. Study of materials and documents.
2. Consultations and assistance of experts provided with by the sponsors of the program.
3. French experience. Study of materials, consultations with French experts, and a mission to France.

## 2.1. Experience of Russia and Ukraine

Concerning the Russian Federation, the drafts of land and urban planning legislation, the law "On Land Reform" and the law "On Land Fees", some decrees of the President, and some decisions of the Government of RF and the Government of the city of Moscow related to the land reform had been considered.

Concerning Ukraine, the complete set of materials of the international conference held in Kiev in May, 1993 on urban planning and land privatization problems is available and those materials give the full picture of the state of the problem. The methodical recommendations regarding the creation of a State Urban Cadastre /2/, also, had been considered.

It is worth to mention the similarity of Russia's and Ukraine's approaches to the implementation of land reform, except for the President of Russia's latest radical decrees concerning land privatization and implementation of a cadastre fixing private land ownership.

The higher level of development of legal and normative documents, the creation and functioning of land administration bodies, the implementation of preparatory activities directed at the urban land cadastre, and others display Russia's and Ukraine's peculiarity, in comparison with Armenia, regarding the realization of land reform.

Just the contrary is in Armenia. During 1991 - 1992 a wide scale privatization of agricultural lands was accomplished, as well as the land plots attached to the individual residential buildings and country-houses along with the gardening plots were transferred for free to the ownership of private citizens. However, the process stopped, except for the agricultural lands. Paid privatization of urban lands is not being implemented, and the activities regarding urban land cadastre are still at the stage of discussions.

The following characterizes the state of the issue in Russia and Ukraine: land administration bodies are created in the form of Committees for Land Resources and Land Survey. Along with the management of all lands regardless of the form of ownership, the Committees are charged with:

- the registration of the right to land as well as the registration of sale or mortgage contracts;
- the issuance of documents certifying the right to land;
- the conduct of the land cadastre;
- the determination of normative prices on land as well as the determination of taxes and amounts of rental fees;
- the calling of violators of the legislation concerning land to account;

- the holding up of incompetent decisions on taking back or allocation of lands unless the case is reviewed by administrative or judicial bodies, and so on.

The urban planning legislation intends the establishment of a territorial cadastre along with a land cadastre.

Actually, it is a cadastre of urbanized areas containing full data on land plots, immovable property, construction, utilities under/above the ground, as well as other data on urban and inter-village environment.

Under western criterias, the above mentioned cadastre most of all complies with the Geographic Information System /GIS/.

Architectural and urban planning bodies are being charged with the conduct of a territorial cadastre. The cadastre is being conducted according to an approved methodology.

Activities concerning the complete drawing up of inventory of lands, re-registration of ownership rights to land plots, collection of information on immovable property as well as collection of other information must be conducted in compliance with the accepted methodology, prior to the implementation of the cadastre.

In the whole, the cadastre complies with the generally acknowledged urban planning principles and is remarkable for the completeness of data and variety of characteristics of urban environment. From this point of view the system is quite suited to the previous urban planning practice in Armenia.

The weak point of the methodology, in the opinion of the authors, is the economic assessment of urban lands, where exponents characteristic to a stable planned economy are laid in.

Such main exponents of methodology as the cost of fixed assets at prices which have nothing in common with real ones, as well as the bringing into operation of fixed assets during a five years period make no sense in a market economy. But in conditions of hyperinflation, universal market prices, broken mechanisms of intercommunication, and difficulties of forecasting, getting of any satisfactory result concerning the cost of land without taking into account the market relationships, gives rise to serious doubts.

Besides, the methodology requires collection of a large quantity of information and its processing, which is connected with considerable labor and material expenses.

#### Conclusions:

1. Power of high density is concentrated in Land Committees. Such a concentration does not comply much with the democratic principles of administration and does not contribute to openness and objectivity, especially when allotting lands and reviewing disputes.

It is necessary to distribute among independent structures the issues regarding the allotment, registration, and assessment of lands, appeals against incompetent actions, and so on.

2. The activities of Land Committees organized on the basis of the land inventory agencies of the Ministry of Agriculture come into a contradiction and conflicts with the activities of architectural and urban planning bodies. Actually there are two managers of urban lands with common functions, but with the priority of land

inventory bodies. Such a situation does not comply with the specific character of management of urban lands.

3. It is necessary to avoid expensive and complicated methodologies while assessing urban lands. It is reasonable, especially at the initial stage, to use simplified methods of assessment, drawing experts into the work and relying on the market prices.

## 2.2. Consultations of USAID/ICMA

The sponsors of the program provided for the mission to Armenia of highly qualified consultants (Robert Josephs, Richard Almy, Lynn Holstein, Richard Winnie) in land cadastre issues, law, real property assessment, taxation, and property registration systems.

The consultants, each in his own field, conducted independent studies of the issue and reviewed, together with the authors and representatives of the agencies and organizations concerned, the state of the problem and the studies accomplished by the group.

Particularly:

1. The following have been considered in details and comments on them are available: the "Program of the Concept of Urban Land Cadastre", the Report on Monitoring of the Yerevan Market of Land and Immovable Property, the Draft Land Code of ROA, the Draft Law of ROA "On Urban Lands", the Draft Regulation for the Procedure of Registration of the Land Plots Attached to the Individual Residential Buildings and Transferred to the Ownership of Private Citizens, and some other documents prepared by the group.
2. The infrastructure and possibilities of the following services and organizations engaged in the process have been considered, as well as consultations with their leaders have been conducted: Tax Inspectorate of ROA, Technical Stock Taking Bureau of the Yerevan City Council, Technical Stock Taking Department of the Association of ROA for Municipal Services and Housing, Department of Legislation of the Ministry of Justice of ROA, Notarial Department of the Ministry of Justice of ROA, Armenian Institute of Geodesy and Cartography, and Institute of the Ministry of Agriculture of ROA "Armgiprozem".
3. Summarizing lectures on international experience regarding land cadastre, as well as joint discussions of the problem have been organized.

Taking into account the real conditions and possibilities available in the Republic, the above mentioned consultants gave general recommendations on priorities regarding the organization of land cadastre /3, 4, 5, 6, 7/, which may be briefly summarized as follows:

1. It is noted that activities regarding the cadastre of agricultural lands are being conducted in the Republic, as well as registration of property is being processed, and preparatory measures concerning the establishment of taxation of property are basically accomplished.

The main missing component of the system is the urban land cadastre.

2. Without waiting for the creation of a juridical cadastre, it is necessary to start activities concerning financial cadastre which may be introduced five times faster than the juridical cadastre.

In parallel with that, activities concerning juridical cadastre and urban land cadastre /GIS/ should start.

3. It is necessary to organize a uniform national system of registration of land and immovable property regardless of the form of ownership and type of use, both at the given stage and in the future.

The system must be decentralized and have a uniform legal basis and procedures. During the registration the main attention should be paid to the immovable property but not to the owners or to the transactions.

In the process of registration and as much as possible, it is necessary to legalize illegal construction, or register the actual use of land and afterwards resolve the disputable matters.

4. For the purpose of saving of resources, it is recommended to implement a systematic regional approach to the registration, which is by 50 percent cheaper than the sporadic approach.
5. Any rejection of registration or privatization must be reviewed only by a court of arbitration.
6. Prevent monopolization of information regarding immovable property. Guarantee for any individual or legal entity a paid access to information regarding registration.
7. Develop a system of assessment of immovable property based on the market cost as well complying with the principles of market economy and normal administrative practices.
8. Develop a system of measures directed at the encouragement of registration of transactions and announcement of real demand prices, as well as directed at the punishment for false information.
9. Organizational structures of cadastre.

All cadastres must be conducted in a decentralized manner, provided their information relations are preserved through maps and codes of plots as well as through information exchange.

Take into consideration the following main principles:

- independence from the bodies of administration;
  - avoid conflicts of interests;
  - serve not only the interests of law and the Government, but also the interests of citizens;
  - take into account the previous experience, skills, willingness, and interest in the work; and
  - possibility for control.
- a) Lay the implementation of financial cadastre on the Tax Inspectorate of ROA and its local agencies charging them with the following functions:
    - identification of tax payers and objects of taxation;
    - assessment of immovable property;
    - collection of taxes; and
    - information regarding taxation of property and review of administrative complaints.
  - b) Lay the registration of property on the:
    - Technical Stock Taking Bureau, concerning the city of Yerevan; and
    - Technical Stock Taking Department of the Association of ROA for Municipal Services and Housing, concerning the districts of the Republics.

As an alternative, the Ministry of Justice, through the Notary's Offices, may be charged with the registration of property.

It seems possible to form in 1 - 2 years in Armenia an Agency for Registration of Immovable Property with its local structures.

Land and immovable property under all types of utilization (private ownership, use, rent) including agricultural lands, as well as transactions of sale, mortgage, donation, inheritance, and others are subject to registration.

The services of juridical cadastre may be made responsible, also, for the drawing up of cadastre maps, establishment of cadastre numbers, and keeping of archives of information regarding property.

Assignment of the function of assessment of property to the service of juridical cadastre may be another alternative.

c) Urban land cadastre.

Implementation of urban land cadastre is considered in detail in the recommendations /4/ It is stated that "the absence of registration of land plots in urban areas creates a serious obstacle for an efficient market". The authors' suggestion on charging the State Department of Architecture and Urban Planning with the implementation of urban land cadastre is considered as well.

The recommendations contain suggestions regarding the necessary characteristics of developed areas and immovable property. Taking into account the real conditions available in the Republic, it is recommended "to quickly develop a preliminary working cadastre".

d) Auxiliary organizations:

- Urban Planning Institute "ArmNIIP" - conduct of studies and research, technical assistance, training, and computerization;
- Armenian Institute of Geodesy and Cartography - provision of cadastres with topographical maps on required scales;
- Institute "Aringiprozem" - implementation of the cadastre of agricultural lands, as well as provision with topographical maps of agricultural lands;
- Scientific-research Center of City Management Systems - provision with software for the housing administration;
- Mergelian Institute - development of software means.

e) Program coordination.

To develop a policy, it is recommended to form a working group headed by the Ministry of Economy of ROA and including representatives of agencies and organizations engaged in the implementation of cadastre.

\* It is necessary to publish textbooks (manuals), as well as organize the training of specialists.

A regional seminar on cadastre issues may be held as well.

### 2.3. French Experience

In accordance with the agreement between the Governments of ROA and France on collaboration, the Ministry of Housing and Transportation Facilities of France has organized

short-term missions of French experts (Natali Elchaninova, Jan F. Moran) in cadastre issues to Armenia, as well as a short-term mission of Armenian experts (including Gourgen Mousheghian) to France.

During the mission of French experts to Armenia, summarized materials on French system of cadastre, the organizational structures, and the historical development of the cadastre have been presented. The problem has been discussed with Armenian experts.

The mission of French experts to Armenia had a character of exchange of experience. No any written recommendation was submitted by the French experts.

The mission of Armenian experts to France was more valuable, because they got acquainted with the organizational structures and final materials related to cadastres. The main attention was paid to the urban land cadastre as well as to the role of specialized urban planning institutions in the development of programs for the inclusion of urban territories in the market.

As a result of studies of the experience and presented materials /8, 9, 10, 11/ the following conclusions may be made:

- 1) The French system of cadastre formed during about two centuries is a decentralized system which can serve as a finally ideal one, but its complete introduction requires a perfect legislative basis as well as greater efforts and material expenses.
- 2) The financial cadastre, which may be introduced in Armenia with some simplification, deserves more detailed studies.
- 3) Concrete data on the cost of cadastre implementation as well as the cost of computer systems and their introduction may serve as a reference point for determination of the forthcoming expenditures.
- 4) The experience of the Urban Planning Institute in Lion, which has active positions in keeping of a database of urbanized territories as well as of a database for the development of special programs for the utilization of the above mentioned territories, seems to be interesting.
- 5) The experience of the National School of Cadastre in Tuluz is interesting. For already fifty years this School provides for the professional training and retraining of wide range experts: legal, tax, and technical knowledge is provided simultaneously.

#### *General Conclusions to the Section 2:*

- 1) Analysis of the experience of foreign countries regarding the conduct of a land cadastre demonstrates that neither of the approaches can be completely used in Armenia because of Armenia's specific features and the established practice.
- 2) Repetition of the experience of Russia and Ukraine seems more attractive, if taking into consideration the community of previous land inventory and urban planning policy, but at this point substantial divergence of the above mentioned policies is already being outlined. Besides, the economic capacity of the Republic available at this stage does not allow to apply expensive methodologies.
- 3) The French cadastre impresses by its perfection, but today Armenia neither by its technical nor by economic capacity is ready for the full scope implementation of the above mentioned cadastre.
- 4) The recommendations of the USAID/ICMA consultants, who have directly studied in Armenia the condition of the problem in all aspects, are very valuable. Their comments and

recommendations may be summarized as follows: what should not be done and what kinds of mistakes should be avoided.

### **3. THE STATE OF THE URBAN LAND ISSUE**

Implementation of a State Land Cadastre is stipulated by Article 68 of the Land Code /1991/ of ROA. The Code does not classify the cadastre of lands dependent on the type of land use: agricultural and urban lands. But the land use types established in Article 69 of the Land Code help to reveal the characteristics of agricultural lands.

Implementation of the land cadastre, through a uniform system, is laid on land inventory agencies functioning in the system of the Ministry of Agriculture of ROA.

The Council of Ministers [i.e. the Government] of ROA, by its decision No. 179 dated March 6, 1991, approved the Regulation "On the Manner of Conducting the State Land Cadastre and on the Manner of Monitoring the Condition of Lands" /12/. The Ministry of Agriculture of ROA bears the responsibility for conducting the land cadastre.

The fact of charging the Ministry of Agriculture with the above mentioned functions copies the previous practice where, first of all, "cadastre of agricultural lands" was understood under the "land cadastre".

Although the Regulation /12/ establishes the necessity of implementation of a cadastre of urban and other lands, that provision of the Regulation is not implemented.

During the land reform, the Government, first of all, paid attention to the agricultural lands. As a result of that, in the agricultural sphere land privatization was accomplished in compliance with the program, the cadastre was modified in 1992, and the cadastre appraisal of lands was approved in 1993. Currently, documents for the certification of the right to land are being issued.

Upon the enactment of bills imposing taxes on lands and immovable property, it can be stated that the cadastre of agricultural lands is functioning.

The situation with urban lands is just the contrary: actually no activities concerning the cadastre are started.

Due to the specific character of activities, lack of experience in activities related to immovable property, as well as lack of appropriate experts, the land inventory agencies of the Ministry of Agriculture are unable to implement a cadastre of urban lands.

During 1991 - 1993, the State budgetary means allocated for the implementation of the land cadastre were completely used in agrarian sphere.

As stipulated in Item 6 of the decision of the Supreme Council [i.e. Parliament] of ROA "On Implementation of the Land Code", dated February 4, 1991, "new State bodies should be created to provide for the conduct of monitoring and implementation of the land cadastre", but this provision is not accomplished yet. The failure to accomplish the above mentioned provision resulted in a situation where urban land cadastre slipped the Government's attention.

One of the reasons for the above mentioned situation is the application of the previous conservative approach which does not take into consideration the variety of forms of ownership and types of use of property, as well as the "for-fee" nature of land use, and the specific features of market economy. Still cadastre is not being considered as a uniform State system of registration and information.

Actually, another reason for that is the absence, in the Republic, of an agency which would completely take the responsibility for the implementation of an urban land cadastre. The Ministry of Agriculture ignores the implementation of an urban land cadastre, and the State Department of Architecture and Urban Planning does not display any interest in that.

Regardless of the absence of a policy as well as of a uniform approach and methodology concerning urban land cadastre, the process started. Registration of property as well as of sales, donations, and other transactions is being conducted in cities/towns and other inhabited areas. The Tax Inspectorate of ROA has accomplished preparatory activities and intends to start taxing land and property in 1994, although it is not clear how it will work in conditions of absence of cadastre information such as maps, assessments of property, information on the legal status of objects of taxation, and so on.

In case the appropriate parties demonstrate due interest in urban land cadastre, activities related to it can very quickly move up to the required level. In that respect the successful implementation of the cadastre of agricultural lands is a good example.

In the Republic, there is a number of functioning agencies, organizations as well as planning and scientific institutes which comply, due to their qualification and experts available, and each in its own field, with the requirements usually presented in relation to the cadastre.

Only a uniform program and coordination of activities of the above mentioned structures are required.

#### **4. URBAN LAND CADASTRE. PRIORITY OBJECTIVES**

Under the old administrative system and State monopoly of land ownership, land cadastre was being perceived in a somewhat simplified way. The tasks and objectives of it were reduced primarily to the use of information regarding the condition of agricultural lands for various economic purposes.

No cadastre for urban lands on which the main economic potential and the majority of the Republic's population was located had been stipulated.

The approach to the determination of priority tasks and objectives is being radically changed in parallel with the establishment in Armenia of private ownership to land and immovable property. They are getting the significance initially inherent in the land cadastre: fiscal and registration functions characteristic to the private ownership.

The general objective of the land cadastre at this stage of reforms is to support the process of establishment of private ownership on land and the process of creation of real market relationships. Other objectives should be conducive to the above mentioned one.

The Land Code of ROA does not classify cadastres in accordance with the registration systems. All the functions are united in a single cadastre and serve the ultimate goals. The situation both in Russia and Ukraine is the same, since they proceed from a common experience. It is no mere chance that the entire process of land regulation and cadastre is centralized in a uniform administration.

Introduction and use of different notions such as "juridical cadastre", "financial cadastre", and "geographical cadastre" comply with the western practice and principles of

demonopolization. Different cadastres can function independently being connected through information systems.

The situation that emerged in the cities/towns of Armenia during privatization proves the possibility of existence of different cadastres to be true.

Actually, a juridical cadastre is functioning, and a financial cadastre is in the process of formation. They are implemented by structures with no any interconnection.

But the further development of the stated cadastres depends on the availability of information which should be collected prior to the start of appropriate activities. Regarding agricultural lands the due succession of actions was maintained, but regarding urban lands such a succession is infringed.

The creation of cadastre plans, collection of information on land and real property, and assessment thereof still do not meet the real needs and requirements.

The infringement of succession of activities makes it necessary to conduct subsequent actions in two directions:

- 1) Provide, without interrupting the started process, for the implementation of priority activities concerning the introduction of juridical and financial cadastres.
- 2) Approve the methodology of an urban land cadastre and conduct regular activities in accordance with the stated methodology.

The existing organizational structures, cartographic materials, and information should be used, as well as simplified methods for working, assessment, and keeping the information should be applied when resolving the first problem.

Cadastres should be interconnected through a plot codification system which can be developed in a shortest possible time. That will help in the future to make necessary corrections to the information as it is accumulated.

The following are the main stages of the work regarding urban land cadastre:

- 1) Creation of a modern cartographic basis on a scale of 1:2000 and 1:500.
- 2) Land registration, finding out of the actual use, identification of the objects and subjects of use, and codification of land plots.
- 3) Determination of the rights to land.
- 4) Development of preliminary (working) cadastre plans.
- 5) Issuance and registration of documents certifying the right to land, introduction of a juridical cadastre.
- 6) Preparation of final cadastre plans.
- 7) Collection of information for the assessment of land and immovable property.
- 8) Determination of the land fees, introduction of a financial cadastre.
- 9) Collection of other information, regarding land areas, for the creation of an urban planning database.
- 10) Unification of all cadastres including the cadastre of agricultural lands in a uniform information system.

It is supposed that computer systems will be used as much as possible at all stages of the work.

Dependent on the financial and technical possibilities available, some stages may be united to accelerate the work and reduce the expenditures, e.g. 1, 2, 3, 7, and 9. For this reason the group should include experts specialized in different fields.

## **5. CARTOGRAPHIC BASIS**

Topographical maps on various scales of the entire territory of Armenia are available. A uniform system of geographic and rectangular co-ordinates guarantees the interconnection between them. The quality of maps complies with international standards.

In the Republic there are about 70 inhabited areas which are classified as urbanized settlements due to their significance. 27 of them hold the status of a city/town, the others are city- or village-type settlements.

Maps of the following scales should be used for the objectives of urban land cadastre:

- 1:500, for developed territories;
- 1:2,000, for spare territories; and
- 1:5,000 - 1:25,000, as look-out [summarizing] and auxiliary ones.

Urbanized settlements and zones round them are completely provided with maps of a scale of 1:2,000 drawn during 1986 - 1993.

The total area of the above mentioned 27 cities/towns is 43.9 thousand hectares, while the maps of a scale of 1:2,000 embrace a territory of 109 thousand hectares including also the agricultural land around the cities/towns.

The maps on a scale of 1:500 embrace 13.5 thousand hectares of urban land or 40 percent of developed territories. Along with surface structures sub-surface engineering infrastructure is also marked on the maps on a scale of 1:500. These maps were drawn during 1986 - 1992.

The maps on scales of 1:500 and 1:2,000 have the size of 50×50 cm.

The maps have a local system of co-ordinates, but it is interconnected with the national system of co-ordinates. Due to that a uniform system of codification based on co-ordinates can be used.

The maps on a scale of 1:2,000 are kept at the Institute of Geodesy and Cartography ("Armgeodesy"). Their copies are available at the architectural and urban planning bodies of Local Councils as well as at the planning institutes.

The maps on a scale of 1:500 are kept by the customers (such as Gas Department, Construction Department, Public Utility Services and so on), as well as at the planning institutes.

Concerning the territory of the city of Yerevan, the archive of the Geodetical Service of the City Council of Yerevan contains the copies of all plans and maps on a scale of 1:500.

Independent archives are kept at the Planning Institutes "Yerevanproject", "Armproject", "Armcommunproject", and others. These archives are very valuable, since they contain also the construction objects' planning documents which contain information necessary for the cadastre.

The scope of forthcoming activities related to the creation of a cartographic basis for urban land cadastre includes:

- new survey on a scale of 1:500 - 30 thousand hectares;
- correction and modification of existing plans on a scale of 1:500 - 14 thousand hectares; and
- correction and modification of plans on a scale of 1:2,000 of non-developed urban territories - 18 thousand hectares.

Besides, approximately 900 settlements and gardening plots must be included in the system of territorial cadastre. That will make about 15 thousand hectares of land subject to cartographic survey.

The authors do not have complete data on the availability of the above mentioned lands' maps on scales of 1:500 and 1:2,000. But many settlements do have master plans, and gardening plots are included in a schematic survey on a scale of 1:2,000.

The majority of structures built on the gardening plots do have approved plans, and this will facilitate the activities regarding the cadastre.

To accelerate the activities concerning financial and juridical cadastres, simplified methods for map-making may be applied. Photocopies of the maps on a scale of 1:2,000 should be made on a scale of 1:500. These photocopies will allow, with a due accuracy, to identify the objects and carry out the demarcation of boundaries as well as to outline other information.

Perhaps, the above mentioned method should be recommended as the main one at the initial stage of land reform; along with accelerating the required activities it is 1.5 - 2 times cheaper than the method of making a map in the field.

The ultimate goal of cartographic activities is the creation of a base-plan of a territory, which shall serve as an actual basis ready for the collection of cadastre information.

## **6. CADASTRE SURVEY AND INFORMATION**

Before getting down to consideration of the cadastre process, it is necessary to clarify an important organizational problem related to the proper sequence of introduction of cadastres.

Cadastre plans of various degrees of elaboration are general and urgent components of all cadastres.

Along with that, information regarding immovable property and its legal status is required for a juridical cadastre. Actual use of land as well as assessment of land and immovable property are important for a financial cadastre.

Information required for a territorial cadastre is more vast, but it can serve as a basis to provide with reliable data on immovable property assessment, to reveal the best use of land, and to control the use of property.

Taking into consideration the situation with urban lands, the need for introduction of financial and juridical cadastres gets a priority. Consequently, the most urgent activities must be directed at the provision with a minimum scope of information necessary for the introduction of the above mentioned cadastres. At the initial stage the cadastre must be considered as preliminary with an intention of its further expansion.

### **6.1. Actual Use of Land**

Revelation of the actual condition of exclusively all lands as well as identification of individuals and legal entities using them are the main objectives at the given stage.

Up to this point all lands of inhabited areas are included in the land balance sheet of the Republic under a single category.

Land registration according to the type of use is being conducted in the cities/towns, but this registration has an approximate character.

In the new Draft Land Code of ROA, the authors propose a classification of lands of inhabited areas relying on their intended functions: residential, public, industrial, construction, common use, and others, all together ten types of use.

The actual use of land is being revealed during cadastre survey, and additional information on land users as well as on the main characteristics of a given land plot and all types of construction is being collected.

### 6.1.1. Cadastre Survey

Cadastre survey is the basic source of cadastre information and gives a graphic description of land plots' boundaries and spatial location of all components of urban environment.

The following constitutes the contents of cadastre survey:

- boundaries of land plots;
- surface area of land plots;
- names of all arterial transportation ways, road-street network, and so on;
- administrative boundaries at all levels;
- all types of construction on, below, and above the ground; and
- code numbers of plots and neighborhoods.

A cadastre plan must be of the same size of 50×50 cm as the topographical map is and have a number in accordance with the approved codification. In the margins of the plan there must be a notice indicating the relation of that given paper to other related ones. There is no need to indicate the North, since the plans are provided with co-ordinate scales.

Accuracy of a cadastre plan must comply with the requirements for outlining the necessary spatial information.

Modification of cadastre plans must be carried out on a:

- selective basis in case of changes regarding the objects or subjects of law; or
- regular basis upon the expiration of time-limits established by the accepted methodology.

### 6.1.2. Cadastre Information

The contents and exponents of information as well as its completeness should be determined by a general methodology, taking into account the method of assessment, organizational structures engaged in the process, and availability of relationships between various information systems.

The main information includes:

- the actual use of lands;
- the legal grounds for the use of lands; and
- the main characteristics of a land plot and of all types of construction.

Additional information related to the use of urban lands and urban planning regulation thereof characterizes:

- all the components of urban environment along with their interrelated assessment;
- the planning structure of a city/town and the location of land plots subject to assessment;
- the natural conditions (topography, hydrography, soil condition, seismicity, engineering-geological conditions, availability of minerals, and so on);
- the ecological conditions; the state of the environment and land plot; and
- other data: sociological, demographic, historic-cultural, aesthetic, and other characteristics.

## 6.2. Codification of Land Plots

The code of a land plot must be unique and simple for use as well as contain a symbol usable for search. One of the main requirements is the constancy of the number which is indicated on all documents related to the plot.

In Armenia it is possible to use any generally accepted system of cadastre numeration, or a combination thereof:

- a) based on the administrative-territorial division and expressed through the postal address: postal index of the city/town, district; postal index of the plot; street and number of the house;

This type of registration is recommended in Ukraine /2/. It is traditional also in Armenia, but its introduction cannot be coordinated with its inclusion in the general classification of agricultural lands.

- b) based on the co-ordinates;

All the maps of Armenia are interconnected through a uniform system of co-ordinates, but it is very difficult for non-specialists to use this method. Besides, the code will contain too much symbols.

- c) based on the map;

A uniform classification of maps on all scales is established in the Republic. This method is relatively simple, and the codification of agricultural lands quite perfectly blends with it.

To make a decision, it is necessary to consider the possibility of information relationships between agricultural and urban land cadastres. Probably, it will happen not soon.

Consequently, at the initial stage, territorial principle of codification should be applied to each inhabited area, providing for the unification of the systems in the future. Most of all, the codification system based on maps complies with that principle.

The stated system includes: maps on a scale of 1:5,000 for agricultural lands; and maps on a scale of 1:10,000 for urban lands. These maps are interconnected by a uniform system of drawing.

The code will look as follows:

1. the district code (the cities of Yerevan and Gyumri having a district division and 37 administrative districts) - two figures;
2. the code of the inhabited area [settlement], separately for each district (concerning Yerevan and Gyumri it is the city district) - two figures;
3. the number of the cadastre plan on a scale of 1:2,000 - three figures;
4. the number of the cadastre plan on a scale of 1:500 - two figures; and
5. the ordinal number of the plot within the boundaries of the plan - three, or scarcely probable, four figures.

Concerning agricultural lands, the code of the Village Council is being indicated under Item 2, and the codes of the cadastre plans on scales of 1:10,000 and 1:5,000 are being indicated under Items 3 and 4 respectively.

To distinguish between lands in accordance with the types of use, Item 6 should be inserted indicating the functional use of lands. This indication is also necessary for the automated registration of lands in accordance with their categories and types.

**Example:**

01|01|078|16.012.01

03.01.012.00.033.10

- |      |                               |      |                             |
|------|-------------------------------|------|-----------------------------|
| 01.  | city of Yerevan               | 03.  | Kotaik district             |
| 01.  | Arabkir district              | 01.  | town of Abovian             |
| 078. | number of the map 1:2,000     | 012. | the same                    |
| 16.  | number of the map 1:500       | 00.  | the same (this is not used) |
| 012. | ordinal number of the plot    | 033. | the same                    |
| 01.  | intended function - residence | 10.  | reserved lands              |

*Name state act*

As far as the system of cadastre codification is connected with legal documents, it must have a legal status and be approved by a Government decision.

### 6.3. Registration of Lands

The Land Code of ROA provides for the issuance of documents certifying the right to land concerning any type of use and form of ownership.

In that respect, a necessity to conduct preparatory activities directed at the identification of the objects and subjects of land use as well as at the revelation of legal grounds regarding land and construction emerges.

The results of studies and of information collection are being entered in the land plots' registration card which is a principal cadastre document along with the cadastre plan.

The registration card contains (this is a tentative contents):

1. a copy of the cadastre plan with an indication of the code and surface area of the plot;
2. the co-ordinates of the angles of bending boundaries of the plot;

3. information about the adjacent land users, as well as about the absence or availability of mutual demands concerning the demarcation of boundaries;
4. information about other land users' lands or construction located on the plot;
5. data on the actual user;
6. information about the availability of legal grounds (acts, decisions, related plans, construction permits, and other documents should be considered) for use of the entire plot or any of its parts;
7. information about both the permitted and actual use of the land plot, as well as about the area under construction or other improvements;
8. information about any restriction regarding land use;
9. the characteristics of the structures (it is likely to get the copies of their plans); and
10. other data as stipulated by the accepted methodology.

The land user's statement regarding the value of the land and other immovable property may serve as an important addition to the above mentioned information. It is possible to create legislative incentives for an objective statement of the value.

The described process of studies actually proves the users' rights. In the event legal grounds for the use of immovable property are revealed, the land user gets a temporary certificate which serves as a basis for issuing to him/her a document certifying his/her right to the land under an established form of ownership, use, or rent.

The non-recognition of the above mentioned rights, rejection of issuance of the certificate or act, or rejection of the subsequent registration must be reviewed by a court of law.

Taking into account the importance and crucial character of the stated activities, as well as the probability of conflicts, the studies should be conducted by a commission including:

- a topograph;
- an official representative(s) of local authorities, public utility services, architectural, urban planning, and land inventory bodies, and technical stock-taking bureau;
- a lawyer; and
- a deputy of the Local Council.

The demarcation of boundaries must be accomplished upon the presence of adjacent land users and the mutual agreement of the parties concerned.

## **7. JURIDICAL CADASTRE**

A complex of preparatory activities common for all kinds of cadastre is considered in the previous sections at different degrees of elaboration. In the following sections an approach to the determination of main principles of juridical, financial, and territorial cadastres is considered in accordance with the reality available.

Juridical cadastre is the legal basis for the land cadastre and contains a system of registration of real property, as well as information regarding owners.

## 7.1. The Right to Registration

The right to private ownership in land and immovable property (still they are not unified under the same notion) was established in Armenia three years ago upon the enactment of the "Property Law of ROA" and the Land Code.

The subsequent laws on privatization of State-owned property practically developed and fixed that right.

The recent establishment of private ownership and non-implementation of privatization of urban lands facilitate the creation of a system of property registration complying with the principles of market economy.

According to the legislation of ROA the registration of immovable property is related both to the subject and object of law. A consistent scheme is proposed; proof of rights - issuance of a document (an act, lease contract) certifying the right to land - registration of that document.

Western practice gives the priority of registration priority to the real property and to the actual use of land.

It will be easy not for every land user, to whom land was allocated before the land reform, to present evidence of his/her rights to the land and construction. This is due to the imperfect office-work and registration, as well as to the problem of illegal land use which is more essential.

The stated problem exists in the Republic in various forms for a long time, and it is very hard to resolve it because of its widespread character. It has never been officially reported about the illegal or semilegal use of land and construction.

The infringements may be classified as follows:

- completely illegal use of land or improvement thereon including construction;
- land is used lawfully, but construction does not comply with appropriate plans or no plans exist;
- legally allocated land plots are expanded by occupying the adjoining lands;
- there are partial infringements regarding the construction on legally used land plots.

Ignoring of this problem will bring to a delay of registration of the majority of land plots, provided the legal procedures are observed completely, since the last two kinds of infringement have a general character.

Three options for the resolution of the problem are available:

1. Achieve the complete restoration of the State's right to its own lands. The probability of this option is too low due to social difficulties of the problem.
2. Accomplish a registration of actual use of lands regardless of the right to possession. This contradicts the acting legislation.
3. Implement a legalization of unlawful use of lands and construction, if no major infringements of urban planning and construction requirements are revealed. Concerning other cases, accomplish a registration of temporary use of land with a 3-5 years deadline, waiting for the resolution of the conflict by any acceptable means.

The last option is the most optimal one, since no immediate legislative changes are required, no delay of registration will take place, a time reserve is being created for the conflict resolution, and the method is socially just.

## 7.2. System of Registration

There is no any uniform system of registration of land and immovable property in the Republic. The Land Code of ROA considers the registration only of land plots. Concerning registration of immovable property (residential buildings, country houses, apartments), a definite practice is formed based on the Civil Code.

The legislation on property taxation also is directed at the separation of land from immovable property: they are intended to be taxed separately.

Under the conditions of development of private property and market relationships, alteration of the type of land use, as well as conveyance of ownership rights will have a natural character. Division of "real property" into "land" and "construction" does not comply with the above mentioned principles and requires creation of a new system of registration of immovable property relying on a uniform legal basis and methodology.

The main requirements to be presented to the system of registration of immovable property are the following:

1. uniformity of registration in one system of the entire immovable property regardless of the form of ownership and type of use;
  - urban, agricultural, and other lands;
  - residential buildings, country houses, privatized apartments, factories, objects of public service, and others;
  - transactions of sale, donation, inheritance, mortgaging, as well as conveyances of rights;
  - leasing of privately owned immovable property;
  - condominiums.
2. decentralization along with a common normative-legal basis and interconnection of information systems;
3. facilitating of the process of privatization and market formation;
4. simplicity of forms of registration; reduction of formalities; clear description of property rights, prohibitions, and restrictions;
5. guarantees for fixing the ownership rights;
6. free access to information regarding registered immovable property. This requirement mostly contributes to the market relationships, allows a potential buyer to get acquainted with the legal status of the property, and gives an investor additional guarantees when contracting on mortgage.
7. capability to intercommunicate with other information systems.

## 7.3. The Scope of Activities and Sequence of Actions

The requirements regarding the registration of the entire immovable property lead to the implementation of a labor-intensive process directed at the creation of a cadastre database and conduct of registration itself.

It is impossible to make exact calculations on the quantity of objects located on lands of inhabited areas and other territories.

Approximately, it may be supposed that there should be about 750 thousand plots on developed lands subject to registration, provided that the average surface area of one plot is 1,000 m<sup>2</sup>. 450 thousand objects may be identified at a higher degree of accuracy: 300 thousand individual residential buildings, 20 thousand multi-storey residential buildings, 20 thousand buildings with a variety of intended use, industrial objects, engineering and transportation facilities, and 80 thousand gardening plots.

Other small and temporary objects: booths, garages, parking areas, kitchen gardens, and others, the size of which may be 20 - 100 m<sup>2</sup>.

Besides, privatized apartments, the quantity of which is about 500 thousand, as well as various transactions should be registered. The total amount of registrations will be about 1.5 million, which will take many years even under favorable conditions, taking into account also the implementation of preparatory activities.

It will be impossible, both for technical and material reasons, to simultaneously conduct all the activities.

It is necessary to define the principles and sequence of activities which will have both selective and regular character:

1. during the privatization of lands and immovable property;
2. upon the transfers of ownership rights (various transactions);
3. upon the allocation or taking back of lands as well as upon the emergence of disputes regarding land;
4. when reviewing a land user's application;
5. during regular activities regarding an inhabited area or any of its parts with the following sequence:
  - the city of Yerevan and other major cities;
  - other towns and inhabited areas having a stable environment;
  - the earthquake zone;
  - districts bordering upon the armed conflict zone.

Regardless of the above mentioned sequence, the complete set of activities stipulated by the accepted methodology, must be accomplished.

## **8. FINANCIAL CADASTRE**

Registration of both movable and immovable property for the purpose of its taxation is the objective of financial cadastre.

Financial cadastre is based on the general cadastre information regarding the objects and subjects of property, but the usable scope of information can be different depending on its objectives at a certain stage.

The main characteristics, which are the actual use of property and its valuation, can be revealed in a simple way and regardless of many other characteristics. It makes the financial cadastre more operative and flexible. Its introduction is not connected with the accomplishment of activities related to other cadastres.

Financial cadastre is an important lever of market economy, and, taking into account the critical situation of the economy, its introduction becomes urgent. At the same time, financial capacities of the majority of land users are at a lower level, which requires an implementation of a socially oriented tax policy.

At the initial stage, it is necessary to reveal the most profitable types of use of land and immovable property for the purpose of their taxation in a priority order.

Such an approach essentially reduces the amount of objects of taxation, facilitates the collection of information, and creates a time reserve for starting regular activities.

### **8.1. The Main Working Principles at the Initial Stage**

The scope of the information and the manner of its collection under conditions requiring the urgent implementation of financial cadastre are dictated by the non-ordinary situation.

The following principles may be proposed:

1. Use as a cartographic basis the available topographical plans on a scale of 1:500 and photocopies on a scale of 1:2,000, enlarged four times, and modify them in the process of cadastre survey as needed.
2. Availability of 1:2,000 scale topographical maps for all lands of urbanized settlements makes the codification of plots possible.
3. Relying on the high quality of the topographical maps, natural observations in many cases may be skipped:
  - objects are being identified by maps;
  - register of owners and users is being formed based on the data provided by housing departments and technical stock-taking bureau. Availability of the address facilitates the identification of the object by map;
  - graphically determine the land plot areas on the map or accept them on the basis of available documentation;
  - determine the construction areas relying on inventory plans, projects, and other documents of Local Councils.

The given method does not secure from errors, but it will not substantially influence the process. In case of errors not favorable for the owners, they will be revealed soon. Other errors will be recovered during the regular activities.

4. Lands and construction being used illegally must be taxed as of the actual situation. However, the taxation may be perceived as a legalization of illegal use. This should be considered in the legislation.

### **8.2. Assessment of Immovable Property**

Assessment of taxable objects is the most substantial component part of financial cadastre.

In the Republic, still no final approach to the assessment of urban lands and construction, as well as to the structures to be charged with that procedure has been formed.

In the past, land was not evaluated, and the cost of buildings and facilities for various purposes still is being determined according to their values fixed on the balance sheet.

A transition to the assessment of immovable property according to its market value is inevitable as the institute of private property strengthens and market relationships develop.

The State suffers great economic damages because of the difference between the balance price and market value. Today this difference is 1:100 - 200.

The Tax Inspectorate does not have experience of work regarding the assessment of immovable property. But there are already some structures in the Republic which are engaged in the assessment in accordance with market prices. These are the real estate stock exchanges and agents, both official and illegal.

The experience of studies of the real estate market in Yerevan demonstrated that a stable practice concerning the assessment of apartments is being formed among the agents. Apartments are being assessed to an approximation of 5 - 10 percent.

Assessment of individual residential buildings, commercial objects, and small factories is more complicated because of their individual specific features and small amount thereof.

The mechanism of assessment of immovable property is necessary, along with taxation purposes, when allocating or taking it back and for market transactions including mortgage.

The responsibility for the assessment of land and immovable property should be laid on:

- Local Councils when allocating the property or taking it back;
- Privatization Commissions when privatizing the State-owned property; and
- the Tax Inspectorate when necessary for taxation purposes.

Assessment may be provided by:

1. specialized subdivisions of State bodies;
2. real estate stock exchanges, investment banks, and insurance companies;
3. independent experts, agents, and their associations.

To guarantee an impartial assessment, it is reasonable to apply to different sources. Information regarding the value must be open to public and be provided for fee. The authors have already had a chance to use this method.

### 8.2.1. Assessment of Land

Due to the specific features of urban lands, their objective assessment is possible upon the comprehensive analysis and evaluation of all components of urban environment influencing the significance of this or that land plot in the planning structure of the city/town.

It is necessary also to take into account some other factors, such as:

- the location of the inhabited area in the system of distribution of the Republic's population;
- the administrative importance of the inhabited area: capital city, regional or district center, Village Council;
- the special functions and predominant profile: industrial, scientific, historic-cultural, recreation, or religious center, and so on;
- the urbanizing importance of the object: positive or negative influence; and
- the social status of the subject or object of taxation.

Consideration of the above mentioned factors contributes to the revelation of the best use of land and to the determination of social priorities.

Along with the resolution of economic problems, taxation is becoming an important urban-regulating mechanism and is stimulating land owners for the best use of land now and in the future.

The above mentioned statement is the main objective of territorial cadastre, the program of which is not established yet. This contradicts the priority tasks of financial cadastre.

Application, at the initial stage, of urban lands' base prices developed by the authors seems to be a way out of this situation.

The base prices for urban lands are determined by simplified methods, using the expert evaluation of main urban planning exponents grouped by similar signs.

The above mentioned methodology has the following peculiarity: it relies on the data available and practically no additional information is required to be collected.

5 - 7 highly qualified experts absolutely aware of the urban planning situation at the given inhabited area including the authors of the master plan, chief architect of the city/town, and experts of different profile (geologist, ecologist, transport expert, economist, and others) should be called for participation in the assessment. Automated processing of expert evaluations is not required because they are not numerous.

Combination of urban planning evaluation with market prices on land and immovable property is another specific feature of the stated methodology. It is necessary to organize appropriate studies of the market for such a combination.

The given approach mostly complies with the principles of market economy, but at the same time it is oriented also toward social priorities.

Assessment of lands and zoning of territories into enlarged appraisal zones for the city of Yerevan was accomplished within three months in 1991 (population - 1.3 million, surface area - 16.5 thousand hectares). In other cities/towns of the Republic having 4 - 15 times smaller territories than Yerevan and simple planning structures, assessment of lands under the given methodology can be accomplished within one month.

The base prices can be used as starting prices also when selling lands.

## 8.2. Assessment of Construction

The cadastre methodologies of Russia and Ukraine provide for urban lands' economic assessment based on the balance values of buildings and facilities along with other exponents.

Such an approach is used also in Armenia. The Tax Inspectorate of ROA develops immovable property taxation models based on the balance value, and using some coefficients related to the specific features of buildings as well as to their utilization.

How much does the stated approach comply with the requirements of market economy?

According to the Government decision a reassessment of fixed assets is being conducted in the Republic for the purpose of consideration of inflation. For example, the balance value of buildings by the end of 1993 must be multiplied 150 times as compared with their value in 1991.

In that case the value of one square meter of construction will be equal to \$1 of USA. Inflation grows faster than the reassessment is being conducted. Starting from the beginning of 1994 the market prices have increased 7-10 times. In case of considering also this increase the balance value of one square meter will not exceed \$10.

The studies of the market of immovable property in Yerevan indicate that the average value of one square meter of housing was about \$150 by the end of 1993.

The difference is too great. The market prices exceed the balance prices minimum 15 times. In a similar proportion will be missed also the property tax amounts and the fees for transactions.

At the initial stage of taxation the price of a certain building or apartment must not be of substantial importance. It is necessary to apply methods for mass appraisal of immovable property relying on market studies.

In our opinion, the value of immovable property as well as of land must be brought maximum closer to the market price. Such an assessment must be used when compensating losses, alienating immovable property, conducting market operations, mortgaging, insuring, and so on.

Taxation of immovable property must comply with actual incomes of physical persons and legal entities, which is easy to regulate by tax rates and various privileges.

The tax calculations must be maximum simplified. It is necessary to use at the initial stage a limited number of coefficients. For example, the following coefficients may be used regarding housing:

- physical depreciation coefficient of a building;
- coefficient of construction peculiarity; and
- coefficient of provision with engineering infrastructure.

### 8.3. Organizational Issues

The situation regarding organizational structures of financial cadastre is more favorable.

Implementation of the above mentioned cadastre by the Tax Inspectorate of ROA most of all complies with the purpose of that agency. The Tax Inspectorate has city and district subdivisions throughout the entire Republic.

Financial cadastre is a new phenomenon in the Republic. Special training for work with immovable property, skills, technical equipment in the form of computer systems are required.

In that respect it is necessary to use the experience of countries having a properly operating system of financial cadastre. The conduct of graphic base and identification of land plots cannot substantially vary in different countries. The main difference concerns the taxation exponents which depend on the legislation of a certain country.

During the mission to France Armenian experts got acquainted with the system MAJIC-2 used in all tax centers.

The above mentioned system can be introduced in two regimes: completely improved and simplified. The simplified version provides only for the graphic base and identification of land plots, but it has the possibility of transformation.

The software and computers necessary for one tax center are worth about \$30,000. At the initial stage ten centers may be equipped in Armenia: four in the city of Yerevan and one in each regional center.

The cost of introduction of the system, not counting the data loading, as of the information available /8/ is \$2 per capita.

## 9. TERRITORIAL CADASTRE

Currently, the legislation of the Republic does not contain the notion of territorial cadastre.

The Draft Urban Planning Law of ROA contains a section named "Territorial Cadastre". In the whole, it is a land cadastre applied to the lands of inhabited areas and other developed territories. By its parameters it corresponds to the western geographic information systems.

Territorial cadastre contains information regarding immovable property located on the lands of inhabited areas, as well as other territories subject to urban planning regulation. It contains also data on demarcation of boundaries, ownership rights, restrictions, prohibitions, urban planning value of land, facilities above and under those lands, as well as data on all components of living environment.

Essentially, territorial cadastre is an information database on all immovable property located on developed lands and serve as the main source of information for juridical and financial cadastres.

The main objectives of the cadastre regarding the information provision are considered in the previous sections at this or that degree of elaboration. The future methodology of territorial cadastre must comply with these principles.

Regardless of the absence of a general methodology, activities directed at the creation of an information base for territorial cadastre are being conducted in the Republic for already more than 10 years.

At the beginning of '80s, an automated system called "AS CRIT" for control of rational use of urban territories was developed by the Yerevan Scientific-Research Institute of City Management.

The system was introduced in the Yerevan Architectural Planning Department with the participation of the authors. Data regarding all non-used areas allocated for construction were entered into the database, and a control over their utilization up to the completion of construction was conducted. Registration of both of the types of construction and users was conducted.

The system was improved and successfully used until the recent times. The process was halted during the last 2-3 years due to the crisis in construction.

The system was awarded the highest grade by the interdepartmental commission of GosPlan of USSR and was introduced in some cities of the Union.

And today the system has not lost its urgency. Its data can be used for identification of land plots in the city of Yerevan.

The shortcoming of the system is the absence of graphic base. But the plots are codified: there is a reference to the number of the original map, as well as number of the construction passport which make the search quick and simple.

Starting from 1990, the Institute of Urban Development ArmNIIP develops a system called "Information Bank of Urban Development Data"; an experimental exploitation is already started. Due to insufficient financing, the work carries episodic character, and the data loses its urgency.

The existing experience will allow to quickly put the complete operation of the system in a proper order.

## 10. ORGANIZATIONAL STRUCTURES

Decentralization of systems and land regulation was outlined already before the start of cadastre implementation in the Republic:

- land allocation is exercised by the Local Councils;
- the cadastre of agricultural lands is implemented by the Ministry of Agriculture;
- registration of immovable property in the cities/towns is conducted by stock-taking bureau of various subordination; registration of privatized agricultural lands - by Local Councils;
- financial cadastre is being concentrated in the Tax Inspectorate;
- information systems of urban planning data are being conducted by urban planning bodies;
- map-making of the territories is being implemented by various agencies;
- the real estate market started its functioning; assessment of real estate is being performed by agents.

A normal process goes on. The following is the substantial shortcoming: there is no coordination of all activities, and urban land cadastre as an integral system is not being implemented at all.

Taking into consideration the situation available in the Republic regarding the implementation of the land cadastre, the following conclusions and recommendations on the organizational structures of the cadastre are possible to make:

1. The Ministry of Agriculture, to which the responsibility of implementing the land cadastre in the Republic is assigned, cannot provide for the implementation of the cadastre of urban lands due to objective reasons.
2. Not to create, as other countries of CIS, a centralized system of management of all lands and land cadastre.

To maintain and develop the decentralization of cadastres keeping the connections through information systems, which contributes to the demonopolization, as well as to the development of private ownership and market relations.

3. To create a coordination group for policy making within the Ministry of Economy, with participation of interested agencies and organizations.
4. To assign the responsibility for implementing the cadastre of urban lands to the Principal Department of Architecture and Urban Planning and the City/Town Councils.

To assign the coordination of actions, scientific-methodical administration, development of normative-technical documentation, keeping the urban planning data-bank, and provision of technical aid in cadastre implementation to the Principal Department of Architecture and Urban Development.

It can exercise its functions through ordinate organizations, particularly the Urban Planning Institute ArmNIIP.

5. Preserve at the initial stage, the real estate registration for the organizations engaged in it at this point. Develop, on the basis of organizations existing in the Republic, possibility for creating a uniform body for registration of the whole real estate, despite of the form of ownership and type of use.

Subordination of this organization to the Ministry of Justice complies with the objectives of the juridical cadastre.

Assign to this body and its local subdivisions only the function of the real estate registration.

6. Assign the implementation of financial cadastre to the Tax Inspectorate with the following functions: real estate assessment, tax collection.
7. Under the jurisdiction of the local bodies of architecture and urban planning, create sections (departments) responsible for preparation and transfer of the following cadastre information:
  - cartographic basis;
  - conduct of cadastre survey;
  - identification of the subjects and objects of land use;
  - land assessment;
  - issuance of documents certifying the right to the land, to the land users temporary certificates, acts, contracts;
  - collection of other information relevant to the data-bank.

The following principles should be maintained:

- a) The State budgetary means are being allotted directly to the local bodies, upon the agreement of the Department of Architecture;
- b) The activities are being carried out by the own means of local bodies, completely or partially, or upon their order - by specialized organizations;
- c) Cadastre plans, identification materials are being delivered to the local subdivisions for registration and tax bodies; all materials regarding the urban planning data-bank - to the Department of Architecture;
- d) Materials are being delivered free of charge, if the tasks are to be carried out at the expense of State means, and for charge, if the tasks are to be carried out at the expense of own means;
- e) Land users who have received documents certifying their right to the land, pass the registration of the real estate themselves.

The right to ownership, use, or rent shall not take effect without the registration documents.

8. Auxiliary organizations:

- a) For creating the cartographic basis and conducting cadastre survey:
  - Armgeodesy (the leading organization);
  - department of geodetical service of the Yerevan Council - for the city of Yerevan;

- institute "Armengproject" - for other cities/towns and settlements; institutes "Yerevanproject", "Armcommunproject", and others may be engaged in as well;
  - institute "Armgirozem" - for rural areas.
- b) identification of objects and subjects:
- local bodies: architectural, housing-municipal, engineering-utilization, and other services;
  - any organization listed in the Item 8a may be involved;
  - involvement of private, co-operative organizations is possible as well.
- c) scientific-information provision:
- Institute of Urban Planning ArmNIIP : creation of the methodology for urban land cadastre; development of computer software; development of models for land and real estate assessment, territory zoning; development of investment programs for territory utilization; keeping of an urban planning data-bank; preparation of proposals and participation in the development of normative-legal acts; rendering of technical and methodical aid; practical accomplishment of tasks related to the cadastre;
  - other scientific-research institutes which develop management systems.
- d) training and retraining of personnel:
- Yerevan Architectural-Construction Institute.

### 10.1. The Cost and Deadlines of Cadastre Implementation

Practically it is impossible to determine the amount of capital investments necessary for the creation, implementation, and operation of the system of urban cadastre with all its components because of the novelty of the problem .

It may be possible to make estimation by obvious elements, using also the French experience through the data /8/ and information obtained during contacts:

1. Creation of a modified cartographic basis:

a) for urbanized settlements, territory of 62 thousand hectares - new survey on the scale of 1:500 and 1:2000, corrections of the existing ones - 4 million dollars.

b) the same, for villages and other developed lands - 14 thousand hectares - 1 million dollars.

2. Cadastre survey with data collection on all lands - 76 thousand hectares.

As of information, the cost of one hectare is around 300 to 350 dollars.

Total - 25 million dollars.

3. Software provision, according to the data /8/ makes up two thirds of the total cost of cadastre introduction, coming from the estimation of 2-3 dollars per capita, without consideration of data loading, total - 5-6 million dollars.

Total by the three Items is approximately 35 million dollars.

Data loading, annual operation, training of personnel are not included in the mentioned cost.

Expenditures will be allotted as follows:

- the city of Yerevan and other large cities - 40%;
- other urbanized settlements - 40%;

- rural settlements and other territories - 20%.

It is obvious that under the current situation of economy, the activities can be prolonged for decades, although organizationally they may be accomplished in 7-10 years.

## **11. CONCLUSIONS**

The main principles, proposed by the authors for cadastre implementation on the lands of the inhabited areas of ROA, are set forth in this concept.

The legislative basis on land regulations, privatization of land and other State-owned property create prerequisites for starting the work. However, still there are obstacles to the development of activities on a large scale, which are, due to the imperfection of the legislation, along with organizational and financial difficulties.

The Land Cadastre of ROA limits the right to private ownership of land. In the inhabited areas ownership of citizens in land only for individual housing construction is permitted.

This encroaches upon the rights of the citizens to other types of use of private land, and the rights of collectives, which can own enterprises, but the land stays under the ownership of the State. The real estate is not being considered as a whole yet. The notion of private ownership itself is missing, it is replaced by the notion of property of citizens, collectives.

The limitations of the right to ownership in various types of land use leads to hidden forms of possession and to unintended use, keeps back from investing processes.

In the new Draft Land Code, prepared with the participation of the authors, proposals on widening the range of the subjects and objects of private ownership in lands are included.

Another obstacle is the absence of urban planning legislation, which would regulate the relationships in the sphere of urban planning activities, and provides for the equal protection of the rights and interests of all subjects of urban planning activities.

It is required as well to develop series of normative documents, that would provide for a legal basis for privatization of lands in the cities/towns, registration of real estate property, taxation cadastre, functioning of markets and so on.

Development of those normative documents, along with the creation of organizational structures of cadastre, must have priority.

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Notice: There are footnotes on references to other literature used in the text .

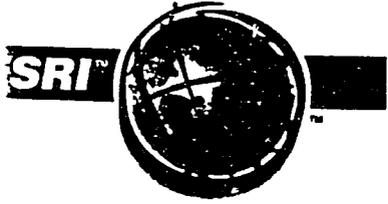
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123



## Spatial data concepts

Using maps to represent geographic features . . . . .	1 - 2
How maps convey geographic information . . . . .	1 - 2
How maps convey descriptive information . . . . .	1 - 4
How maps convey spatial relationships . . . . .	1 - 5
Additional map concepts . . . . .	1 - 6
Map scale . . . . .	1 - 6
Cartesian coordinate system . . . . .	1 - 8
Latitude and longitude . . . . .	1 - 9
Map projections . . . . .	1 - 10
Map concepts and GIS . . . . .	1 - 10
Using computers to represent geographic features . . . . .	1 - 11
Vector data model . . . . .	1 - 11
The arc-node data structure . . . . .	1 - 13
Topology . . . . .	1 - 15
Extending the vector data model . . . . .	1 - 18
Regions . . . . .	1 - 19
Routes . . . . .	1 - 22
How the vector data model represents surfaces . . . . .	1 - 25
Raster data model . . . . .	1 - 25
How the raster data model represents spatial relationships . . . . .	1 - 30
How the raster data model represents surfaces . . . . .	1 - 32
The triangulated irregular network data model . . . . .	1 - 32
Using the three spatial data models together . . . . .	1 - 35
Methods for representing descriptive information . . . . .	1 - 36
Linking attributes to features—the georelational model . . . . .	1 - 37
Organizing geographic information . . . . .	1 - 40

## Contents

Comparison of spatial data models . . . . .	1 - 43
Comparison of raster and vector data models. . . . .	1 - 43
Comparison of raster and TIN data models. . . . .	1 - 46
How does ARC/INFO apply key spatial data concepts? . . . . .	1 - 47

## Geographic data sets

Coverage . . . . .	2 - 3
Coverage feature classes . . . . .	2 - 3
Coverage uses . . . . .	2 - 6
Coverage limitations . . . . .	2 - 7
Managing multiple coverages. . . . .	2 - 8
Grid . . . . .	2 - 9
Grid uses . . . . .	2 - 10
Grid limitations . . . . .	2 - 15
Raster scanning . . . . .	2 - 15
Storing attributes for coverages and grids . . . . .	2 - 17
Attributes for coverages. . . . .	2 - 18
Attributes for grids . . . . .	2 - 21
Attribute table uses . . . . .	2 - 22
TIN . . . . .	2 - 24
Comparing tins and grids . . . . .	2 - 26
Lattices . . . . .	2 - 27
Images. . . . .	2 - 28
Image formats supported in ARC/INFO . . . . .	2 - 28
Pixels . . . . .	2 - 29
Multispectral images . . . . .	2 - 31
Images as attributes . . . . .	2 - 33
Images as maps . . . . .	2 - 34
Image catalogs . . . . .	2 - 35
Image limitations . . . . .	2 - 36
Multimedia integration . . . . .	2 - 36

CAD drawings . . . . . 2 - 37  
 Bringing it all together . . . . . 2 - 39  
     Integrating geographic data sets . . . . . 2 - 39

**The coverage**

Coverage features . . . . . 3 - 1  
     Storing coverage features . . . . . 3 - 2  
     Points . . . . . 3 - 5  
     Ares and nodes . . . . . 3 - 5  
     Route-systems . . . . . 3 - 10  
     Polygon . . . . . 3 - 19  
     Regions . . . . . 3 - 23  
     Annotation . . . . . 3 - 28  
     Tic. . . . . 3 - 34  
     Link . . . . . 3 - 36  
     Coverage extent (BND). . . . . 3 - 38  
 Storing attributes . . . . . 3 - 40  
     Understanding attribute definitions . . . . . 3 - 40  
     Using codes in tables . . . . . 3 - 42  
     Relating tables . . . . . 3 - 43  
 Storing coordinates . . . . . 3 - 44  
     Coordinate precision . . . . . 3 - 44  
     Coordinate system definition . . . . . 3 - 44  
     Processing tolerances for a coverage . . . . . 3 - 45  
 Coverage naming conventions . . . . . 3 - 45  
     Multiplatform naming convention . . . . . 3 - 47  
     User naming convention . . . . . 3 - 47  
 Coverage file management . . . . . 3 - 48  
 Summary . . . . . 3 - 50

## Coverage database design examples

Design steps . . . . .	4 - 2
Sample coverage designs . . . . .	4 - 5
Coverage: Streams . . . . .	4 - 7
Geographic feature: Streams . . . . .	4 - 7
Coverage: Terrain . . . . .	4 - 10
Coverage: Well . . . . .	4 - 15
Geographic feature: Water wells . . . . .	4 - 15
Coverage: Control . . . . .	4 - 17
Geographic feature: Control point . . . . .	4 - 17
Coverage: Parcels . . . . .	4 - 20
Geographic feature: Lot lines . . . . .	4 - 20
Geographic feature: Rights-of-way . . . . .	4 - 23
Geographic feature: Tax parcel . . . . .	4 - 25
Related feature: Owner . . . . .	4 - 27
Related feature: Permits . . . . .	4 - 29
Coverage: Building . . . . .	4 - 32
Geographic feature: Building . . . . .	4 - 32
Coverage: Streets . . . . .	4 - 36
Geographic feature: Intersections . . . . .	4 - 36
Geographic feature: Street segments . . . . .	4 - 39
Geographic feature: Street names . . . . .	4 - 41
Geographic feature: Speed zones . . . . .	4 - 44
Geographic feature: Speed limit signs . . . . .	4 - 46
Geographic feature: Lanes . . . . .	4 - 48
Related feature: Address . . . . .	4 - 50
Coverage: Crime . . . . .	4 - 52
Geographic feature: Crimes . . . . .	4 - 52
Summary . . . . .	4 - 54

## Database design guide

Objectives of design . . . . .	5 - 3
Scope of database design in this section . . . . .	5 - 4
Design guidelines . . . . .	5 - 5
Design steps . . . . .	5 - 7
Step 1: Model the users' view . . . . .	5 - 8
Identify organizational functions . . . . .	5 - 8
Identify the data which supports the functions . . . . .	5 - 9
Organize data into sets of geographic features . . . . .	5 - 11
Is it worth it? How long will this take? . . . . .	5 - 13
Sketch a database implementation plan . . . . .	5 - 13
Step 2: Define entities and their relationships . . . . .	5 - 14
Data dictionary . . . . .	5 - 15
Diagramming techniques . . . . .	5 - 16
Diagramming hints . . . . .	5 - 20
Normalize the data . . . . .	5 - 23
Design matrix . . . . .	5 - 27
Is it worth it? How long will this take? . . . . .	5 - 29
Step 3: Identify representation of entities . . . . .	5 - 30
Step 4: Match to ARC/INFO data model . . . . .	5 - 33
Determine ARC/INFO representation . . . . .	5 - 33
Ensure complex feature classes are supported . . . . .	5 - 35
Step 5: Organize into geographic data sets . . . . .	5 - 38
Define the content of geographic data sets . . . . .	5 - 38
Add coverage definitions to the data dictionary . . . . .	5 - 41
Generate file names . . . . .	5 - 42
Complete entity definitions . . . . .	5 - 43
Add cartographic text . . . . .	5 - 45
Add code tables . . . . .	5 - 45
Summary . . . . .	5 - 47

## The ARC/INFO workspace

Computer files and directories . . . . .	6 - 1
What is an ARC/INFO workspace? . . . . .	6 - 2
Storing non-ARC/INFO files . . . . .	6 - 6
File naming . . . . .	6 - 7
The INFO database . . . . .	6 - 14
Workspace uses . . . . .	6 - 17
Workspace operations . . . . .	6 - 19
Pathnames . . . . .	6 - 22
Managing ARC/INFO data sets . . . . .	6 - 24
Backup and recovery . . . . .	6 - 25

## Coverage processing tolerances

Coverage resolution . . . . .	A - 2
Coordinate precision . . . . .	A - 3
Device precision and scale of input documents . . . . .	A - 4
RMS (tic registration error) . . . . .	A - 5
Tic match tolerance . . . . .	A - 6
Fuzzy tolerance . . . . .	A - 7
Dangle length . . . . .	A - 10
Node snap tolerance . . . . .	A - 11
Arc snap tolerance . . . . .	A - 12
Weed tolerance . . . . .	A - 12
Grain tolerance . . . . .	A - 13
Calculating a tolerance for a given map scale . . . . .	A - 14
The coverage TOL file . . . . .	A - 15

**Coverage data limitations**

Feature attribute table limits . . . . .B - 2  
    Maximum record size. . . . .B - 2  
    Maximum number of records per file. . . . .B - 2  
Coverage processing . . . . .B - 3  
    Too many arcs encountered in a scan line (SEGPUT) . . . . .B - 3  
    Segment table is full (PUTSEG) or Segment table full (CRESEG) . . . .B - 3

**ARC/INFO data file naming conventions**

**Glossary**

**Index**

ICMA/USAID HOUSING SUPPORT PROGRAM

IMPLEMENTING AREMIA'S CADASTRAL SYSTEM

Findings and Recommendations

Notes for Wrap-up Meeting, August 17, 1994

Walter G. Robillard  
Registered Surveyor, Attorney at Law

Upon a study of prior reports and other documents furnished by various government authorities, the format of this presentation is redesigned to permit the Inter Agency Steering Committee the opportunity to discuss the findings as the problems are presented.

Robillard's visit is a follow up to the visit by Lynn Holstein who had served earlier and had made certain findings and recommendations. His specific tasks were to examine what had been done and to investigate how to implement the system in a more efficient and productive manner. He was also directed to attempt to speed up the privatization of the urban and city lands and the recording of the documents necessary to implement the cadastral system.

PROBLEM 1. In order to explain his approach he stated that he is not in conflict with Holstein's definition of the three cadastral systems, fiscal, the legal, and the multi-purpose, but he considered them as a single unified system that would be used for three distinct and separate purposes. Yet having the same requirements for creation but having schedule for finalizing.

All prior experts recommended that the fiscal cadastre be given first priority, yet the fiscal cadastre depends for its description on the legal cadastre to assess taxes.

There are many landowners who obtain State Acts of land who have not or refuse to register their parcels. This causes difficulties in identifying landowners of privatized lands so that tax records can be modernized. As land parcels are bought and sold under a title system, it is important that certain professionals, such as attorneys, surveyors and engineers, are able to determine who the current owners of land are.

RECOMMENDATION: Consider the legal cadastre and the fiscal cadastre of equal importance, and realize it is important that all privatized lands must be registered. Enact laws that will both encourage registration and penalize those who do not register their lands. This could be accomplished by making fees for rapid registration low and expanding the fees. If the land owner does not register in a period of time declare that the land will revert to the government.

PROBLEM 2. The specialist found that the present cadastre is under the supervision and direction of three government agencies. The Yerevan Municipality Inventory Department is responsible for the City of Yerevan; The Inventory Board of Communal Department is responsible for the villages through its 38 districts and rural surveys are the responsibility of Armgeprozym. Each of these groups act independently from each other using their own personnel and surveyors, methods, numbering systems and forms.

It was also found that several of these groups were going beyond their original direction. One agency which was responsible for rural lands was surveying lands within the villages; the agency responsible for villages was surveying rural lands, but the City of Yerevan had so much work they had all they could do to just keep current. If this continued it is entirely possible that these agencies could find themselves competing with each other.

RECOMMENDATION: Holstein recommended a separate agency be created to direct the cadastre. Initially this expert agreed but after an examination of the present conditions, he cannot agree with the recommendation. He does agree that something must be done immediately. The cadastre is still progressing too slowly. State Acts are being granted, there are no additional funds available from which to create a new agency. The program must continue and it can not be delayed. To establish a new agency and transfer employees and duties would delay the cadastre. This expert recommends that a Cadastre Management Committee be established under presidential authority and direction to manage the cadastre for the immediate future, until legislation can establish a cadastral agency. This committee would be established under Presidential direction and should be composed of at least five members; one legal expert from The Minister of Finance; one from the Department of Agriculture (Armgiprozym), one from the Inventory Board of the Communal Department; one from Yerevan Municipal Department of Inventory and one from the Government Department of Urban Policy. It is recommended that an ad hoc member be named as a consultant with no voting power. These individuals should serve as a Steering Cadastral identify the specific responsibilities of each agency performing cadastral surveys. They should also design a universal form for registering the parcels, prepare manuals and provide training for surveys and registering the private lands.

The consultant recommends a Presidential Committee (or highest authority available) because the land of Armenia is its national treasure and is identified as being the responsibility of the President of Armenia.

PROBLEM 3. The Expert found a major misunderstanding as to

what some of the individual people he met thought what the new cadastre was as compared to what the former cadastre actually in use was.

RECOMMENDATION: Require all individuals who will be working with the cadastre to attend training sessions in which the concept of property ownership and property right are taught and how a cadastre actually works and what a cadastre does.

It is imperative for success that all levels of understand the concepts of the cadastre.

This should be supplemented with training manuals and programs directed to the cadastre and its impact on the people.

PROBLEM 4. A problem that has disturbed the expert is a complete misunderstanding that a title system being adopted in the Armenian cadastre is dependent on the fact that land is identified by land owner and not by the parcel number. Land identification by number and not by a person must be a necessary requirement for cadastre.

Several situations were found where two separate and distinct land parcels were given the same number within the same village. Under the title system this will cause serious future problems when lands are sold.

RECOMMENDATION: In all offices immediately establish a numbering system for the identification of privatized immovable property based on a number system. This system will be discussed later. The name of the owner of the immovable property can be used as a secondary identifier.

PROBLEM 5. During visits to the Yerevan municipality records and several village offices, the consultant was shown the records of immovable property now being kept by the officials in responsibility. Those records that were examined were found to be subject to destruction at any time from fire or water. This is totally unacceptable since the foundation of a cadastre is the use of these past records in assembling the new information.

RECOMMENDATION: Realizing that it will be very expensive to solve this problem, it is imperative that all offices in which records of immovable property are stored place these records in fire proof storage or that the information be stored in data files in computers. It also would be possible to electronically scan this data for storage.

PROBLEM 6. Since adequate maps are the basis for a cadastral system, no complete inventory was found as to the status of all maps and aerial photographs made as to dates and scales. No base maps were found at any of the field offices for their

use and to maintain records. It was found that two agencies, Armgirozyn and the Armlandsurveying maintained the base maps of the country on "metal mounted" boards. All corrections and additions were made directly in these boards. All of the maps examined had topographic contours. These contours are of little or no value to a cadastral map, in fact they may detract from their use.

RECOMMENDATION: First, an inventory should be made of all maps in both Armgirozyn and the Armlandsurveying to determine what maps, dates and scales are available for a cadastre.

Second; Arrangements should be made to have copies made on a stable plastic base so that the metal mounted boards can be placed in a safe protection and no longer used.

Third; When the plastic copies are copies of those maps in each district or area should be duplicated and a copy sent to each district so that the immovable parcels can be placed on the maps. This should apply to the village and city areas even though individual apartments may not be shown.

Fourth; Once the indexing numbers should be placed on these maps for public information and for public reference.

Fifth; It is suggested that in the future these indexes can be made of aerial photograph mosaics.

PROBLEM 7. It was found by the Consultant the preparation of the State Acts, the surveys, the drafting and all matters related to immovable property for the cadastral information was very labor intensive, in that few modern methods, procedures or equipment was being used or was available. Because of these labor intensive methods delays were encountered in completing the work and getting the Village Councils to approve the completed work. Problems in indexing, drawing the State Acts and conducting surveys all added to the delays. It was found that at times surveys and examinations of the privatized properties required several visits before a final title document could be prepared.

It was found that many of the surveys were conducted using nothing but a measuring tape, with the majority of the village surveys being conducted by plane table methods that were abandoned in other countries over 40 years ago. This method should not be considered as suitable for today's needs.

These methods are costly and make delays in making the final title documents.

RECOMMENDATIONS: A key to a successful cadastre system is the ability to create the data, to store it, to retrieve it and to send it on to a central office for centralization. The

expert found a serious lack of modern technology at all levels of the cadastre process, except the City of Yerevan. The consultant recommends that serious thought be given to modernizing the following:

Data storage and transmission on cadastre plots at all levels from rural, urban and city be accomplished by providing computer stations, software and training to the various districts, survey offices who create the data and the Ministries who are responsible for supervision and storage. At the present only the City of Yerevan has computer capabilities, including programming capabilities. At the field level there are no such capabilities. Starting immediately the Consultant recommends that as many survey districts and the Yerevan offices responsible for surveys be assigned computers to provide for survey computations and the storage of cadastral data and the ability of even creating and printing the final State Acts granting the land rights to the citizens. This will include the necessary training.

These computers can be used to create the data, to store the data and then to transmit to the respective offices.

Presently the consultant sees the need for up to 40 computers. Initially a major assignments will be to the City of Yerevan and possibly several of the major cities. The land data relative to land parcels now on record can be entered under a project basis. This is a very labor intensive project and it once completed its maintenance is routine. The computer systems that will be released can then be assigned to other urban areas and the same project completed there. With the reduced number of computers the staff can then keep the records current.

SURVEYS: Although the survey crews use the most primitive of surveying instruments, they are gradually getting work done. It is estimated that Armgiprozym will require at least five years to complete their work in the villages on a systematic basis. Equipping approximately 150 crews with electronic equipment would be beyond financing capabilities. The Consultant recommends that crews in the more demanding villages and those whose cadastre field work is lagging be supplied with new equipment, the type to be determined after an analysis is made of what is available. Coupled with computer capabilities a fully integrate survey to map and to prepare the descriptions could be developed.

The ultimate goal for the Republic is a totally integrated cadastre of the fiscal, legal and multi-purpose areas. Although the concentration of the expert is in the urban areas, some thought should be given to aiming for geo-positioned parcels, that is the position of each parcel as having for one of its identification elements a reference to latitude and longitude and/or map coordinates. This would

aid both the fiscal cadastre and the legal cadastre in being able to quickly identify any parcel, without having to resort to a parcel number or a landowner's name.

ICMA/USAID HOUSING SUPPORT PROGRAM  
IMPLEMENTING ARMENIA'S CADASTRAL SYSTEM  
Findings and Recommendations  
Page 2

Notes for Wrap-up Meeting, August 17, 1994

Walter G. Robillard  
Registered Surveyor, Attorney At Law

These additional recommendations are made as supplement to my initial list of recommendations.

The following recommendations are made relative to solid cartographic and legal recommendations and I offer them for immediate action on the behalf of the my visit.

PROBLEM A. Several visits to rural villages and in the city of Yerevan indicated an area of concern that must be addressed. It will be of concern to all who are involved in the complete cadastre. This problem is the unauthorized building or trespass (unauthorized capturing of land) by people onto the government lands that are adjacent to their land parcels. Or in some instances independent of other parcels.

Wherever the Consultant went , both city and rural areas, this problems was discussed and advice sought as to how to handle them. Realizing these problems must be addressed by an official government statement and action, the Consultant recommended to them that each trespass be indicated and shown on maps until a final decision is made as to final policy determined by the government agencies.

These trespasses are of two types; those that occurred prior to the establishment of the Republic of Armenia and those that have occurred after that date. In order to manage the lands owned by the Republic of Armenia those illegal capturings or trespass on Government lands should be identified and addressed in the cadastre.

RECOMMENDATIONS:

As part of his cadastral responsibilities the Consultant recommends that using personal observations in the field and by interpretation on aerial photographs these trespasses be located.

These should be separated into two areas; those that occurred before or under the Soviet authorities and those that occurred under the Armenian authorities. Since it is the opinion that those that occurred under the Soviets were not the responsibility of the present government, these

should be "grandfathered" and the illegal uses authorized and the owners given State Acts authorizing them. For those illegal trespasses (capturing) that occurred after the founding of the Republic each person should be given official notice by the Government that the capturing is illegal and the Government will consider removal necessary. A written permission should be granted indicating this capturing would be permitted but additional taxes would have to be paid until removed. The permission must indicate that if the property is ever sold the new owner will be required to remove the area captured under government direction.

TIME FRAME: this should commence and the necessary direction established by Sept. 1, 1994.

PROBLEM: B While visiting the Minister of Agriculture the Consultant was informed that there were recent (1989) aerial photographs and maps available at Novocherrassr in Russia. These maps and photographs could be of much use because they were developed about the time of the establishment of the Republic. If they could be obtained they would identify any uses at or near the time of the establishment of the Republic. The un-authorized uses can be pinpointed in time if the photographs are usable.

RECOMMENDATION: It is recommended that someone, either the Consultant or some person qualified in aerial photo interpretation visit Novocherrassr to examine the photographs and if they are suitable and usable arrangements then be made to see money can be made available to purchase the film and whatever copies of aerial photographs are available. At the time of the visit the visitor should examine whatever maps were made and determine if they are suitable for use in the cadastre or for other related activities by other Ministries.

TIME FRAME: Possible use and expected costs if suitable should be completed before December 1, 1994.

PROBLEM C. Many of the maps at all scales, 1:5,000, 1: 2,000 and 1: 500 that are used by the many agencies must be adapted and modified for cadastre purposes. If it is determined that the maps identified in B above are suitable, then these should be examined with the possibility that these new maps become the basis for all cadastre in Armenia.

RECOMMENDATION: If it is determined that the maps and/ or aerial photographs are suitable for use in Armenia, then funds should be made available to modernize the maps or if mapping facilities are suitable, then funds be granted to the proper government agency to produce the maps required for the cadastre and these maps then be distributed to the various agencies for use and for distribution to the field offices.

TIME FRAME: As determined but before 6 months.

## Land Code of Republic of Armenia

This code regulates the land relations on the territory of Republic of Armenia and intends to provide: scientifically motivated effective land use and maintenance; Environment Protection and Improvement; creation of conditions for equal development of all economic forms based on a variety of property; preservation of rights of citizens, enterprises and organizations; legal reinforcement of rule of law in the sphere of land relations.

### Part I. General Provisions Chapter I. Main Provisions

#### Article 1. Land Legislation of the Republic of Armenia.

Land relations in the Republic of Armenia are regulated by this code and other legislative act of legislation of the Republic of Armenia adopted on the basis of it.

Relations connected (concerning) with use and preservation of the underground resources of the earth: forest, water and air territories, as well as, vegetable and animal kingdoms, are regulated by special legislation of the Republic of Armenia.

#### Article 2. Property Right to Land

Land is the national wealth of the Republic of Armenia and the property of the people living on the territory of the Republic.

Every citizen of the Republic of Armenia has a right of ownership of land. The order and conditions for allotting land as of land allotment property are determined by this code and other RA legislation deeds being adopted on the base of it.

#### Article 3. Land Stock Composition.

The land stock of the Republic of Armenia according to its special purpose importance is divided into:

1. Lands of agricultural importance;
2. Lands of populated areas (towns, settlements, villages);
3. Lands of industry, transportation, communication, defense and other importance;
4. Lands of natural protection, health, resort; sports and historic-cultural importance;
5. Lands of forest stock;
6. Lands of water supply;
7. Lands of preservation (Preserved Lands').

Assignment of lands to one of the above-mentioned categories and their transition from one to another are realized by the Council of Ministers of the Republic of Armenia.

#### Article 4. Forms of Land Property (Forms of ownership of Land).

The forms of ownership of land in the Republic of Armenia are:

- a) ownership of citizens of the Republic of Armenia;
- b) collective ownership;
- c) state ownership.

*I. A. Melik. Land Code.  
G. S. Federal title*

### **Article 5. Allotment of Land as Property**

1. Land, is allotted to the citizens of the Republic of Armenia as property:
  - a) for operating agricultural (peasant's) and agricultural (peasant's) collective farms;
  - b) as a plot of land attached to the house, or for the construction of a dwelling-house and serving it;
  - c) for gardening (country-house).
2. Collective ownership of land is formed by voluntary unification of land lots of individual owners or by allotting land as a collective property.
3. State property lands are the lands that are not objects of citizens' or collective property rights.
4. Other cases of allotting land as property can be established as well by the Supreme Council of the Republic of Armenia.

### **Article 6. Allotting State Property Lands for Permanent Use.**

Land use is considered permanent, if no definite time (term) condition is established for it.

The state property lands are allotted for permanent use:

- a) to citizens of the Republic of Armenia;
- b) to the beneficiaries of collective property rights;
- c) to the state enterprises, institutions, public and religious organizations;
- d) to the organizations mentioned in the article 48 of this code-for defense needs.

The state property lands are allotted for permanent use to the suitable beneficiaries during the whole period of their activity.

Other cases of allotting land for permanent use can established as well by legislation of the Republic of Armenia.

### **Article 7. Allotting Land for Temporary Use.**

State property lands can be allotted to the citizens, enterprises, institutions and organizations of the Republic of Armenia according to the established order for temporary use, for a short period of time up to three years and for a long period of time from three to ten years.

These terms can be prolonged proceeding from (based on) production necessity according to the order established by the legislation.

State property lands can be allotted to other states, legal persons and citizens, international organizations, associations and joint enterprises (ventures) only for a temporary use according to the procedure established by legislation.

The terms of allotting lands of citizens' and collective ownership for temporary use are established by the reciprocal agreement of the parties and signed by a contract.

### **Article 8. Land Rent**

Land can be allotted to the citizens, legal persons, other economic organizations, of the Republic of Armenia and other states, as well as international organizations and associations for use rental conditions.

The lessor of the state property land is the Council of Ministers of the Republic of Armenia, corresponding Councils of People's Deputy within the limits of their

competence. The lessors of lands of the citizens' and collective ownership are the owners of these lands.

The rental conditions are determined by the reciprocal agreement of the parties and signed by a contract.

The subrent of lands is permitted if it is provided by the agreement about rent.

Land rent relations are regulated by this code and other acts of legislation of the Republic of Armenia.

5% to general treasury, for cost of operation

**Article 9. Compensation for Land as Property and Land Utilization  
(Land Ownership and Land Use Being Paid)**

During land reforms state lands are allotted as a property:

- a) for operating a peasant's and peasant's collective farms with partial compensation according to the order and conditions established by the law of the Republic of Armenia "About Peasant's and Peasant's Collective Farms";
- b) as a land plot attached to the house with payment, of their cadaster value calculated according the situation of the time of allotment except for those citizens, who, with valid excuse, were not able to realize their property right regarding land during the land reform and were not a member of an peasant's and peasant's collective farm. Plots, of land, attached to the house, are allotted as property to those citizens for free;
- c) for gardening (country house) according to the order and prices established by the Council of Ministers;
- d) for building houses in the towns and settlements and serving it with payment of maximum prices or according to another order determined by the Council of Ministers.

The right to sell lots allotted as property is effective after paying their value completely.

The right to sell the lots of peasant's and peasant's collective farms appears, after three years from the moment of obtaining a property right towards the land during land reforms.

After the process of land reforms, the allotment of state lands, as property, as well as, the sale of lots owned by citizens or collectives, are realized at (on) free market forming prices.

The plots of lands attached to houses, as well as, lots that the citizens of the Republic of Armenia have for gardening (country house) and constructing a dwelling houses and its services, are left to them as a property for free.

In case of their transfer the cadaster valuation price accounted by the situation of the moment of their allotment, is exacted from the citizens.

Land use in the Republic of Armenia is chargeable.

The charge for the use of land established in the form of land a tax which is exacted according to the order established by the Republic of Armenia.

**Charter 2. Questions of Supreme Council's Disposal (Management) and Competence of Council of Ministers, Local Councils of People's Deputy of the Republic of Armenia in the Sphere of Regulation of Land Relations**

150

**Article 10. Management Issues (Ruling) of the Supreme Council of the Republic of Armenia.**

The Supreme Council of the Republic of Armenia

1. realizes the regulation of land relations on the whole territory of the Republic of Armenia;
2. establishes the partial compensation and payment order for the lands allotted as property; conditions and privileges, as well as, the payment order and conditions for the lands allotted for use.
3. confirms the dimensions of the territories of regions, towns, settlements and rural areas allotting the land to the disposal of corresponding Councils;
4. confirm the land balance of the Republic of Armenia per year.
5. determines the order and conditions of banding land resources of the Republic of Armenia to other states for use.
6. realizes other authorizations established by law.

**Article 11. Competence of Council of Ministers of the Republic of Armenia**

The Council of Ministers of the Republic of Armenia

1. determines the composition of land inventory categories of the Republic;
2. clarifies and presents to the confirmation of the Supreme Council of the Republic of Armenia the dimensions of the territories of rural areas;
3. prepares and organizes the land preservation order, realizes a control over their use and maintenance;
4. operates the land cadaster system and organizes the system of land use on the whole territory of the Republic;
5. establishes a tax exaction order for the lands allotted as property and allotted for use;
6. conducts (prepares) an annual land balance of the Republic;
7. considers and presents suggestions to the Supreme Council of the Republic of Armenia about the solution to interregional land disputes;
8. realizes other authorizations established by law.

**Article 12. Competence of Local Council of People's Deputy.**

The Local Council of People's Deputy within their competence

1. attach as property the lands allotted to the citizens by the established order;
2. dispose the lands attached to them by according to the established order, as well as, allot them to the enterprises, organizations and individuals for use and rent them not altering the category of the lands;
3. organize the system of land use;
4. take back the lands allotted by them, as property, for use and rent, according to the established order;
5. organize the exaction of land payment and rent;
6. realize controls upon the land use and maintenance;
7. confirm the land balance of their territories;
8. solve land disputes;

Set power and org. lands

### Chapter 3. The Order of Allotting Lands and Taking Them Back

#### **Article 13. The Order of Land Allotment.**

Giving the land as a property and for use is realized by the allotment order.

The land allotment is realized based on the decisions of the Council of Ministry, Region, City, Settlement, Village Councils of People's Deputy within their purview (competence).

For the purpose of operating peasant's and peasant's collective farms, land allotment as a property is realized according to the order established by the law of RA "About Peasant's and Peasant's Collective Farms". The conditions of land allotment and land use are noted in the decisions about land allotment.

Giving the land lot as property or for use to another owner or land user is realized after the termination of the right of the owner or land user to the given land lot according to the order established by the law.

Land suited for agricultural needs, first of all, are to be allotted to agricultural activities.

Land suitability for agricultural needs is established by the land cadaster.

#### **Article 14. Agencies Having Right of Giving Lands to Citizens as a Property, as well as, for use.**

Village Councils of People's Deputy allot land lots as property and for use from the lands being under their disposal.

City (Settlement) Councils of People's Deputy allot land lots as property and for use from the lands being under their disposal.

Region Councils of People's Deputy allot land lots as property and for use from the lands being under their disposal, as well as from the reserved stock's lands within their jurisdiction.

During land reforms and privatization process, for the purpose of creating peasant's and peasant's collective farms, the Local Councils of People's Deputy, allot land lots as property by the presentation of the corresponding commissions of Land Reforms and Privatization.

The land stock category alteration related to land lot allotation is made by the Council of Ministers of the Republic of Armenia.

#### **Article 15. Taking Back Land Lots Given as Property and for Use.**

Land lots allocated to the citizens as property can be taken back only by the corresponding Councils of People's Deputy according to the provisions of article 21 of this Code.

Lands lots allotted for use can be taken back by the corresponding Councils of People's Deputy according to the provisions of article 22 of this Code.

Taking back valuable and fruitful lands, lands under preserved natural and historic-cultural objects, as well as, preserved land, for not appropriate use, is prohibited.

The list of these lands is established by the Supreme Council of the Republic of Armenia by the presentation of the Council of Ministers of the Republic.

In exceptionally necessary cases the mentioned lands can be taken back under the decision of the Supreme Council of the Republic of Armenia.

Experimental plots of research institutes educational organizations, as well as, lands allotted for sports needs, can be taken back by the order established by the Council of Ministers of the Republic of Armenia.

**Article 16. Allotting Lands for Non-Agricultural Needs**

Lands that are not suitable for agriculture or agricultural land areas of poor quality not exceeding the regional average level according to the cadaster valuation system, are allotted to the enterprises and organizations for non-agricultural needs.

Other lands are permitted to be allotted, as well, for electrical transmission, communication, roads, main pipe-lines and other lineal structural constructions, according to the land allotment norms, design-technical documents established for that purposes.

Taking back agricultural land areas valued higher than the regional average level under the cadaster valuation; suburban, green and forest belts, and allotting them for non-agricultural needs can be allowed only in exceptional cases under the decision of the Council of Ministers of the Republic of Armenia.

**Article 17. The Procedure for Raising Mediations About Land Lot Allocation and Their Consideration.**

The procedure for raising mediations about land lot allotment and for their consideration is established by the Council of Minister of the Republic of Armenia.

**Article 18. Documents Confirming Land Property Right and the Right of its Permanent Use.**

The right of land property and the right of its permanent use is confirmed by the corresponding state act, which is given by the corresponding Local Council's Executive Committee of People's Deputy.

The owner, purpose and conditions of land allotment and use, the name of the lot, its location, dimensions, borders, cadaster valuation and other data are noted in the state act of the land property right.

The land user, dimensions and borders of the lot, its cadaster valuation, conditions of use of the lot according to the special-purpose importance of the allotment are stated in the state act of the right of permanent land use.

The forms of state acts, their registration and allotment order are determined by the Council of Ministers of the Republic of Armenia.

**Article 19. Documents Confirming Right of Land Rent and Other Temporary Use.**

The right of land rent and other temporary use is established by a contract. The form of the contract and its registration order is determined by the Council of Ministers of the Republic of Armenia.

A plan of the rental land and the land allotted for other temporary use should be attached to the contract.

**Article 20. Realization of Right of Land Property, Land Use and Land Rent.**

The beneficiaries of the right of land property, land use and land rent undertake the use of a plot of the land allotted to them by the decision of the corresponding Council of People's Deputy after the clarification of the boundaries of the plot in the locality made by the Land Development Bodies and after getting the documents confirming their right of land use and land property right.

#### Chapter 4. Termination of the Right of Land Property, Land Use and Land Rent

##### **Article 21. Termination Bases of the Right for Land Property.**

The property right regarding land or one part of it terminates when

1. the land-owner voluntarily relinquishes the plot or transfers it;
2. the plot is taken back for government or public needs;
3. the plot is confiscated according to the procedures and bases established by law;
4. the owner of the land dies and no heir exists (or no heir claims his rights); *except*
5. the plot is used not according to its expedient importance;
6. the plot is used in such ways which result in the reduction of land fruitfulness, their chemical and radio-active pollution, violation of ecological safety requirements;
7. the land tax is not paid periodically within the established period of time;
8. historic-cultural monuments are discovered on the plot;
9. the owner ~~fails~~ to pay the partial or complete payments for the land allotted to him during the privatization process within established period of time starting from January 1st of the year of privatization (as amended by the law of RA dated 29.07.91).

##### **Article 22. Termination Bases of the Right of Land Use and Land Rent**

The right of land use and land rent terminates when

1. the land owner or the land lessee (tenant) relinquishes voluntarily the plot;
2. the activity of the land user or land lessee is terminated;
3. the plot is used not according to its expedient significance;
4. the plot is used not effectively (for the lands of agricultural importance it is expressed by periodically low productivity as compared with the normatives of the cadaster valuation);
5. the plot is used in such ways that results in the reduction of land fruitfulness, their chemical and radio-active pollution, violation of ecological safety requirements;
6. the land taxes or rents are not paid periodically within the established period of time;
7. the plot allotted for the agricultural production is not used for one year and the plot allotted for non-agricultural needs is not used for two years;
8. the plot is taken back for government or public needs or in relation with privatization needs-at the end of the economic year, coordinating the concrete time with the lessee. (as amended by the Law of RA dated 29.07.91)
9. the period of time fixed for the use of the plot allotted is expired;
10. historic-cultural monuments are discovered in the plot.

**Article 23. Termination Order of the Right of Land Property, Land Use and Land Rent.**

In all cases provided by the 21st and 22nd articles of this Code the decision on the termination of the right of land property, land use, land rent is made by the Supreme Council of the Republic of Armenia, Council of Ministers, the corresponding Local Councils except for the case provided in the 47th article of this Code when the right for the allotted plot is terminated by the decision of the administration of the enterprise, institution having allotted it.

The right of the land property, land use and land rent is terminated by the decision of the corresponding Council of People's Deputy from the day the decision is made.

In the cases provided in the 3rd, 4th, 5th, 6th and 7th sections of the 22nd article of this the decisions on the termination of the right of land use and land rent are made based on those documents that testify that after receiving a proper written warning, the land users or land lessees have not taken any measures to terminate within the established period of time the violations made by them.

In the case of terminating the right of land property, land use and rent the corresponding Council of People's Deputy makes a decision to exact for the damages done to the land.

**Chapter 5. Right and Obligations of Land Owners, Land Users and Land Lessees, Protection and Guarantees of Their Rights.**

**Article 24. The Rights of Land Owner**

The land owner has all rights of an owner (the rights of sale, mortgage, exchange, grant, inheritance) and has the right

1. to manage the land independently;
2. to own the produced agricultural production and all profits received from its realization;
3. to use for economic needs the widespread natural minerals, peat, forests, water objects, as well as, exploit other useful qualities of land according to the established order;
4. to construct dwelling, production, cultural and personal service buildings and other structures according to the order and conditions established by law;
5. to turn over the plot or one part of it for rent or temporary use;
6. to do other actions not contradicting the law.

**Article 25. Obligations of Land Owner**

The land owner is obliged to

1. use the land effectively, according to its expedient importance, not to reduce it fruitfulness, use natural protection technologies of production, not to allow any aggravation of the natural protection situation because of the economic activity;
2. to use the land effectively, to apply natural protection technologies of production, not to allow any aggravation of the natural protection situation because of the economic activity.
3. to realize the complex measures provided by the 60th and 61st articles of this Code;

4. to pay land tax

4. to pay land taxes within established periods of time;
5. not to violate the rights of other land users and land owners.

→ **property**

**Article 28. Rights of Land Lessees and other Temporary Land Users.**

The land lessees and other temporary land users have the right

1. to use the land according to the conditions of its allotment;
2. to own sowings of agricultural crops and produced production;
3. to receive compensation for the land improvement expenses in case the right of land use is terminated.

**Article 29. Obligations of Land Lessees and Other Temporary Land Users**

The land lessees and other temporary land users are obliged

1. to provide land use according to the expedient importance and the conditions of land allotment;
2. to use the land effectively, to apply natural protection technologies of production, not to reduce its fruitfulness, not to allow any aggravation of the natural protection situation because of the economic activity;
3. to realize the complex measures provided by the 60th and 61st article of this Code;
4. to pay land taxes and land rent within established periods of time;
5. not to violate the rights of land owners and other land users.

**Article 30. Protection of Rights of Land Owners, Land Users and Land Lessees.**

The government, economic and other bodies and organizations are prohibited to interfere in the economic activities of land owners, land users and land lessees except in cases when the acting (present) legislation or contract is infringed upon.

The infringed rights are subject to be restored according to the procedure established by law.

The damages caused by the infringement of the rights of land owners, land users and land lessees and missed profits are subject to a full compensation.

**Article 31. Guarantees of Rights of Land Owners and Land Users.**

The plots owned by the citizens may be taken back for government or public needs in the case of extreme necessity, on the condition that a full compensation is given or an equivalent plot is allotted to the land owner.

The plots disposed to the use of the citizens may be taken back for government or public needs only if an equivalent plot is allotted.

Those enterprises, institutions and organizations to whom the plot is (re) allotted, construct dwelling, production and other buildings in the new place if there were such and fully compensate the landowner or land user for all other damages.

**Part II. Land of Agricultural and Other Importance**

**Chapter 6. Lands of Agricultural Importance**

**Article 32. Lands of Agricultural Importance**

Lands of agricultural importance are the arable (lough-) lands, perennial nurseries, hayfields, pastures, as well as other land lots determined for agricultural purposes.

**Article 33. Allotment of Lands of Agricultural Importance Lands of Agricultural Importance are Allotted.**

1. to citizens for operating peasant's and peasant's collective farms and for gardening (country-house);
2. to agricultural enterprises and organizations, collective farms for realizing agricultural activities;
3. to research, educational and other agricultural enterprises, institutions, rural productive-technical schools and public schools for research, educational purposes, for introduction of advanced technology and agricultural activities;
4. to non-agricultural enterprises, institutions and organizations for realizing auxiliary agricultural activities;
5. in the cases provided by the legislation of the Republic of Armenia lands of agricultural importance can be allotted also to other organizations and individuals for realizing agricultural activities.

**Article 34. Allotting Lots to Citizens as a Plot of Land Attached to the House.**

Lots are Allotted to citizens as plots of land attached to the house on property right, by the Local Councils of People's Deputy having the right of allotting lots according to the 14th article of this Code, within the dimensions provided by the 39th article of this Code.

**Article 35. Allotting Plots to Citizens for Gardening (country house).**

Plots are allotted to citizens and collectives for gardening on property right, by the Councils of People's Deputy having the right of allotting lots according to the 14th article of this code, from the lands turned over at their disposal according to the projects of land development.

The Council of Ministers of the Republic of Armenia establishes normatives for constructing dwellings and other structures on the plots allotted to citizens for gardening (country house).

Citizens can be allotted lots for temporary use, with the purpose of growing vegetable and small-fruit plantations.

**Article 36. Allotting Land to Agricultural Enterprises, Organizations and Collective Farms for Use.**

The agricultural enterprises and organizations are allotted lands, for use, by the corresponding Councils of People's Deputy having a right of allotting plots, according to the 14th article of this code.

Land use by collective farms is realized on rental bases.

The agricultural enterprises and organizations can lease and rent plots.

**Article 37. Allotting Land to Research, Educational and Other Agricultural Enterprises, Institutions, Rural Production Technical Schools and Public Schools for Use.**

Plots are allotted to research, educational and other agricultural enterprises, institutions, rural production technical schools and public schools for use in purposes of research, educational purposes and realization of agricultural activities, according to the 14th article of this code, by the Councils of People's Deputy having the right of allotting plots.

**Article 38. Allotting Land to Non-Agricultural Enterprises, Institutions and Organizations for Use.**

Plots are allotted to non-agricultural enterprises, institutions and organizations for use in purpose of realizing auxiliary agricultural activities, according to the 14th article of this code, by the council of People's Deputy having the right of allotting plots.

**Article 39. Dimensions of Plots being Allotted to Citizens.**

Dimensions of the plots, being allotted for gardening, as plots attached to houses, are

1. up to 0,25 hectare, as plot attached to the house for the citizens living in rural places. On irrigation land dimensions of plots allotted for that purpose are reduced to the extent of a half.

Other plot dimensions can be established by the Supreme Council of the Republic of Armenia for mountainous and frontier regions.

2. up to 0,07 hectare for gardening (for a country house). More than the established dimensions can be allotted small bits of land generated because of land use regulation.

They can be allotted to the citizens living in rural areas, by the corresponding Councils of People's Deputy, if these small bits of land can not be used for the production needs of peasant's and peasant's collective farms, enterprises and organizations or turned over to other citizens.

**Article 40. Land Use of Peasant's and Peasant's Collective Farms.**

The relations concerning land use by peasant's and peasant's collective farms are regulated by the Law of RA "About Peasant's and Peasant's Collective Farms".

**Article 41. Land Use by State Agricultural Enterprises.**

Plots are allotted to state agricultural enterprises for use in management purposes.

The principles of legislation of the Republic of Armenia regarding the creation and activity order of state enterprises apply to state agricultural enterprises.

**Chapter 7. Lands of Populated Areas**

**Article 42. Lands of Town and Settlements.**

All lands within the borderline of towns and settlements are under the disposal of city and settlement councils of People's Deputy.

The borderline of towns and settlements is the external border of a town (settlement) which separates the lands of towns (settlements) from lands of other categories.

Including the plots into the border of a town, settlement does not terminate the right of land property and land use.

# Do towns have master plans -

All lands of towns and settlements are used according to the masterplans of towns and settlements, projects of developing and planning their territory and plans of land economic structures.

The lands that are worthless for agriculture, and situated near the permanent place of residence of the citizen, and are within the city border can be allotted to the citizens, for use for gardening and vegetable growing by the decision of City Council's Executive Committee of People's Deputy. Any kind of construction is prohibited on these plots. The plots having a special ecological value (territories occupied by monuments of nature, wild vegetation, etc.) can not be allotted for the mentioned purposes.

## **Article 43. Lands of Rural Areas**

All those lands that are situated within the borders established for rural areas and are cut (separated by land developings in the location, are considered lands of rural areas.

The lands of rural areas are under the disposal of the village Councils of People's Deputy.

## **Article 44. Allotting Plots to Citizens for Dwelling Construction.**

The citizens of the Republic of Armenia have the right to get plots in the towns and settlements for dwelling construction and serving it.

In the town and settlements plots are allotted to the citizens for dwelling construction up to the extent of 0,04 hectare.

## **Article 45. Allotting Plots for Individual and Collective Non Dwelling Construction and for Running Individual Work Activity.**

Plots are allotted to the citizens for use, for individual and collective non-dwelling construction and for running individual work activity, according to the 14th article of this code, by the Council of People's Deputy having the right of allotting plots.

## **Chapter 8. Lands of Industry, Transportation, Communication, Defense and Other Importance**

### **Article 46. Lands of Industry, Transportation, Communication and Other Importance.**

Lands of industry, transportation, communication and other importance are those lands that are allotted for use to the corresponding enterprises, institutions and organizations for realizing the tasks given to them.

Dimensions of the plots being allotted for the mentioned purposes are determined according to the confirmed norms and project-technical documents, on the condition of their maximum effective use.

For mining purposes plots are allotted to the enterprises, institutions and organizations on condition that the allotment of the mine is registered and land territories having been allotted to their use before, are restored.

### **Article 47. Allotment Order and use of Official Lots of Land.**

The enterprises, institutions and organizations of transportation, forest economy, forest industry, communication, water, fish hunting industry, as well as other branches of

City Councils have the right to use for urban w/o approval -

national economy can allot official land lots from the lands allotted to their use, to their employees not having a land property, by the decision of the administration.

Official land lots are allotted for use during the period of working in the given enterprise, institution, organization.

In case of quitting the job, the rights of the employees for an official plot are terminated.

If the worker having done sowings of agricultural crops quits his (her) job, his (her) right of land lot use is terminated after gathering the crop.

If several members of a family work in the same enterprise and have a right of getting an official land lot, they are allotted one official land lot.

Hayfields and pastures can be allotted only to those workers who own livestock (cattle).

Construction on the official land lots is prohibited.

Official land lots are reserved for those individuals, who have terminated their work activities retiring on a retirement or disability pension and prior to retiring on a pension, have worked for at least ten years in the given enterprise, institution, organization.

\* for the families of those employees who have taken up an elective office, called up for active military service or entered studies - during the whole period of being in the elective office, military service and studies;

\* for the families of those employees having been killed while operating their official duties, for a disabled spouse or old parents - for life, and for children - till their coming of age and taking up a permanent job in other spheres.

The dimension of the official land lot is determined by the administration of the given enterprise, institution, organization based on the number of the employees and land lots being at its disposal for that purpose.

#### **Article 48. Lands for Defense Needs**

Lands of defense needs are considered the lands allotted to the permanent activity and distribution of armed forces, border troops, inner (internal) and railroad military troops, defense, institutions, military educational institutions, enterprises and organizations.

The order of allotment and use of the lands for defense needs is established by the Supreme Council of the Republic of Armenia.

#### **Article 49. Occupation of Lands for Doing Prospecting Work by Enterprises, Institutions and Organizations.**

The enterprises, institutions, organizations doing research and geodetical, geological and other investigations can work on all lands regardless of their special-purpose importance.

During prospecting works the land is not taken back from its owner, user or lessee.

The permission for the mentioned works is giving the Council of the Ministers of the Republic of Armenia for a period of not more than one year.

The date and place for starting that work, rates of payments for land use, duties (obligations) of compensating for damages and bringing the land to useful conditions, as well as, other conditions are determined by the contract signed with the landowner and land user.

The enterprises, institutions, organizations doing prospecting works are obliged to liquidate at their own expenses, violations done regarding lands, rehabilitate the former

land lot for special-purpose use and turn over them to the landowners and land user by an act.

If the enterprises, institutions, organizations realize such prospecting works that, according to technology, require to occupy the plot or one part of it under temporary structures, by which is limited land use fully or partially, then they do corresponding payments and fully compensate the landowners and land users for all caused damages.

## **Chapter 9. Lands of Natural Protection, Sanitary, Resort, Sports and Historic-Cultural Importance**

### **Article 50. Lands of Natural Protection**

Lands of natural protection include reserves, national and arboreal parks, botanical parks, forest reserves (except for hunting), lands of natural monuments.

Preservation zones are established for providing the regime of reserves, national and arboreal parks, botanical parks, forest reserves (except for hunting), monuments of nature; such an activity which has a dangerous influence on providing their regime is prohibited in these zones.

The borders of these zones are marked with special information signs in the locality.

The order of use of lands of natural protection importance, as well as, the order of establishment and use of the zones having special conditions of land use are determined by the legislation of the Republic of Armenia. The plots situated within the borders of the natural protection zones are not taken back from their owners and users.

Any kind of activity on the lands of natural protection importance, contradicting their special-purpose function, is prohibited.

### **Article 51. Lands of Sanitary Importance**

Areas having favorable natural medicinal factors for organizing treatment and prophylaxis are classified to the category of the lands of sanitary importance.

The lands of sanitary importance are subject to special preservation. Sanitary preservation zones are established in all health resorts for preserving natural medicinal factors.

Those plots on which the mentioned zones are determined, are not taken back from the owners or users. A corresponding order is established for their use.

Those citizens, enterprises, institutions, organizations the activity of which is incompatible with medicinal qualities of nature and provision of the favorable conditions for the population's rest are prohibited to be allotted plots within the borders of those zones, neither for use, nor as property.

The enterprises, institutions, organizations, proceeded from the interests of which zones having special conditions of land use are established, are obliged to fasten special information signs within the borders of the zones.

### **Article 52. Lands of Resort and Sports Importance**

The lands used and provided for organizing vacations, tourism and sport for population, are considered lands of resort and sports importance.

Those plots that are occupied by health resorts; holiday hotels; rest homes; tourist hostels; tourist-sanitary camps; fishing and hunting huts; children's tourist stations; educational-

tourist paths, signaled ways, sports structures, camps and bases being out of the lands of sanitary importance; green buffers surrounding the towns and other populated areas are classified to the category of lands of resort and sports importance. Lands occupied with forests, forest parks and other green arboreal lands situated outside the towns and other populated areas and having protective and sanitary-hygienic functions, are considered rest places and entered into the green zone.

Any activity violating the special-purpose use the lands of resort and sports importance is prohibited.

The order of use and borders of the lands of resort and sports importance are determined by the legislation of the Republic of Armenia.

#### **Article 53. Lands of Historic-Cultural Importance.**

The lands of historic-cultural importance are the lands occupied by historic-cultural reserves and forest reserves, monument parks and monument complexes, cemeteries, archaeological and architectural monuments, architectural-landscape complexes.

Taking back, these lands for needs that have nothing to do with their expedient importance or realizing any activity on them contradicting their special purpose importance is prohibited.

the order of use or the mentioned lands is determined by the legislation of the Republic of Armenia.

### **Chapter 10. Lands of Forest Stock**

#### **Article 54. Lands of Forest Stock.**

Lands of forest stock are wooded (lands covered by woods), as well as not wooded (lands, not covered by woods) but allotted for the needs of forest economy.

Agricultural and other land lots not used temporarily for the forest economy and the forest industry needs, can be allotted by the enterprises of forest economy for use in agricultural purposes if it does not contradict the special-purpose importance of the given land lots.

The order of use of forest stock lands is determined by the legislation of the Republic of Armenia.

### **Chapter 11. Lands of Water Supply**

The lands of water supply are the lands occupied with water pools, ice-fields, sloughs, hydro-technical water-based economic structures, as well as, those lands that are separated for channels and collectors, and lands that make the transferring land zones round the water pools.

The order of use of lands of water supply is established by the legislation of the Republic of Armenia.

### **Chapter 12. Lands of Reserve Stock**

#### **Article 56. Lands of Reserve Stock**

Lands of reserve stock are all those lands owned by the state that have not been allotted as property or for use. Those lands, the ownership and right of use of which has been terminated according to the 21st and 22nd article of this code are, classified to the category of lands of Reserve Stock, as well.

Lands of reserve stock are under the disposal of the corresponding Councils of People's Deputy and are provided as property and for allotting for use.

### **Part III. Compensation for Damages of Land Owners, Land Users and Agricultural and Forest Economic Production Losses.**

#### **Article 57. Compensation for Damages Caused Because of Taking Back Plots or Occupying Them Temporarily, as Well as, Limiting Rights of Land Owners and Land Users.**

Damages (including missed profits) caused because of taking back or occupying temporarily the plots, as well as, limiting the rights of landowners and land users or deterioration of the land quality by the activity of the enterprises, institutions, organizations and citizens, are subject to a full compensation to the landowners and land users who suffered those losses.

According to the order established by the legislation of the Republic of Armenia, damages are compensated by those enterprises, institutions and organizations that have been allotted the taken plots, as well as, those enterprises, institutions and organizations, the activity of which has brought to the limitation of the right of the landowners and land users or deterioration of the lands.

In case of taking back the plot for government or public needs, the former land owner has the right to get a full compensation.

Disputes related to the compensation of damages and determination of their extent are (to be) solved by court.

In case of discovering items of historical-cultural significance on the plot, if the landowner or land user immediately informs the corresponding bodies and it becomes necessary to take back the given land lot or one part of it or occupy it temporarily, then the landowner or land user, beside the full compensation for the damages are given an additional compensation according to the order established by the legislation.

#### **Article 58. Compensation for Losses of Agricultural and Forest Economic Production.**

Those losses of agricultural and forest economic production that are connected with taking back the agricultural lands and wooded lands of forest economy for use with the purposes that are not connected with operating the agriculture and forest economy; limiting the rights of the owners and land users or deterioration of land quality because of the activity of the enterprises, institutions and organizations, are subject to compensation to the corresponding Councils of People's Deputy. These damages are to be compensated regardless the compensation of damages as established by article 57 of this code.

The mentioned losses are compensated by those enterprises, institutions and organizations around the objects of which maintenance, sanitary and preservation zones are established taking out of the circulation or deteriorating the agricultural and forest lands.

The enterprises, institutions, organizations as well as, citizens compensate for the agricultural and forest economic production losses if there has taken place deterioration of land qualities of other owners and land users because of their activity.

The determination order and extent of the losses subject to compensation, as well as, the list of the enterprises, institutions and organizations being exempted from their compensation, are established by the legislation of the Republic of Armenia.

The means (money) received from the compensation for losses are provided for reclamation of new lands, with the purpose of increasing the fruitfulness of lands and effectivity of forest stock's lands.

#### **Part IV. Maintenance of Lands**

The maintenance of lands includes a complex of economic, organizational, legal and other measures that are aimed to their special-purpose and effective use preventing the taking back of the lands from the circulation in an unjustified way, their preservation from the dangerous influence caused by human activities, as well as, rehabilitation and increase of the fruitfulness of the lands.

##### **Article 60. Order and Content of Land Maintenance**

Land-owners and land-users realize

- rational organization of the location (territory);
- rehabilitation, improvement and effective use of fruitfulness and other useful qualities of land;
- preservation of lands from water and wind sediments floods, waterloggings, double salt formings, hardenings, pollution with industrial waste, chemical and radio-active substances, other influences deteriorating the condition of land;
- preservation from covering the agricultural lands with shrubs, other influences deteriorating the cultural-technical condition of lands;
- rehabilitation of violated lands, their fruitfulness and useful qualities of land and including them into the economic circulation in time;
- taking off the productive stratum of the land, its maintenance and use before realizing the works related to the violation of the lands.

The government bodies take necessary measures regarding the maintenance of lands within the plans of the Republic.

Land maintenance works done according to the republican and territorial plans are realized at expenses of the state budget.

The cultural-technical and other works of the improvement of the plots of land-owners and land-users regarding the increase in fruitfulness of land, are realized at their own expenses.

The order of land maintenance is established by the legislation of the Republic of Armenia.

##### **Article 61. Ecological Requirements to Location, Projecting, Construction and Operation of Objects, Buildings and Structures Influencing the Condition of Lands.**

While locating the new and reconstructing objects, buildings, structures, as well as, inserting new technologies influencing negatively on the condition of lands, land maintenance measures must be provided and realized.

Exploitation of objects and application of technologies, that are not provided with the means preserving lands from decay and violation, are prohibited.

The allocation of the objects influencing on the condition of lands must be conformed with the land development, natural protection and other bodies of the Republic according to the order established by the legislation of the Republic of Armenia.

#### **Article 62. Economic Stimulation of Effective Use and Maintenance of Lands.**

The economic stimulation of effective use and maintenance of lands is directed to raise the personal interest of land-owners and land-users for maintaining the fruitfulness of lands, preserving lands from the negative results of the production activity.

The economic stimulation of lands includes

- the allotment of means (money) from the republican and local budgets for the rehabilitation of lands violated through no fault of land-owners or land-users;
- the exemption from payment for the plots being in the condition of improvement or agricultural development during the commitment of works provided by the plan;
- giving credits on privileged conditions;
- partial compensation at the expense of the budget means for the reduction of income because of the temporary conservation of the lands violated not through the fault of the land-owners and land-users.
- encouragement of the citizens operating peasant's and peasant's collective farms, in case of land quality improvement, raise of land fruitfulness and production of ecologically clear output.

The order of realization of the measures related to the economic stimulation of the effective use and maintenance of lands is established by the legislation of the Republic of Armenia.

### **Part V. Government Control of Land Use and Maintenance**

#### **Article 63. Goals of Government Control of Land Use and Maintenance**

The goals of the government control of land use and maintenance are to provide the commitment of land legislation requirements by all citizens, institutions, enterprises and organizations with the purpose of effective and special-purpose use and maintenance of lands.

#### **Article 64. Bodies Realizing Government Control of Land Use and Maintenance**

The government control of land use and maintenance is realized by the corresponding Councils of People's Deputy and Services of Land Development and Natural Maintenance of the Republic of Armenia. The order of realization of the government control of land use and maintenance is established by the Council of Ministers of the Republic of Armenia.

#### **Article 65. Systematized Observation of Condition of Land (Monitoring).**

Monitoring of lands is the observation system of the land stock's condition for revealing the changes of that condition in time, valuating them, preventing the results of negative phenomena and liquidating them.

The structure, content and order of realization of land monitoring are established by the Council of Ministers of the Republic of Armenia.

## **Part VI. State Land Cadaster.**

### **Article 66. State Land Cadaster.**

The state land cadaster is anticipated for providing the Councils of People's Deputy, interested enterprises, institutions, organizations and citizens with informations about land with the purpose of organizing effective use and maintenance of land regulation of land relations, land development, reasons of the rates of land rent, valuation of economic activities and realization of other activities related to use of land.

### **Article 67. Content of State Land Cadaster and its Operating Order.**

The state land cadaster is the system of the necessary documents and information about the legal regime of lands, allocation of lands according to the land-owners, land-users and categories, as well as, about their qualification and national-economic valuation.

The operating of the state land cadaster is provided with carrying out of topographical-geodetical, land developing, land agro-chemical, geological-botanical and other investigations and research; registration of land-owners and land-users, land records and valuation.

The state land cadaster is being operated by the State Land-Development Bodies by a common system, at the expenses of budget means.

The operation order of the state land cadaster is established by the Council of Ministers of the Republic of Armenia.

## **Part VII. Land Development**

### **Article 68. Content and Importance of Land Development**

Land development is a system of state measures that is directed to enforcement of land legislation, decisions made by the Councils of People's Deputy Under land legislation concerning organization of land use and maintenance; creation of favorable ecological environment and improvement of the natural landscape.

Land development anticipates:

1. development of Republic and region<sup>1</sup> plans; schemes of use and maintenance of land resources and land development projects;
2. determination and fastening of administrative-territorial formation borders in the locality;
3. making proposals of formation of new land use and regulation of the ones already existing resolving the inconsistencies of location of land lots, separating the land lots and their assignment in the location; preparation of the documents confirming the rights of land use and land ownership;

4. working out other projects of land development and rational use and maintenance of lands;
5. formation of work projects of new land development, preservation of lands from pollution and salt formation, improvement of agricultural lands, rehabilitation of violated lands;
6. substantiation of the allocation of the territories having a special natural protection, resort and reserve status, determination of borders and their establishment;
7. clarification and fixing of the borders of urban, settlement, rural populated areas;
8. organizing topographical-geodetical, cartographical, agro-chemical, geological-botanical and other investigations and research.

**Article 69. Organizing Land Development**

Land development is realized by the state Land Development bodies at the expense of budget means.

The preparation of land development projects related to the regulation of the location, radical improvement of the plots and their preservation from collapsing, salting is realized on the initiative of the land-owners and land-users and at their expenses.

**Part VIII. Solving Land Disputes**

**Article 70. Bodies Having Right of Solving Land Disputes**

Land disputes are solved by the Local Councils of People's Deputy, Court or State arbitration.

Land disputes of enterprises, institutions, organizations and citizens are solved by those Councils of People's Deputy at the disposal of which is the plot.

In case of disagreement with the decision of the Council of People's Deputy, the land disputes are considered by the court.

Inventory disputes related to the land relations are solved by the court or state arbitration according to their competence.

Land disputes related to the land allotment, taking back and termination of the right of land property and land use are solved by the court and state arbitration.

**Article 71. Solving of Disputes Between Republic of Armenia and Other States Related to Land Allotment and Land Use.**

The disputes arisen between the Republic of Armenia and other states regarding the questions of land allotment and land use are debated by the order of mediation debates or other order established by the law.

**Article 72. Solving of Disputes of the Republic of Armenia Citizens and Juridical Persons of Arisen in the Territory of Other States Regarding Land Use and Land Property.**

The disputes regarding land use by the RA, juridical persons and citizens and their land ownership on the territory of other states are debated by the commission formed from the representatives of the interested states on a parity basis, based on the legislation of the corresponding state and interstate agreement.

*Some who allot land<sup>20</sup> solve disputes*

If the commission does not come to a coordinated decision, the disputes are solved by the order of mediation debate.

**Article 73. Competence of Local Councils of People's Deputy in Solving Land Disputes.**

To the competence of the Land Councils of People's Deputy is related the solution of land disputes of those citizens, enterprises, institutions, organizations whose lands are at the disposal of the corresponding Councils.

**Article 74. Procedure for Disputes' Consideration by Local Councils of People's Deputy.**

Land disputes are considered by the local Council of People's Deputy based on the application of one of the parties during one month from the day of receiving the application.

The materials regarding the solution of land disputes are prepared by the Deputy commissions of the corresponding Councils of People's Deputy, coordinated with the land development bodies.

The Council of People's Deputy makes a decision connected with the consideration of land disputes, where can be provided the implementation order of the decision and measurements regarding the rehabilitation of the infringed rights of land-owners or land-users.

**Article 75. Rights and Obligations Parties Taking Part in Land Disputes.**

The parties taking part in the land disputes, have the following rights: to get acquainted with the materials regarding the solution of land disputes; to make extracts from them; to take part in the session of the Local Council of People's Deputy while debating the land dispute; to present documents and other evidence; to arouse mediations; to give written and oral explanations; to make objections to arguments and considerations, to get the copy of the decision of the Local Council of People's Deputy on the land dispute; within 10 days from the moment of getting the copy of the decision regarding the land disputes, the decision of the city, settlement, village Council of People's Deputy to the Regional Council of People's Deputy and the decision of the Regional, City Council (cities dependent on the Republic) of People's Deputy to the Council of Ministers of the Republic of Armenia.

**Article 76. Implementation (enforcement) of Decisions on Land Disputes.**

The decisions on the land disputes are enforced by the Land Development bodies, if no other body (organ) is mentioned in the decisions.

The appeal of the decision of the Council of People's Deputy regarding the land dispute stops the enforcement of that decision.

**Part IX. Responsibility for Violating Land Legislation**

**Article 77. Responsibility for Violating Land Legislation.**

Those persons who are guilty in occupying plots without permission, spoiling agricultural and other lands, polluting them with chemical, radio-active substances and industrial waste and debris, in not fulfilling the requirements of the natural maintenance regime of land use in not returning the land occupied temporarily or in not fulfilling the duties of bringing the lands to the condition of special-purpose use, in destroying the land boundary marks, in distorting the data of the registration of lands, record and valuation and in violation of the replacement of the objects influencing negatively on the condition of lands, their constructing, designing and maintenance, as well as, in other violation, bear civil, administrative or criminal responsibility according to the legislation of the Republic of Armenia.

The enterprises, institutions, organizations and citizens are obliged to compensate for the damages caused because of the land legislation infringements done by them.

The plots occupied without permission are returned according to the belonging, without compensating for the expenses that have been done during the illegal use.

Bringing the plots to the condition for proper use, including the demolition of buildings, are done by the citizens, enterprises, institutions and organizations having occupied the plot without permission or at their own expenses.

## **Part X. International Contract (Agreements or Conventions)**

### **Article 78. International Contract (Agreements or Conventions).**

If rules other than this Code contains, are established by the international contracts of the Republic of Armenia, then the rules of the international contracts are applied.

**President of Supreme Council  
of the Republic of Armenia**

**L. Ter-Petrosian**

**Secretary of Supreme Council  
of the Republic of Armenia**

**A. Sahakian**

29 th of January, 1991.

## **Decision of the Supreme Council of the Republic of Armenia**

**On Implementation of the Land Code  
of the Republic of Armenia**

### **The Supreme Council of the Republic of Armenia Decides:**

1. To implement the land code of the Republic of Armenia from the 15th of March, 1991.
2. Before coordinating the legislation of the Republic of Armenia to the Land Code of the Republic of Armenia, the acting deeds of the legislation of the Republic of Armenia are being applied so far as they do not contradict the code.

3. The Land Code of the Republic of Armenia is applied to the legal relations that will be generated after the implementation of the Code, that is from the 15th of March, 1991.
4. Regarding the land relations governed by law (legal relations) having been generated before the 15th of March, 1991, the Land Code of the Republic of Armenia is applied to the rights and responsibilities that will be generated after the implementation of the Code.
5. To establish that the decisions on land allotment that have been adopted before the 15th of March, 1991 by corresponding bodies, within their jurisdiction, but have not been executed till the moment of the implementation of the Land Code of the Republic of Armenia, are subject to execution according to the demands of the Code.
6. To authorize the Council of Ministers of the Republic of Armenia, by the 15th of March, 1991.
  - to present suggestions to the Supreme Council of the Republic of Armenia about making changes and additional proceeding from the Land Code of the Republic of Armenia in the acting legislative deeds of the Republic of Armenia;
  - to coordinate the decisions of the Council of Ministers of the Republic of Armenia to the Land Code of the Republic of Armenia;
  - to provide with revision and liquidation of the normative deeds contradicting the Land Code of the Republic of Armenia by the ministries, state committees and departments of the Republic of Armenia;
  - to fulfill the complex of measures directed to the realization of the Land Code of the Republic of Armenia, including the establishment of land payment principles, main provisions of land utilization, operation order of systematized observation of lands and land cadaster system; creation of such new state bodies that could provide with operation of systematized observation of lands, land state control of land utilization and maintenance.
7. To consider the Land Code of the Republic of Armenia established by RA law of the 18th of December, 1970, with all its changes and additions, invalid from the 15th of March, 1991.
8. To authorize the RA Parliamentary Permanent Commissions on Agrarian and Rural Development Issues, Nature Protection and Natural Resources' and Legal Issues to provide the control of the realization process of the measure anticipated by the present decision and, in case of necessity, to make suitable suggestions to the Supreme Council of the Republic of Armenia.

**Chairman of the Supreme Council  
of the Republic of Armenia**

**Levon Ter-Petrosian.**

**Secretary of the Supreme Council  
of the Republic of Armenia**

**A. Sahakian.**

**4th of February, 1991. Yerevan.**

**ENGLISH TRANSLATION BY :**

ICMA (USAID Contractor)  
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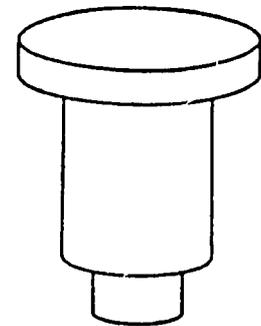
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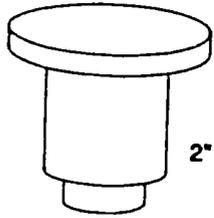
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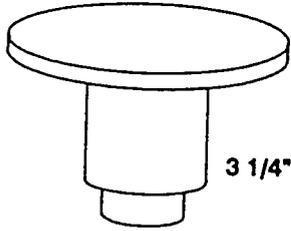
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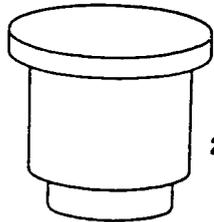
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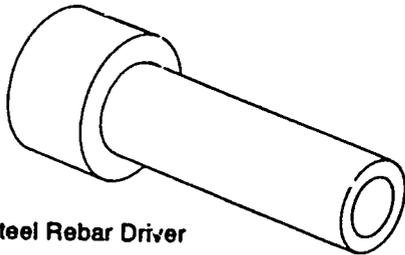


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4	FTH3200	2" Flat cap for 3/8" Rebar (Aluminum)	\$5.08	\$2.89	\$2.52	\$2.36
4	FTH3200BR	2" Flat cap for 3/8" Rebar (Brass)	\$10.65	\$9.71	\$9.48	\$9.44
4	RBH3250	2 1/2" Domed cap for 3/8" Rebar (Aluminum)	\$5.32	\$3.04	\$2.75	\$2.60
4	RBH3325	3 1/4" Domed cap for 3/8" Rebar (Aluminum)	\$5.71	\$3.40	\$3.20	\$2.99
4	RBH3325BR	3 1/4" Domed cap for 3/8" Rebar (Brass)	\$15.15	\$13.85	\$13.53	\$13.48
4	FTH4150	1 1/2" Flat cap for 1/2" Rebar (Aluminum)	\$4.75	\$2.66	\$2.18	\$2.03
4	FTH4200	2" Flat cap for 1/2" Rebar (Aluminum)	\$4.94	\$2.77	\$2.38	\$2.22
4	FTH4200BR	2" Flat cap for 1/2" Rebar (Brass)	\$10.54	\$9.59	\$9.36	\$9.32
4	RBH4250	2 1/2" Domed cap for 1/2" Rebar (Aluminum)	\$5.27	\$2.92	\$2.69	\$2.53
4	RBH4325	3 1/4" Domed cap for 1/2" Rebar (Aluminum)	\$5.62	\$3.28	\$3.18	\$2.97
4	RBH4325BR	3 1/4" Domed cap for 1/2" Rebar (Brass)	\$15.04	\$13.73	\$13.41	\$13.36
4	FTD5150	1 1/2" Flat cap for 5/8" Rebar (Aluminum)	\$4.78	\$2.77	\$2.22	\$2.06
4	FTD5200	2" Flat cap for 5/8" Rebar (Aluminum)	\$4.88	\$2.89	\$2.34	\$2.23
4	FTD5200BR	2" Flat cap for 5/8" Rebar (Brass)	\$11.08	\$10.13	\$9.90	\$9.86
4	RBD5250	2 1/2" Domed cap for 5/8" Rebar (Aluminum)	\$5.31	\$3.03	\$2.69	\$2.53
4	RBD5325	3 1/4" Domed cap for 5/8" Rebar (Aluminum)	\$5.58	\$3.39	\$3.16	\$2.95
4	RBD5325BR	3 1/4" Domed cap for 5/8" Rebar (Brass)	\$15.30	\$13.99	\$13.67	\$13.62
4	FTX6200	2" Flat cap for 3/4" Rebar (Aluminum)	\$5.14	\$2.90	\$2.58	\$2.42
4	RBX6250	2 1/2" Domed cap for 3/4" Rebar (Aluminum)	\$5.49	\$3.06	\$2.93	\$2.77
4	RBX6325	3 1/4" Domed cap for 3/4" Rebar (Aluminum)	\$5.83	\$3.39	\$3.29	\$3.14
4	FTX7200	2" Flat cap for 7/8" Rebar (Aluminum)	\$5.05	\$2.81	\$2.49	\$2.33
4	RBX7250	2 1/2" Domed cap for 7/8" Rebar (Aluminum)	\$5.39	\$2.91	\$2.83	\$2.67
4	RBX7325	3 1/4" Domed cap for 7/8" Rebar (Aluminum)	\$5.73	\$3.30	\$3.19	\$3.04
4	FTX8200	2" Flat cap for 1" Rebar (Aluminum)	\$5.14	\$2.75	\$2.58	\$2.42
4	RBX8250	2 1/2" Domed cap for 1" Rebar (Aluminum)	\$5.49	\$3.06	\$2.93	\$2.77
4	RBX8325	3 1/4" Domed cap for 1" Rebar (Aluminum)	\$5.83	\$3.42	\$3.29	\$3.14
4	PC6200	2" Flat cap for 3/4" ID Pipe (Aluminum)	\$5.09	\$2.72	\$2.53	\$2.37
4	PC8200	2" Flat cap for 1" ID Pipe (Aluminum)	\$5.04	\$3.30	\$2.47	\$2.32



2" Cap for Pipe

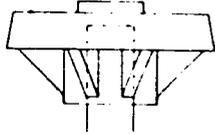
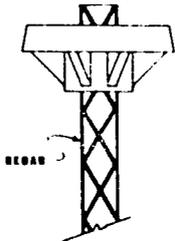


Steel Rebar Driver

NEW!	RDRV4	Rebar Driver for 1/2" Rebar	\$19.00 each
NEW!	RDRV5	Rebar Driver for 5/8" Rebar	\$19.00 each
NEW!	RDRV6	Rebar Driver for 3/4" Rebar	\$19.00 each

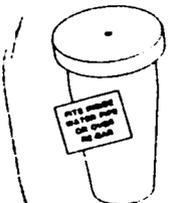
Open Center

Capped Center ("F")



Note: MORASSE cap designations ending in "F" have a capped center. Those without that designation have a center hole with ribs. Minimum order on MORASSE caps (capped or open center) is 200 each.

MORASSE Cap



Permamark minimum order: 200

PERMAMARK Cap

CATALOG

PAGE	ITEM	DESCRIPTION	200*	500*	1000*
4	P41 & P41F	MORASSE 2 3/8" diameter cap for 3/8" Rebar	\$0.79	\$0.74	\$0.69
4	P42 & P42F	MORASSE 2 3/8" diameter cap for 1/2" Rebar	\$0.79	\$0.74	\$0.69
4	P43 & P43F	MORASSE 2 3/8" diameter cap for 5/8" Rebar	\$0.79	\$0.74	\$0.69
4	M41 & M41F	MORASSE 2 3/4" diameter cap for 3/8" Rebar	\$1.15	\$1.09	\$1.03
4	M42 & M42F	MORASSE 2 3/4" diameter cap for 1/2" Rebar	\$1.15	\$1.09	\$1.03
4	M43 & M43F	MORASSE 2 3/4" diameter cap for 5/8" Rebar	\$1.15	\$1.09	\$1.03
4	M44 & M44F	MORASSE 2 3/4" diameter cap for 3/4" Rebar	\$1.15	\$1.09	\$1.03
4	C41 & C41F	MORASSE 2 3/4" Square cap for 3/8" Rebar	\$1.26	\$1.21	\$1.14
4	C42 & C42F	MORASSE 2 3/4" Square cap for 1/2" Rebar	\$1.26	\$1.21	\$1.14
4	C43 & C43F	MORASSE 2 3/4" Square cap for 5/8" Rebar	\$1.26	\$1.21	\$1.14
4	C44 & C44F	MORASSE 2 3/4" Square cap for 3/4" Rebar	\$1.26	\$1.21	\$1.14

\* Minimum Order: 200. Prices are for each cap. Colors available: Blue, Green, Orange, Yellow.

CATALOG

PAGE	ITEM	DESCRIPTION	200*	500*	1000*
4	PERM3000	PERMAMARK 3000- Fits 3/8" Rebar or 1/2" Pipe	\$21.50 /100	\$17.50 /100	\$15.50 /100
4	PERM4000	PERMAMARK 4000- Fits 1/2" Rebar or 3/4" Pipe	\$22.50 /100	\$18.50 /100	\$16.50 /100
4	PERM5000	PERMAMARK 5000- Fits 5/8" Rebar or 1" Pipe	\$24.50 /100	\$20.50 /100	\$18.50 /100
4	PERM6000	PERMAMARK 6000- Fits 3/4" Rebar	\$25.50 /100	\$21.50 /100	\$19.50 /100

\* Minimum Order: 200. Prices are per 100. Standard color is YELLOW. Optional color is RED.

CATALOG

PAGE	ITEM	DESCRIPTION	(NO CHARGE for stamping 11 or more markers)			
			1-24	25-99	100-249	250+
5	C1D	3 1/4" Domed Concrete Marker- Aluminum	\$6.21	\$5.39	\$5.08	\$4.99
5	C1F	3 1/4" Flat Concrete Marker- Aluminum	\$9.14	\$8.03	\$7.76	\$7.72
5	C1DB	3 1/4" Domed Concrete Marker- Brass	\$14.60	\$13.29	\$12.97	\$12.92
5	C1FB	3 1/4" Flat Concrete Marker- Brass	\$17.45	\$16.15	\$15.83	\$15.78
5	C4D	4" Domed Concrete Marker- Aluminum	\$8.93	\$7.82	\$7.55	\$7.51
5	C4DB	4" Domed Concrete Marker- Brass	\$18.62	\$17.31	\$16.99	\$16.94
5	C4FB	4" Flat Concrete Marker- Brass	\$21.70	\$20.39	\$20.07	\$20.02
5	CD2	2" Domed Concrete Marker- Aluminum	\$5.01	\$3.05	\$2.73	\$2.30
5	CD2B	2" Domed Concrete Marker- Brass	\$7.19	\$5.25	\$4.91	\$4.47
5	RT1F	3 1/4" Flat Rock Tablet- Aluminum	\$12.73	\$11.62	\$11.35	\$11.30
5	RT1D	3 1/4" Domed Rock Tablet- Aluminum	\$9.65	\$9.54	\$8.27	\$8.22
5	RT1FB	3 1/4" Flat Rock Tablet- Brass	\$20.45	\$19.14	\$18.82	\$18.77
5	RT1DB	3 1/4" Domed Rock Tablet- Brass	\$17.37	\$16.06	\$15.74	\$15.69
5	BROW1	3.2" Domed Right-Of-Way Marker- Brass	\$23.26	\$22.44	\$22.09	\$21.83
5	SPH	35mm Spherical Wall Marker	Please call for current price			
5	DRYLOK	Anchoring Cement for Markers	\$5.99/QT			
18	CAPMAG	1/2" diameter X 1/4" Ceramic Magnet for Markers	\$0.35 (ANY QUANTITY)			

CD2

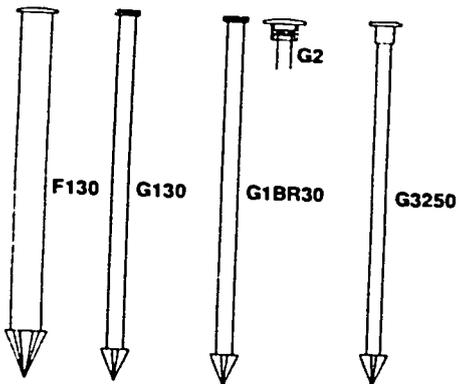
C1D

RT1D

BROW1

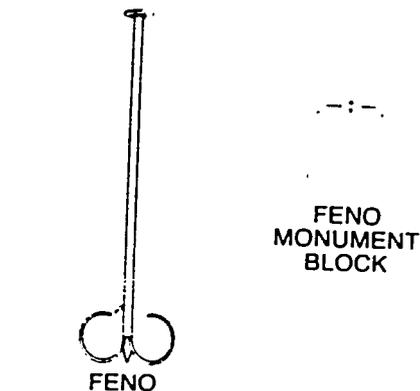
SPH

DRYLOK



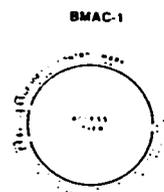
CATALOG PAGE	ITEM	DESCRIPTION	(NO CHARGE for stamping 11 or more monuments)				
			1-10	11-24	25-99	100-249	250+
6	F130	Aluminum Drive-in Cone Monument					
6	G130	Aluminum Drive-in Piston Monumen	\$31.75	\$28.64	\$25.04	\$24.16	\$24.02
6	G2 CAP	3 1/4" Aluminum Tap-on Cap for G1 & G1BR Monuments	\$16.12	\$14.40	\$12.06	\$11.49	\$11.40
6	G1BR30	Aluminum Drive-in Breakaway Monument	\$8.87	\$7.42	\$5.94	\$5.21	\$4.66
6	G1PVC30	Drive-in Monument (PVC Pipe, Aluminum cap & Point)	\$17.19	\$15.11	\$12.66	\$11.42	\$11.32
7	G3250	Aluminum Drive-in Monument w/ 2 1/2" Cap	\$23.43	\$17.52	\$13.92	\$13.04	\$12.90
7	G3325	Aluminum Drive-in Monument w/ 3 1/4" Cap	\$23.20	\$17.29	\$13.69	\$12.81	\$12.67
7	CEMETERY	Stamped and Cast Markers for Cemetery Marking	\$24.38	\$18.04	\$14.44	\$13.56	\$13.85

Available as a concrete marker or rebar/pipe cap.

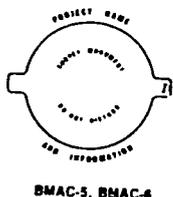


CATALOG PAGE	ITEM	DESCRIPTION	(NO CHARGE for stamping 11 or more markers)					
			1-10	11-24	25-99	100-249	250+	
8	F350BC	350mm Drive-in FENO Mark w/ 2" Brass cap	\$19.74	\$18.83	\$17.45	\$16.47	\$16.16	
8	F600BC	600mm Drive-in FENO Mark w/ 2" Brass cap	\$20.44	\$19.53	\$18.15	\$17.17	\$16.96	
8	F1000BC	1000mm Drive-in FENO Mark w/ 2" Brass cap	\$39.79	\$38.61	\$37.98	\$37.40	\$36.60	
8	F50BRA	2" Brass cap for 350mm & 600mm FENO Spike	\$11.84	\$10.93	\$9.55	\$8.57	\$8.41	
8	F50BRB	2" Brass cap for 1000mm FENO Spike	\$11.99	\$10.81	\$10.18	\$9.60	\$8.92	
8	F83BRA	3 1/4" Brass cap for 350mm & 600mm FENO Spike	\$14.84	\$12.22	\$11.41	\$10.95	\$10.80	
8	F83BRB	3 1/4" Brass cap for 1000mm FENO Spike	\$15.04	\$12.42	\$11.61	\$11.15	\$11.00	
8	F350SPK	350mm Drive-in FENO Mark (spike only-no cap)	\$7.90	(ANY QUANTITY)				
8	F600SPK	600mm Drive-in FENO Mark (spike only-no cap)	\$8.60	(ANY QUANTITY)				
8	F1000SPK	1000mm Drive-in FENO Mark (spike only-no cap)	\$27.80	(ANY QUANTITY)				
8	F350/600SQA	Square Aluminum Top for 350mm & 600mm FENO Spike	\$3.25	(ANY QUANTITY)				
8	F1000SQA	Square Galvanized Top for 1000mm FENO Spike	\$13.70	(ANY QUANTITY)				
8	F90WHITE	White Polyroc Monument Block for FENO Mark 350/600mm	\$4.30	(ANY QUANTITY)				
8	F90RED	Red Polyroc Monument Block for FENO Mark 350/600mm	\$4.30	(ANY QUANTITY)				
8	F90YELLOW	Yellow Polyroc Monument Block for FENO Mark 350/600mm	\$4.30	(ANY QUANTITY)				
8	F110WHITE	White Polyroc Monument Block for FENO Mark 1000mm	\$21.10	(ANY QUANTITY)				
8	F110RED	Red Polyroc Monument Block for FENO Mark 1000mm	\$21.10	(ANY QUANTITY)				
8	F110YELLOW	Yellow Polyroc Monument Block for FENO Mark 1000mm	\$21.10	(ANY QUANTITY)				
8	F350DRV	Driver for FENO 350mm	\$15.00	(ANY QUANTITY)				
8	F600DRV	Driver for FENO 600mm	\$15.00	(ANY QUANTITY)				
8	F1000DRV	Driver for FENO 1000mm	\$33.00	(ANY QUANTITY)				
8	F350SLV	Extension Sleeve for FENO 350mm	\$18.00	(ANY QUANTITY)				
8	F600SLV	Extension Sleeve for FENO 600mm	\$18.00	(ANY QUANTITY)				
8	F1000SLV	Extension Sleeve for FENO 1000mm	\$37.00	(ANY QUANTITY)				
8	F350/600GP	Ground Driving Plate for FENO 350 & 600mm	\$17.00	(ANY QUANTITY)				
8	F1000GP	Ground Driving Plate for FENO 1000mm	\$28.00	(ANY QUANTITY)				

- A - 7 (178 mm)
- B - 5-1/2" (140 mm)
- C - 1-1/4" (33 mm)
- D - 5 (127 mm)
- E - 2 (50.8 mm)
- F - 5/8" (161 mm)



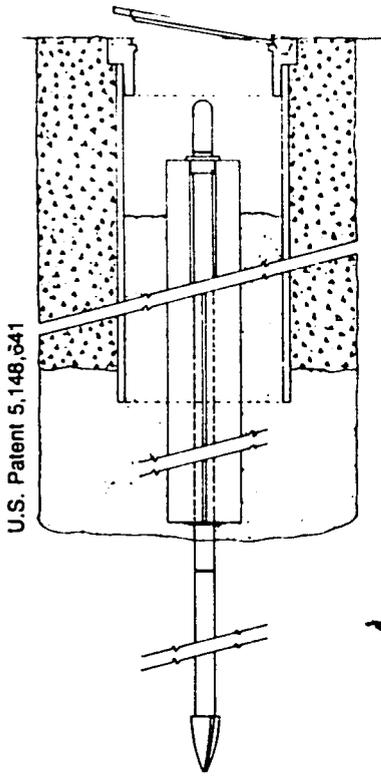
- A - 7-1/4" (184.4 mm)
- B - 5-9/16" (141.3 mm)
- C - 9" (227 mm)
- D - 1" (25.4 mm)
- E - 5/8" (161.2 mm) on BMAC-5
- F - 1-1/4" (31.8 mm)
- G - 5-7/8" (149.2 mm)



CATALOG PAGE	ITEM	DESCRIPTION	(NO CHARGE for stamping 11+ BMAC5/BMAC6 Access Covers. BMAC1 available plain or with CAST logo only)				
			1-24	25-99	100-249	250+	
15	BMAC1	NGS Style Access Cover for 5" PVC (Exposed Dbl. Hinge)	\$34.44	\$31.88	\$29.52	\$28.55	
15	BMAC5*	Access Cover for 5" PVC (Recessed Hinge)	\$50.75	\$47.90	\$46.65	\$45.70	
15	BMAC6*	Access Cover for 6" PVC (Recessed Hinge)	\$40.48	\$38.63	\$37.12	\$33.65	
15	TAM3	Tamper-proof Tool for BMAC5 & BMAC6	\$18.70				
15	5PVC	5" Schedule 40 PVC Pipe	\$7.50 /FT				
15	6PVC	6" Schedule 40 PVC Pipe	\$8.40 /FT				
14	UV6800	Adhesive for BMAC/PVC Pipe (Fits Std. Caulking Gun)	\$8.50/CARTRIDGE				

\* BMAC5/BMAC6 Access Covers available with optional tamper-proof screws; order TAM3 Tamper-proof Tool for access

175



Rod Monument

See Rod Driving Accessories On Page 9 Of This Price List.

CATALOG PAGE	ITEM	DESCRIPTION	
11	SS91604	9/16" diameter x 4' Stainless Steel Rod w/thread	Please call for current price
11	SS12	9/16" Stainless Steel Point	Please call for current price
11	SSDP1	Stainless Steel Spherical Datum Point	Please call for current price

\*NOTE: Stainless steel rods packaged 15 per box.

CATALOG PAGE	ITEM	DESCRIPTION	<240	240+	
11	H1R1	5/8" diameter x 1' Aluminum Rod w/thread	\$8.33	\$8.24	*(Packaged 30 per box)
11	H1R2	5/8" diameter x 2' Aluminum Rod w/thread	\$9.73	\$9.08	*(Packaged 30 per box)
11	H1R3	5/8" diameter x 3' Aluminum Rod w/thread	\$8.47	\$7.42	*(Packaged 30 per box)
11	H1R4	5/8" diameter x 4' Aluminum Rod w/thread	\$10.99	\$10.25	*(Packaged 30 per box)
11	H12	Spiral Point for 5/8" Rod	\$2.78	\$2.35	
11	M13	Locking Connector Thread for 5/8" and 3/4" Rod	\$0.83	\$0.74	

\*NOTE: 5/8" Aluminum rods packaged 30 per box. Call for "broken case" pricing.

CATALOG PAGE	ITEM	DESCRIPTION	(NO CHARGE for stamping 11 or more markers)			
			1-24	25-99	100-249	250+
11	H14	3 1/4" Domed Cap for 5/8" Rod w/magnet	\$4.42	\$4.15	\$3.98	\$3.49
11	H15	2 1/2" Domed Cap for 5/8" Rod w/magnet	\$3.82	\$2.58	\$3.44	\$3.02

CATALOG PAGE	ITEM	DESCRIPTION	<240	240+	
11	HDRR1	3/4" diameter x 1' Aluminum Rod w/thread	\$9.22	\$8.61	*(Packaged 20 per box)
11	HDRR2	3/4" diameter x 2' Aluminum Rod w/thread	\$10.05	\$9.38	*(Packaged 20 per box)
11	HDRR3	3/4" diameter x 3' Aluminum Rod w/thread	\$9.39	\$8.23	*(Packaged 20 per box)
11	HDRR4	3/4" diameter x 4' Aluminum Rod w/thread	\$12.51	\$11.68	*(Packaged 20 per box)
11	HDR12	Spiral Point for 3/4" Rod	\$3.28	\$2.88	
11	M13	Locking Connector Thread for 5/8" and 3/4" Rod	\$0.83	\$0.74	

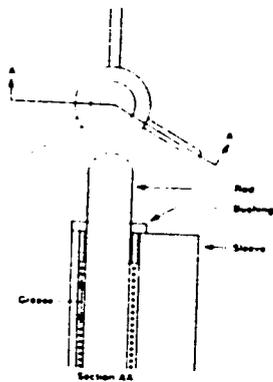
\*NOTE: 3/4" Aluminum rods packaged 20 per box. Call for "broken case" pricing.

CATALOG PAGE	ITEM	DESCRIPTION	(NO CHARGE for stamping 11 or more markers)			
			1-24	25-99	100-249	250+
11	HDR14	3 1/4" Domed Cap for 3/4" Rod w/magnet	\$4.47	\$4.19	\$4.02	\$3.50
11	HDR15	2 1/2" Domed Cap for 3/4" Rod w/magnet	\$3.87	\$3.62	\$3.50	\$3.03

CATALOG PAGE	ITEM	DESCRIPTION	<240	240+	
11	TSHR18	5/8" x 18" Top Security Rod w/thread	\$10.77	\$9.07	*(Packaged 15 per box)
11	TSHR3	5/8" x 3' Top Security Rod w/thread	\$16.20	\$13.64	*(Packaged 15 per box)
11	M13	Locking Connector Thread for 5/8" and 3/4" Rod	\$0.83	\$0.74	
11	DSLKH	Disc-Lock Washers for 5/8" Rod (pair)	\$1.60	\$1.35	
11	TSHT1	Threaded Insert for 5/8"	\$3.60	\$2.71	

\*NOTE: 5/8" Top Security rods packaged 15 per box. Call for "broken case" pricing.

CATALOG PAGE	ITEM	DESCRIPTION	(NO CHARGE for stamping 11 or more markers)			
			1-24	25-99	100-249	250+
11	TSH14	Top Security Cap for 5/8" Top Security Rod	\$9.29	\$8.02	\$7.72	\$7.66



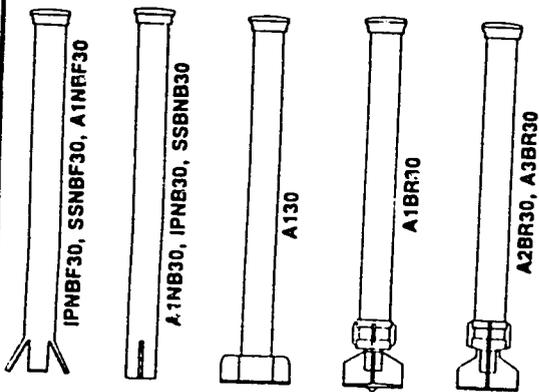
Top Security Sleeve Rod Monument

CATALOG PAGE	ITEM	DESCRIPTION	<240	240+	
11	TSDR18	3/4" x 18" Top Security Rod w/thread			
11	TSDR3	3/4" x 3' Top Security Rod w/thread	\$11.78	\$9.92	*(Packaged 10 per box)
11	M13	Locking Connector Thread for 5/8" and 3/4" Rod	\$18.47	\$15.55	*(Packaged 10 per box)
11	DSLKD	Disc-Lock Washers for 3/4" Rod (pair)	\$0.83	\$0.74	
11	TSDTI	Threaded Insert for 3/4"	\$1.63	\$1.38	
11	RODMAG	1/4" diameter x 1/2" Magnet for Rods	\$3.94	\$3.33	
		*NOTE: 3/4" Top Security rods packaged 10 per box. Call for "broken case" pricing.	\$0.60		

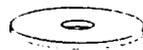
CATALOG PAGE	ITEM	DESCRIPTION	(NO CHARGE for stamping 11 or more markers)			
11	TSD14	Top Security Cap for 3/4" Top Security Rod (w/TSDTI and DSLKD)	1-24	25-99	100-249	250+
			\$9.10	\$7.83	\$7.69	\$7.38

CATALOG PAGE	ITEM	DESCRIPTION	<240	240+	
14	TSS18	Top Security Sleeve, 18 inch (w/ endcaps)**	\$6.65	\$5.40	
14	TSS3	Top Security Sleeve, 3 ft (w/ endcaps)**	\$10.00	\$8.13	
14	TSS4	Top Security Sleeve, 4 ft (w/ endcaps)**	\$12.39	\$10.86	
14	TSSGREASE	NO-TOX Grease for TSS3 & TSS4 (Fits Std. Grease Gun)	\$6.50	CARTRIDGE	
		** Be sure to specify endcap size- 9/16" (yellow), 5/8" (red), or 3/4" (blue)			

CATALOG PAGE	ITEM	DESCRIPTION	(NO CHARGE for stamping 11 or more monuments)				
16	A1NB30	Aluminum Notch Base Monument (Not Flared)	1-10	11-24	25-99	100-249	250+
16	A1NBF30	Aluminum Notch Base Monument (Flared)	\$21.38	\$16.65	\$13.40	\$12.61	\$12.28
16	SS5NBF30	Stainless Steel Notch Base Monument (Flared) Sch5	\$21.38	\$16.65	\$13.40	\$12.61	\$12.28
16	SSBNB30	Stainless Steel Notch Base Monument (Not Flared) Sch5	\$39.10	\$34.24	\$30.95	\$30.15	\$30.02
16	SSBNBF30	Stainless Steel Notch Base Monument (Flared) Sch10	\$44.64	\$39.78	\$37.55	\$36.79	\$35.56
16	IPNB30	Iron Pipe Base Monument (Not Flared)	\$44.64	\$39.78	\$37.55	\$36.79	\$35.56
16	iPNBF30	Iron Pipe Base Monument (Flared)	\$35.15	\$30.29	\$27.01	\$26.21	\$26.08
16	A130	Aluminum Standard Monument (Cast Magnetic Base)	\$35.15	\$30.29	\$27.01	\$26.21	\$26.08
16			\$32.52	\$29.41	\$25.80	\$24.93	\$24.28
17	A1BR30	Aluminum Break-Off Monument (Alum. Cap, Pipe, & Base)	\$36.26	\$30.35	\$26.75	\$25.87	\$24.80
17	A2BR30	Alum. Break-Off Monument (Alum. Cap & Pipe, Plastic Base)	\$27.76	\$21.85	\$18.24	\$17.37	\$16.82
17	A3BR30	Break-Off Monument (Alum. Cap, PVC Pipe, Plastic Base)	\$25.75	\$19.84	\$16.24	\$15.36	\$14.92
NEW!!	A6BR30	Break-off Monument (Plastic Cap & Base, PVC Pipe)	\$20.69	\$17.29	\$15.61	\$14.97	\$14.64



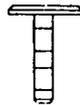
Our customers generally find that the standard 30" length monuments listed above meet or exceed their needs. Should "custom-made" extra lengths be required for the monuments on your project, please call or fax us for a price quotation. If you have any questions, please call us.



SST1



SNM1



BPM1



CAPMAG



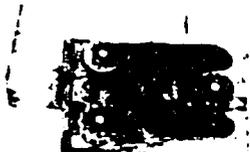
BPM1



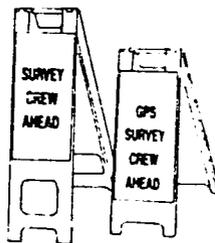
Star Drill



Letter &amp; Number Stamp Set



Rotary Stamp Set



Plasticade

PLEASE  
PROTECT  
NEARBY  
**SURVEY  
MARKER**

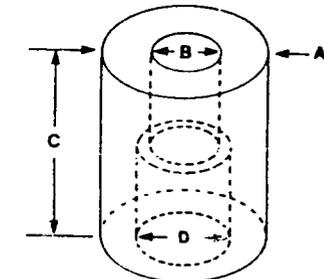
Polyethelene Sign

## CATALOG

PAGE	ITEM	DESCRIPTION	<100	100-249	250+
18	SNM1	Steel Nail Marker for Asphalt & Wood / 1" Convex Top	\$0.93	\$0.87	\$0.79

## CATALOG

PAGE	ITEM	DESCRIPTION	(NO CHARGE for stamping 100+ washers)			
			1-24	25-99	100-249	250+
18	AT1	1 1/2" diameter Aluminum Washer for 1/4" PK Nail	\$0.89	\$0.79	\$0.71	\$0.58
18	BT1	1 1/2" diameter Brass Washer for 1/4" PK Nail	\$1.69	\$1.49	\$1.19	\$1.08
18	BT2	2" diameter Brass Washer for 1/4" PK Nail	\$2.07	\$1.87	\$1.57	\$1.46
18	SST1	1 1/2" diameter Stainless Steel Washer for 1/4" PK Nail	\$0.92	\$0.82	\$0.74	\$0.61
18	BP1	Brass Marker for Concrete w/anchoring plug w/"SURVEY MARK"	\$1.58	\$1.38	\$1.08	\$0.97
18	BP1P	Brass Marker for Concrete w/anchoring plug. w/up to 17 char.	\$1.58	\$1.38	\$1.08	\$0.97
18	BPM1	Countersink Drill Bit for BPM1 Marker	\$98.50			
18	SD34	3/4" Star Drill (for C1 Markers)	\$6.87			
18	SD100	1" Star Drill	\$5.80			
18	SD114	1 1/4" Star Drill for (RT1 Markers)	\$14.27			
18	CAPMAG	1/2" diameter x 1/4" Ceramic Magnet for Markers	\$0.35			



ANVIL

A = 2-23/32" (69mm)  
B = 1-1/8" (28mm)  
C = 3" (77mm)  
D = 1.25" (32mm)

## CATALOG

PAGE	ITEM	DESCRIPTION	Each
19	ANVIL	Anvil for Stamping Aluminum Rebar and Rod Caps	\$22.00
19	COMBO18	1/8" Combination Steel Letter & Number Stamp Set	\$34.04
19	COMBO316	3/16" Combination Steel Letter & Number Stamp Set	\$38.85
19	STL18	1/8" Steel Letter Stamp Set (27 Characters)	\$34.75
19	STN18	1/8" Steel Number Stamp Set (9 Characters)	\$11.89
19	STL316	3/16" Steel Letter Stamp Set (27 Characters)	\$39.30
19	STN316	3/16" Steel Number Stamp Set (9 Characters)	\$14.55
19	ROS18	1/8" Rotary Letter & Number Stamp Set	\$240.00
19	ROS316	3/16" Rotary Letter & Number Stamp Set	\$240.00
19	RL/N18	Replacement Letters & Numbers- 1/8"	\$2.90
19	RL/N316	Replacement Letters & Numbers- 3/16"	\$3.95

## CATALOG

PAGE	ITEM	DESCRIPTION	1	2-3	4+
19	NCES*	Narrowcage Plasticade 13'x 45"	\$51.75	\$49.80	\$46.80
19	MCES*	Minicade Plasticade 13'x 36"	\$50.75	\$48.80	\$45.80

\*Plasticade available in Orange, White, or Yellow and include a decal on each side to read either "SURVEY CREW AHEAD" or "GPS SURVEY AHEAD"

## CATALOG

PAGE	ITEM	DESCRIPTION	25-49	50-99	100-249	250-499	500-999	1000+
19	POLYSIGN4X6	Polyethelene Sign 4"x6" (.055 Gauge)	\$6.58	\$5.18	\$3.56	\$2.52	\$1.92	\$1.65
19	POLYSIGN6X8	Polyethelene Sign 6"x8" (.055 Gauge)	\$7.54	\$6.10	\$4.88	\$3.80	\$3.38	\$2.90
19	POLYSIGN9X12	Polyethelene Sign 9"x12" (.055 Gauge)	\$9.90	\$8.94	\$8.45	\$7.82	\$7.09	\$5.83
19	POLYSIGN4X6	Polyethelene Sign 4"x6" (.125 Gauge)	\$7.52	\$6.10	\$3.85	\$2.81	\$2.21	\$1.94
19	POLYSIGN6X8	Polyethelene Sign 6"x8" (.125 Gauge)	\$8.02	\$6.90	\$5.83	\$4.93	\$4.67	\$4.25
19	POLYSIGN9X12	Polyethelene Sign 9"x12" (.125 Gauge)	\$14.43	\$11.54	\$10.04	\$9.20	\$8.30	\$7.37

— Price for additional 1 or 2 color printing, add \$0.60 per sign per color. Quantity variance is ±10%. Sign colors: orange, white, or yellow.

## CATALOG

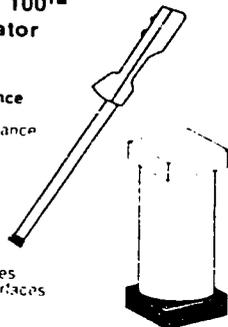
PAGE	ITEM	DESCRIPTION	50	100	250	500	1000	5000
19	TT3X5	3"x5"x.020 PVC Sign (Custom Sign)	\$2.10	\$1.24	\$0.69	\$0.46	\$0.36	\$0.28
19	TT3X5SM	3"x5"x.020 PVC Sign (Survey Marker)	\$0.56	\$0.43	\$0.38	\$0.34	\$0.29	\$0.23
19	TTBPEN	Black Permanent Ink Pen for TT Model Signs	\$1.95 each	\$15.00 (Box of 12)				

— One ink color only. Quantity variance on TT3X5 sign: ±10%. Sign colors available on TT3X5: blue, green, lavender, orange, red, white, or yellow. Sign colors available on TT3X5SM: orange, white, or yellow.

**CST Magna-Trak 100™  
Magnetic Locator**

**Peak Signal Performance**

- Deep sensing performance
- Water Resistant Case
- Light Weight
- Easy to operate
- Excellent battery life
- Quality Built



**DEEP-1 Magnetic Marker**

Depth reception varies depending on ground surfaces



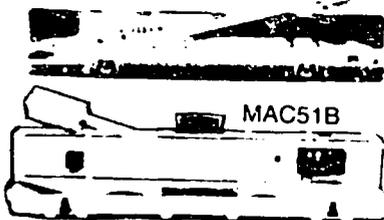
**GA-72CV**

Schonstedt's latest Model ... the GA-72CV Magnetic Locator features:

- Visual and audio pinpointing
- Meter display
- Distinguish between vertical and horizontal pipes

The complete line of Schonstedt Magnetic Locators and accessories is available from Berntsen. Call us now for fast delivery!

**GA52Cx**



**MAC51B**



**Carsonite**

**CATALOG**

PAGE	ITEM	DESCRIPTION	(300 per Case)*	("Broken Case" Price)*
20	DEEP1FB	DEEP1 Fluorescent Blue (SW)	\$0.99 per DEEP1	\$1.15 per DEEP1
20	DEEP1C	DEEP1 Clear (Under the Monume: ')	\$0.99 per DEEP1	\$1.15 per DEEP1
20	DEEP1S	DEEP1 Metallic Silver (NE)	\$0.99 per DEEP1	\$1.15 per DEEP1
20	DEEP1FP	DEEP1 Fluorescent Pink (SE)	\$0.99 per DEEP1	\$1.15 per DEEP1
20	DEEP1FO	DEEP1 Fluorescent Orange (NW)	\$0.99 per DEEP1	\$1.15 per DEEP1
20	DEEP1UB	DEEP1 Blue (Water)	\$0.99 per DEEP1	\$1.15 per DEEP1
20	DEEP1UO	DEEP1 Orange (Communication)	\$0.99 per DEEP1	\$1.15 per DEEP1
20	DEEP1UY	DEEP1 Yellow (Gas)	\$0.99 per DEEP1	\$1.15 per DEEP1
20	DEEP1UG	DEEP1 Green (Sewer)	\$0.99 per DEEP1	\$1.15 per DEEP1
20	DEEP1UR	DEEP1 Red (Electric)	\$0.99 per DEEP1	\$1.15 per DEEP1

\*DEEP1 Magnetic Markers are packed 300 per case. For less than full case quantities unit price is \$1.15.

**CATALOG**

PAGE	ITEM	DESCRIPTION	Each
NEW!!	CST100	CST MAGNA TRAK 100 Magnetic Locator (w/soft case)	Please call for current price
NEW!!	GA52Cx	SCHONSTEDT Magnetic Locator (w/case)	Please call for current price
NEW!!	GA72CV	SCHONSTEDT Magnetic Locator w/meter (w/case)	Please call for current price
20	MAC51B	SCHONSTEDT Magnetic & Cable Locator	Please call for current price
20	MACSC	Signal Clamp for MAC51B	Please call for current price
20	MACMT	Mini-transmitter for MAC51B	Please call for current price
20	GAHS	Headphones for GA52C, GA72CV, MAC51B	Please call for current price

**CATALOG**

PAGE	ITEM	DESCRIPTION	30-480 Posts*	510-990 Posts*	1020+ Posts*
21	CBM206004	5 Foot Fiberglass Orange Post w/SM110 Decal	\$8.90	\$8.16	\$7.35
21	CBM207204	6 Foot Fiberglass Orange Post w/SM110 Decal	\$10.55	\$9.65	\$8.70
21	CBM208404	7 Foot Fiberglass Orange Post w/SM110 Decal	\$12.20	\$11.15	\$10.05
21	CBM2072NS	6 Foot Fiberglass Orange Post w/No Decal	\$9.95	\$9.05	\$8.15
21	D250R	Boundary Marker Driver	\$49.00		
21	DP18	Pilot Hole Punch	\$8.95		
21	CFW250	Featherweight Driving Cap	\$6.00		
21	CBM207204KT	Intro-Kit (20 posts w/SM110 Decal, D250, DP18)	\$199.00		
21	CPP-1R	Post Puller	\$115.00		
21	DP100R	Pilot Hole Driver	\$79.00		

\* 20 POSTS PER CASE

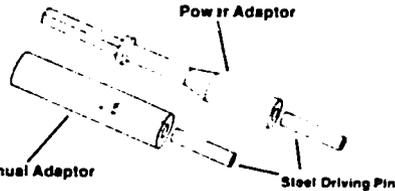
-Prices for Carsonite fiberglass posts and installation accessories do not include shipping charges. Please contact Berntsen for current charges

-Prices include standard decal (SM110). Other decals and lengths available at additional cost.

-Carsonite boundary marker posts are packed 20 per case. Add 15% for "broken cases".



**LIXIE  
Deadblow Hammers**



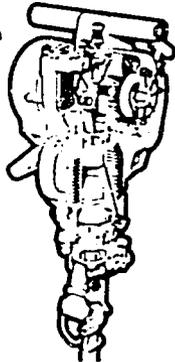
Manual Adaptor

Steel Driving Pin

**Pionjar  
120**

• Ideal for installing GPS Monument Systems

• Great for highway, public utility or railroad right-of-way work



**KANGO 978S  
(Drill Bit Not Included)**

CATALOG PAGE	ITEM	DESCRIPTION	Each
22	LX3	3 1/2 Pound Deadblow Hammer/ 2" Face/14" Handle	\$50.42
22	LX6	6 1/2 Pound Deadblow Hammer/ 2.5" Face/17" Handle	\$74.17
22	LX7	7 Pound Deadblow Hammer/2.5" Face/32" Handle	\$107.67
22	LX10	10 1/2 Pound Deadblow Hammer/3" Face/19" Handle	\$113.50
22	LX11	11 Pound Deadblow Hammer/3" Face/32" Handle	\$156.67
22	LX300FU	3 Inch Urethane Replacement Face	\$25.60
22	LX250FU	2.5 Inch Urethane Replacement Face	\$17.59
22	LX200FU	2 inch Urethane Replacement Face	\$11.25
22	LX3HS	Replacement Handle for LX3	\$8.25
22	LX6HS	Replacement Handle for LX6	\$8.25
22	LX7HS	Replacement Handle for LX7	\$24.50
22	LX10HS	Replacement Handle for LX10	\$12.94
22	LX11HS	Replacement Handle for LX11	\$24.50

CATALOG PAGE	ITEM	DESCRIPTION	Each
22	MDA	Manual Driving Adapter for 9/16", 5/8" or 3/4" Rod (Please specify)	\$90.00
22	PDA	Power Driving Adapter for 9/16", 5/8" or 3/4" Rod (Please specify)	\$90.00
22	M1DPA	Steel Drive Pin for 5/8" or 3/4" Rod	\$7.50
22	P120*	PIONJAR 120 Gasoline Powered Breaker/Driver	Please call for current prices.
22	PJTOOLS	PIONJAR Tools & Accessories available	Please call for current prices.
NEW!!	KANGO	KANGO 978S Gasoline Powered Hammer/Drill	Please call for current prices.
NEW!!	KGTOOLS	KANGO Tools & Accessories available	Please call for current prices.

\* PIONJAR 120 available for rental. Call for rates and availability.

Please turn to pages 10 thru 12 for personalized design layout drawings and ordering information. Questions or comments about our products and services?

Call us at **1-800-356-7388.**

Business Hours

8AM to 4:30 PM

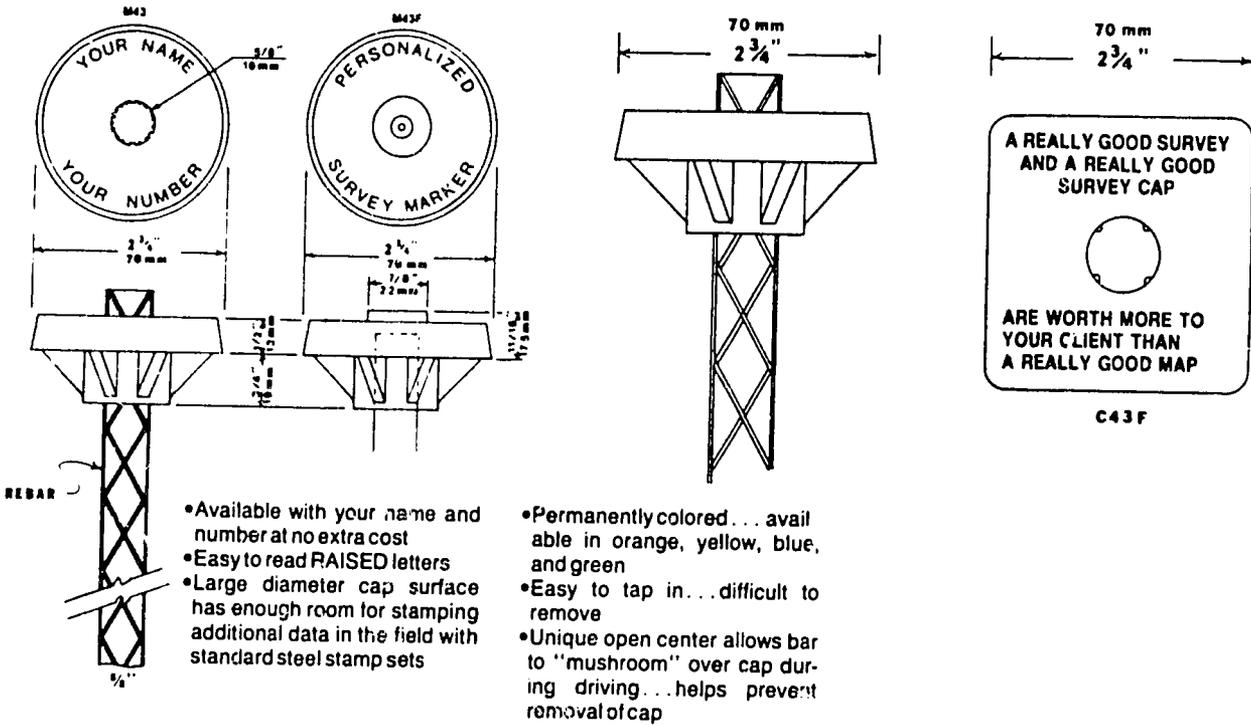
Monday thru Friday

(24 Hour FAX Every Day)

**TOLL FREE FAX 1-800-249-9794**

**Save Time and Money. Order by our TOLL FREE FAX Today!**

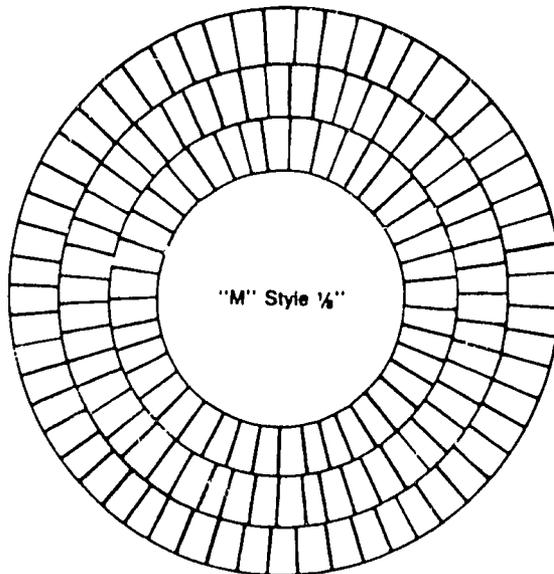
# MORASSE<sup>®</sup> Plastic Survey Caps Layout



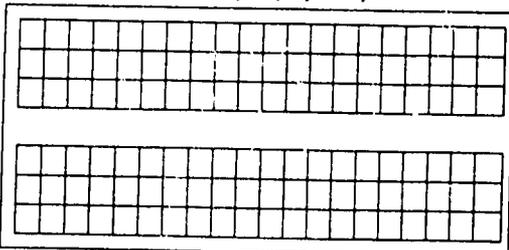
Use the layout at the right or below for MORASSE<sup>®</sup> plastic caps. Be sure to indicate your style and color choice and send this layout with the order form.

- P41 & P41F = 2 5/8" diameter cap for 3/8" rebar
- P42 & P42F = 2 3/8" diameter cap for 1/2" rebar
- P43 & P43F = 2 3/4" diameter cap for 5/8" rebar
- M41 & M41F = 2 3/4" diameter cap for 3/8" rebar
- M42 & M42F = 2 3/4" diameter cap for 1/2" rebar
- M43 & M43F = 2 3/4" diameter cap for 5/8" rebar
- M44 & M44F = 2 3/4" diameter cap for 3/4" rebar or 1/2" pipe
- C41 & C41F = 2 3/4" square cap for 3/8" rebar
- C42 & C42F = 2 3/4" square cap for 1/2" rebar
- C43 & C43F = 2 3/4" square cap for 5/8" rebar
- C44 & C44F = 2 3/4" square cap for 3/4" rebar or 1/2" pipe

All cap numbers ending with "F" have a capped center. Those caps without this designation have center hole with ribs.



## "C" Style (Square)



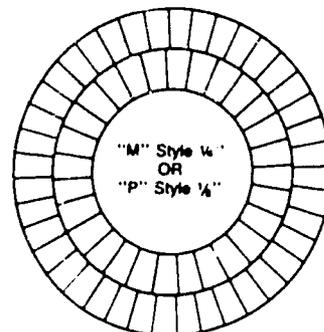
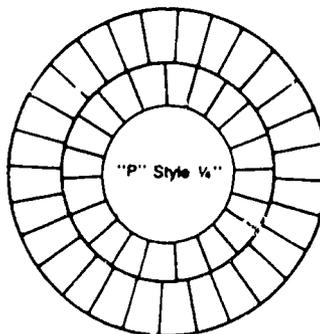
Three lines are available on the upper and bottom part of cap (total 6 lines) On each line: 20 letters of 1/8" or 16 letters of 1/4"

## Center Designs



## COLOR Choice:

- Orange
- Blue
- Yellow
- Green



101

# Berntsen

P.O. Box 8670  
Madison, WI 53708-8670  
PHONE TOLL FREE 1-800-356-7388

# Fax or Mail Order Form

## TOLL FREE FAX 1-800-249-9794

### Method of Payment

- VISA®  MasterCard  American Express®  
 Payment Enclosed  C.O.D.  
 (Make your check payable to Berntsen International, Inc.)  
 Sorry, no C.O.D. on PERMAMARK products.

Name on Card \_\_\_\_\_  
 My Credit Card Account No. is \_\_\_\_\_

Expiration Date \_\_\_\_\_

Signature \_\_\_\_\_ Date \_\_\_\_\_

### Sales Tax Exemption

The undersigned is exempt from tax

Name \_\_\_\_\_

State Exempt Tax No. \_\_\_\_\_

Is certificate on file?  Yes  No

If not, please send with order

Is this your first order from us?

Yes  No

### CHARGE TO

Type or Print

Institution, Company or Individual (please print) \_\_\_\_\_

Address \_\_\_\_\_

City, State, Zip (Zip Code must be furnished) \_\_\_\_\_

Telephone \_\_\_\_\_ FAX Number \_\_\_\_\_

(Signature of Duly Authorized Official) \_\_\_\_\_

### SHIP TO (Shipments must have street or highway address)

Type or Print

Same as Charged \_\_\_\_\_

Street Address \_\_\_\_\_

City, State, Zip (Zip Code must be furnished) \_\_\_\_\_

Telephone \_\_\_\_\_

Attention \_\_\_\_\_

(Title) \_\_\_\_\_

- DELIVERY** - We ship by UPS or truck freight depending on the total weight of your order. While an average order is shipped within 2 weeks, please allow additional time for personalized items, and 5 to 7 working days for transportation.
  - PAYMENT - F:** for your convenience, we accept MasterCard, VISA and The American Express Card. You may, of course, enclose your check or money order or have most items shipped C.O.D. Sorry, no C.O.D. on PERMAMARK products.
  - SHIPPING AND HANDLING\*** Prices in this brochure do not include shipping charges. Please call or write for shipping information on your order, or add 10% for shipping and handling on BERNTSEN and PERMAMARK products. On all other items, such as CARSONITE, call for additional information on shipping charges.
  - SALES TAX** - Wisconsin and Arkansas residents add State, City, and County tax as may be applicable.
    - Prices DO NOT include freight charges
    - Price List is based on stamped lettering only. Please call for quotation on custom cast lettering and designs.
    - NO stamping charges on 11+ caps (\$30.00 stamping set up charge for 1-10 caps).
    - Prices are in U.S. Dollars
- Office hours are 8am to 4:30pm Central Time (M-F). Answering machine operates at all other times. 24 hour FAX line: 1-800-249-9794.

**CUSTOM CAST MONUMENTS:** Call for quotations on all custom cast monuments and markers. Camera ready art may be required.  
**CUSTOM MONUMENTS:** Berntsen welcomes the opportunity to offer a quotation on custom survey monuments to meet your specifications.  
**TERMS:** Terms and prices subject to change without notice. Because product innovation is a continuing endeavor at Berntsen, specifications and prices are subject to change without notice.

### Price list P-40 supersedes all previous price lists

The unique design and layout of this brochure and the products depicted herein, and the arbitrary, distinctive numbering system for Berntsen products all originated with Berntsen International, Inc. and are the result of years of research by Berntsen to determine not only exactly what our customers wanted, but to best present our customers with the wide range of products available from Berntsen. No copying or reproduction of the format of this brochure or any of the designs, layouts, drawings, or combinations of designs or parts manufactured by Berntsen is permissible without the express written consent of Berntsen. Many Berntsen products are protected by U.S. Patents including 243,159; 243,319; 4,087,945; 4,502,258; 3,748,795; 4,625,473. Other patents pending.

Quantity	Item Number	Item Description	Unit Price	Total Price

### Use standard layouts on reverse side for personalized markers.

Price list P-39 contains most of the more popular items offered by Berntsen International, Inc. All items are priced F.O.B. SHIPPING POINT (Madison, WI for Berntsen items or Carson City, NV for most Carsonite items).

January 1995 \*Add 10% for shipping and handling on Berntsen & Permamark products for delivery in the 48 states (not including Alaska and Hawaii) or call for shipping charges to your destination anywhere in the world

Sub Total	
10% Shipping & Handling	
Sub Total	
Tax (WI, AR)	
Total US\$	

Check here and we'll send our FREE catalog.

182



Republic of Armenia  
Ministry of Agriculture  
Armgirozem Institute

Under the Land Reform policy being carried out in Armenia, the Armenian farmers at last, became the owners of their own plots. There are more than 300 000 private farmers in Armenia and they have no legal documents but temporary certificates which approve their property rights.

Such legal document might become The State Act on Land Property Rights approved by the Government.

This document should include the name of the property owner, plan and dimensions of the plots around the house in the rural area , as well as the dimensions of the agricultural land transferred to farm workers from the former state or collective farms.

The distribution of The State Act on Land Property Rights is the final stage in the Land Reform process. Prior to that, there is a great number of topographical, land-surveying, evaluation and other works to be done.

a) On-site works

- updating of the existing mapping and cartographical materials
- survey of the occupied territories
- measuring of the plots and privatized agricultural lands
- setting of the adjacent borders and their coordination
- checking of the topographical survey
- collection of evaluation data for the further discussions.

b) Off-site works

- mapping of the administrative boarding of separate plots
- mapping of the developed rural areas
- listing of the grounds and privatized plots
- processing and filling of all the forms of The State Acts on Land Property Rights.



# Digital Link *Atlanta*

1-20-1995

Mr. Walter G. Robillard, Esq.  
*Walter G. Robillard & Associates, P.C.*  
8215 Roswell Road, Building 800  
Atlanta, Georgia 30350

Dear Mr. Robillard,

I appreciate the opportunity of offering this proposal for the reproduction of the documents we discussed which are located in Yerevan, Armenia. Please let me know if you need further information, or if you have any questions concerning this proposal.

Good luck with the project.

Sincerely



Dell Howard  
President

Page 2

**SCOPE**

It is my understanding that there are appx. 4-5 thousand "metal mount" documents that are appx. 36x42 inches in size. These documents are located in Yerevan, Armenia, and shall need to remain there for the duration of this project. These documents are said to be in "fair" to "good" shape, and will need to be duplicated in a manner that provides the following:

- Archival Permanence
- Reproducibility
- Adequate Drafting Surface
- Good Legibility (equal to or better than the original)

These requirements shall be met in one of two ways...

**Option 1** to do a partial reproduction "on-site" which allows for the original "metal mounts" to remain in Yerevan, with the bulk of the final full size reproduction to be done in the offices of Digital-Link/Atlanta, Inc., in Atlanta, Georgia.

**Option 2** is to do all the reproduction "on-site" in Yerevan.

In any event, the final deliverable proposed here is a 4mil polyester mylar reproducible with a photographic silver image that meets ANSI standards for both accuracy and archival permanence. A by-product of the process proposed is a miniature negative image of each "metal mount". This negative is 8.5x11 inches.

I understand that the exact number of mylar copies per "metal mount" has not yet been determined, this proposal offers an "additional rate" that shall be applied to each additional mylar requested.

***TRAVEL SCHEDULE***

Dell Howard will spend one week in Yerevan to acquire space for production, inspect the originals, and hire 2-3 local individuals to assist in the production.

Al Edge will spend two weeks in Yerevan at the time of equipment installation to setup the production facility and start the project.

Dell Howard will replace Al Edge for the 2nd two week period to continue production.

Jim Gaither will replace Dell Howard for the duration of the negative production portion of the project estimated to be 6 weeks.

If production of the full size mylars is to be done on site this will increase our on-site presence by 8 weeks per set of final mylars. If this is the case, there will be an additional trip required to replace Jim Gaither.

140

Costs for this project are listed in 3 categories, *Administrative, Setup, and Production*. These costs are as follows:

***Administrative:  
Option 1***

<b><i>Site Selection Trip</i></b>	
Airfare	1,500.00
Perdiem 7 @\$120	840.00
Hourly Rate 40@\$60	2,400.00

<b><i>Installation/Setup Trip</i></b>	
Airfare	1,500.00
Perdiem 14 @\$120	1,680.00
Hourly Rate 40 @\$40	1,600.00

<b><i>Production Replacement Trip</i></b>	
Airfare	1,500.00
Perdiem 14 @\$120	1,680.00

<b><i>Production Replacement Trip</i></b>	
Airfare	1,500.00
Perdiem 45 @\$120	5,400.00

<b><i>Total</i></b>	<b><i>19,600.00</i></b>
---------------------	-------------------------

*Equipment/Setup  
Option 1*

Opti-Copy Camera	\$10,500.00
Shipping	10,000.00
Installation	14,220.00
Agfa Processor 24"	6,000.00
Shipping	2,000.00
Site Prep	6,000.00
<b>Total</b>	<b>48,720.00</b>

190

Page 6

**Production  
Option 1**

Negatives	
5000 @ \$10.00 ea	50,000.00
Mylars 36x42 inches	
5000 @ \$66.00 ea	330,000.00
Shipping Mylars	8,000.00
<b>Total (1 set)</b>	<b>388,000.00</b>
Additional Mylars (1 set)	
5000 @ 54.00 ea	270,000.00

***COST SUMMARY***

***Option 1 Partial production in Yerevan, with final production in Atlanta.***

Administrative	19,600.00
Equipment/Setup	48,720.00
Production	388,000.00
<b><i>Total</i></b>	<b><i>\$456,320.00</i></b>
 <b><i>Additional Mylar Set</i></b>	 <b><i>\$270,000.00</i></b>

**TOTAL ON SITE PRODUCTION**

If the option to have production done totally in Yerevan, the following costs/prices apply...

**Administrative:  
Option 2**

**Site Selection Trip**

Airfare	1,500.00
Perdiem 7 @\$120	840.00
Hourly Rate 40@\$60	2,400.00

**Installation/Setup Trip**

Airfare	1,500.00
Perdiem 14 @\$120	1,680.00
Hourly Rate 40 @\$40	1,600.00

**Production Replacement Trip**

Airfare	1,500.00
Perdiem 14 @\$120	1,680.00

**Production Replacement Trip**

Airfare	1,500.00
Perdiem 45 @\$120	5,400.00

**Production Replacement Trip**

Airfare	1,500.00
Perdiem 56 @\$120	6,720.00

**Total** **27,820.00**

*Equipment/Setup  
Option 2*

Opti-Copy Camera	\$10,500.00
Shipping	10,000.00
Installation	14,220.00
Agfa Processor 48"	26,500.00
Shipping	4,500.00
Installation	4,500.00
Site Prep	6,000.00
<b>Total</b>	<b>76,220.00</b>

Page 10

***Production  
Option 2***

Negatives		
5000 @ \$10.00 ea		50,000.00

Mylars 36x42 inches		
5000 @ \$66.00 ea		330,000.00

<b><i>Total (1 set)</i></b>		<b><i>380,000.00</i></b>
-----------------------------	--	--------------------------

Additional Mylars (1 set)		
5000 @ 54.00 ea		270,000.00

**COST SUMMARY**

***Option 2 , All production done in Yerevan***

Administrative	27,800.00
Equipment/Setup	76,220.00
Production	380,000.00
<b><i>Total</i></b>	<b><i>\$484,020.00</i></b>
 <b><i>Additional Mylar Set</i></b>	 <b><i>\$270,000.00</i></b>



## ASHTECH SURVEY DOMESTIC PRICE LIST

Effective 1 January 1995 through 31 March 1995

### Z Series Receiver

PRODUCT	LIST PRICE
<b>Z-12</b> ..... P/N 990116-1 .....	\$32,000
Full wavelength carrier and Z Tracking™ on both L1 and L2 (Including periods of AS). (Direct independent Y-Code correlation on both L1 and L2. No sequencing and no cross-correlation.)	
A standard receiver package includes:	
<ul style="list-style-type: none"> <li>• 12 Channels L1 C/A Code &amp; Carrier Phase</li> <li>• 12 Channels L1 P-Code &amp; Carrier Phase</li> <li>• Waypoint Navigation</li> <li>• Real-Time Data Output (Raw Data)</li> <li>• 1 Mb Memory</li> <li>• External Power Cable</li> <li>• Marklite Battery and Charger (110/220 VAC)</li> <li>• Calibrated H.I. Rods</li> <li>• Rotatable Tribrach Adapter</li> <li>• One Year Receiver Warranty</li> </ul>	<ul style="list-style-type: none"> <li>• 12 Channels L2 P-Code &amp; Carrier Phase</li> <li>• 1/2 Second Data Recording Rate</li> <li>• 1 PPS</li> <li>• Precision Geodetic Dual-Band Antenna</li> <li>• 10 Meter Antenna Cable</li> <li>• RS-232 Data Cable</li> <li>• High-Impact Shipping Case</li> <li>• Receiver Operating Manual</li> <li>• One Year Firmware Updates</li> <li>• Waterproof Receiver</li> </ul>
<b>Options</b>	
<ul style="list-style-type: none"> <li>• 3 Mb Memory (70,000 Epochs) ..... P/N 700250 .....</li> <li>• 6 Mb Memory (140,000 Epochs) ..... P/N 700199 .....</li> <li>• External Frequency Input ..... P/N 680010 .....</li> <li>• Photogrammetry Input ..... P/N 680008 .....</li> <li>• Real-Time Differential GPS (Base &amp; Remote) ..... P/N 680007-1 .....</li> <li>• MSK Modulator ..... P/N 700640 .....</li> <li>• Barcode Tagging System ..... P/N 700500 .....</li> <li>• Remote Monitor Firmware ..... P/N 680009 .....</li> </ul>	\$2,000 5,000 3,500 3,500 2,500 3,500 950 3,500
<b>Upgrades to Z-12</b> ( Waterproof units purchased after November 1992)**	
P-12 with P1 and P2 and L2 Codeless .....	\$ 8,000
P-12 with either P1 or P2 .....	14,500
Dual-Bit Processing Option .....	3,000
**For non-waterproof units add an additional \$3,000	

All Ashtech products and technical data, including software, are subject to the export regulations of the U.S. Government and are controlled by the U.S. Export Administration Act of 1979. The export of these goods or technical data to any country other than the country to which export has been approved, for either permanent or temporary use, is strictly prohibited without prior authorization from Ashtech, Inc. and the U.S. Government.

# M Series Receiver

PRODUCT	LIST PRICE
<b>M-XII</b> .....	P/N 990111-1 ..... \$16,800
A standard receiver package includes:	
<ul style="list-style-type: none"> <li>• 12 Channels L1 C/A Code &amp; Carrier Phase</li> <li>• 1/2 Second Recording Rate</li> <li>• Real-Time Data Outputs (raw data)</li> <li>• Precision Geodetic Dual-Band Antenna</li> <li>• External Power Cable</li> <li>• Marklite Battery and Charger (110/220 VAC)</li> <li>• Calibrated H.I. Rods</li> <li>• Receiver Operating Manual</li> <li>• One Year Firmware Updates</li> </ul>	<ul style="list-style-type: none"> <li>• 1 Mb Memory (40,000 Epochs)</li> <li>• 1 PPS</li> <li>• Waypoint Navigation</li> <li>• 10 Meter Antenna Cable</li> <li>• RS-232 Data Cable</li> <li>• High-Impact Shipping Case</li> <li>• Rotatable Tribrach Adapter</li> <li>• One Year Receiver Warranty</li> <li>• Waterproof Receiver</li> </ul>
<b>M-XII Options</b>	
<ul style="list-style-type: none"> <li>• 3 Mb Memory (120,000 Epochs) .....</li> <li>• 6 Mb Memory (240,000 Epochs) .....</li> </ul>	P/N 700250 ..... 2,000 P/N 700199 ..... 5,000
<b>MD-XII (Dual-Frequency)</b> .....	P/N 990110-1 ..... 19,800
Includes standard 990111-1 package plus:	
<ul style="list-style-type: none"> <li>• 12 Channels L2 Codeless</li> </ul>	
<b>MD-XII Options</b>	
<ul style="list-style-type: none"> <li>• 3 Mb Memory (120,000 Epochs) .....</li> <li>• 6 Mb Memory (240,000 Epochs) .....</li> </ul>	P/N 700250 ..... 2,000 P/N 700199 ..... 5,000
<b>M Series Options</b>	
<ul style="list-style-type: none"> <li>• External Frequency Input .....</li> <li>• Photogrammetry Input .....</li> <li>• Real-Time Differential GPS (Base &amp; Remote) .....</li> <li>• Barcode Tagging System .....</li> <li>• 1/4 Second Update Rate .....</li> <li>  (Not available with Z-12)</li> <li>• Remote Monitor Firmware .....</li> <li>• Ranger .....</li> <li>  (Includes extended storage capability &amp; Ranger Post-Processing Software)</li> </ul>	P/N 680010 ..... 3,500 P/N 680008 ..... 3,500 P/N 680007-1 ..... 2,500 P/N 700500 ..... 950 P/N 680011 ..... 2,000* P/N 680009 ..... 3,500 P/N 680016 ..... 3,500
* This price available only at time of purchase.	
<b>Upgrades</b>	
The following after-purchase upgrades are available on the M-XII and the MD-XII:	
Codeless L2 .....	P/N 600087 ..... 6,000
1/4 Second Update Rate .....	P/N 600069 ..... 3,000

# Dimension Receiver

## PRODUCT

## LIST PRICE

**Dimension** ..... P/N 990101 ..... \$9,980

A standard geodetic receiver package includes:

- 12 Channels L1 C/A Code & Carrier
- Integral Microstrip Antenna
- 1 Second Data Recording Rate
- PowerDisk™ - Nicad
- Battery Charger (110/220 VAC)
- One Year Receiver Warranty
- One Year Firmware Updates
- 2 Mb Memory (40,000 Epochs)
- High Impact Shipping Case
- HI Rods - Calibrated
- RS-232 Data Cable
- Rotatable Tribach Adaptor
- Receiver Operating Manual
- Waterproof Receiver

### Receiver Options

- 4 Mb Memory (80,000 Epochs) ..... P/N 990101-4 ..... \$2,000
- Real-Time Differential (Remote Only) ..... P/N 680007-2 ..... 1,500

### Interface Units

- CMT MC-V Operator Interface Kit ..... P/N 890008 ..... \$1,600  
Includes: CMT MC-V Unit, Case, Interface Software, Manual, I/O Cable
- HP-95 Operator Interface Kit ..... P/N 890007 ..... 850  
Includes: HP-95 Computer/Calculator, Data Cable, GPS Interface Software
- CMT Interface Software & I/O Cable only ..... P/N 600129 ..... 145
- GPS Interface Software for the HP-95 ..... P/N 600145 ..... 100
- GPS PC Interface Software (PCDIME) ..... P/N 600213 ..... 100

### Accessories

- HP-95 Data Cable (HP-95 End) ..... P/N 102209 ..... \$ 45
- HP-95 Data Cable (Dimension End) ..... P/N 700465 ..... 45
- HP-95 AC Power Adaptor ..... P/N 102313 ..... 20
- CMT Data Cable ..... P/N 700621 ..... 45
- CMT Battery Charger (110V) ..... P/N 102345 ..... 25
- CMT Battery Charger (220V) ..... P/N 102346 ..... 25
- CMT Battery Pack ..... P/N 102343 ..... 95
- CMT Carry Case ..... P/N 102281 ..... 75
- RS-232 Data Cable/PC Interface ..... P/N 700461 ..... 45
- External Power Cable - PowerDisk ..... P/N 700511 ..... 160
- External Power Cable - Marklite ..... P/N 700462 ..... 160
- 12 Volt Auto Cable ..... P/N 700548 ..... 80
- PowerDisk™ Battery Pack, Nicad ..... P/N 700657 ..... 710
- PowerPole™ Battery Pack, Nicad ..... P/N 700642 ..... 475
- Battery Charger, Nicad w/power cord ..... P/N 700524-1 ..... 175
- Dimension High Impact Shipping Case ..... P/N 102241 ..... 350

## Software

PRODUCT	LIST PRICE
MISSION PLANNING SOFTWARE..... P/N 990124 .....	\$ 500
PRISM II BASIC ..... P/N 990133-1 ..... Includes Mission Planning, Process, Fillnet , PNAV and GPS CADD	8,000
PRISM II W/DATA BASE ..... P/N 990133-2 ..... Includes Mission Planning, Process, Fillnet, PNAV, GPS CADD and Database Manager	10,000
PRISM II W/SOLUTION PACK..... P/N 990133-3..... Includes Mission Planning, Process, Fillnet, PNAV, GPS CADD and Solution Pack	11,000
PRISM II W/DATABASE/SOLUTION PACK .. P/N 990133-4..... Includes Mission Planning, Process, Fillnet , PNAV, GPS CADD, Database Manager and Solution Pack	12,000
DATA BASE MANAGER SOFTWARE ..... P/N 990135 .....	2,000
CADD SOLUTION PACKAGE..... P/N 600128 ..... Modules included are: Contour, Volume, Mapping, Coordinate Geometry and 3-D View	3,000
PNAV POST-PROCESSING SOFTWARE .. P/N 990130 ..... Trajectory/Navigation Only	2,800
SNAP ..... P/N 990138 ..... Survey Network Adjustment Package	2,500
UPGRADE FROM SURVEY SOFTWARE PACK (GPPS) TO PRISM II BASIC* P/N 990133-1 ..... Includes Mission Planning, Process, Fillnet, PNAV, and GPS CADD	2,500

**\* MUST BE A REGISTERED USER OF SURVEY SOLUTION PACK TO QUALIFY FOR UPGRADE PRICING**

All of the above listed software comes with one year software updates  
 Second set of software available to original purchaser at 50% discount  
 Contact Ashtech Sales or your dealer for volume discounts

# Accessories

PART #	PRODUCT	LIST PRICE	PART #	PRODUCT	LIST PRICE
<b>Antennas &amp; Accessories</b>			<b>Receiver Accessories</b>		
700718	Precision Geodetic Antenna L1/L2	\$3,500	103362	Shipping Case M/Z Series	\$ 350
700699	Marine Antenna L1	1,500	102180	Shipping Case MS-XII	350
700700	Marine Antenna L1/L2	2,500	101307	Backpack	300
700293	Airborne Antenna L1	1,800	100650	Nylon Carrying Strap	15
700326	Airborne Antenna L1/L2	2,500	102619	Measuring Tape, MS-XII	15
102242	Calibrated H.I. Rods	225	700500	Barcode Scanner Pen System 11 Pin.	950
700285	3 Meter Antenna Cable	80	700620	Barcode Scanner Pen System 16 Pin.	950
700265	10 Meter Antenna Cable	100	<b>Manuals</b>		
100914	30 Meter Antenna Cable	300	600223	Z-12 Operating Manual	25
700389	Line Amplifier	450	600119	Dimension Manual	25
101759	Magnetic Roof Mount	300	600185	Receiver Operating Manual	25
101188	Roof Rack	275	600071	Mission Planning Manual	25
700190	Kinematic Bipod & Pole	450	600089	Fillnet Manual	50
101437	Tripod	220	600085	Data Base Manager Manual	100
101438	Tribrach	375	600149	PRISM (VOLUME I & II)	350
<b>Cables &amp; Batteries</b>			600150	PRISM (VOLUME III & IV)	350
700423	Power Cable, M/Z Series	200	600059	Remote Monitor Users Guide	25
700264	RS-232 Data Cable M Series	200	600200	PNAV Software Users Guide	50
700471	External Power Cable, MS-XII	125	<b>Service Agreements</b>		
700472	RS-232 Data Cable, MS-XII	125	600198	4Yr Software/Firmware Updates ...	1,700
700473	External Antenna Cable, MS-XII	120		(Per receiver - Extended to 4 years)	
700617	RS-232 Data Cable Z Series	200	600199	Extended Service Agreement	1,700
700619	Dual RS-232 Data Cable Z Series	450		(Per receiver/per year)	
700493	Y Cable (Rcvr/Marklite/Charger)	200	<b>Differential GPS Radio Links</b>		
700492	Car Adapter Cable (12 Volt)	80	VHF 148-173 MHz Radio	2,800**	
101917	Marklite Battery	300	UHF 450-470 MHz Radio	2,800**	
101918	Marklite Charger	210	System includes: radio with built-in modem controller, base or remote omnidirectional antenna, RS-232 cable.		
700496	MS-XII NiCad Battery Charger	135	**Two radios minimum are required for a differential system		
100806	External 8AH Gel Cell	60			
101452	Gel Cell Cgr (110/220 VAC)	210			



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209

*Leica GPS Surveying = always at the top*



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- Fast, accurate and efficient GPS surveying
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- With high performance, easy-to-use hardware and software
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*Leica*



Dear Potential Ashtech GPS User,

Thank you for your recent request for information on the Ashtech line of GPS receivers. Ashtech is the leader in advanced GPS technology and GPS system development. The Ashtech GPS line of receivers offers easy to use, capable software coupled with a compact, state-of-the-art design.

Some of the standard features our receivers offer are:

- Automatic "All-In-View" dedicated 12 channel C/A code tracking.
- Integrated full-function 8-line, 40 character display
- Easy to use operator interface
- Non-volatile internal memory
- Ruggedized, portable antenna with preamp
- Menu-driven GIS support software
- Battery, battery charger (110/220 VAC) and cables included.
- Light-weight - total portability

Included with this package are pertinent brochures and current price lists which includes options, warranty information and software/firmware update information.

Also included with this package is information on the Ashtech Training Seminars. Held in Sunnyvale, we offer a five-day Basic GPS Survey seminar, a four-day Advanced GPS Survey seminar and seminars on GIS, Real-Time Differential and GPS CAD Solutions. Seminar fees are listed in the brochure. Please notify Ashtech two weeks in advance if you plan to attend.

If you have any questions, would like additional information or copies of our technical papers, please contact us at (408) 524-1400.

Sincerely,

Ashtech Sales

204

# ASHTECH Dimension™ GPS Receiver Systems

When the green light is on—  
all systems are GO

Turn the Dimension ON to begin a survey -- a green LED indicates the unit is operating and flashes for each satellite tracked — turn it OFF to end a session. The Ashtech Dimension series of GPS receivers automatically brings centimeter level accuracy for first order surveying. The Dimension Receiver provides 10 minute static GIS accuracies of 1 decimeter. The Dimension is sealed with the antenna and receiver in one waterproof package, weighs only 3.2 pounds and consumes only 8 Watts (8-32 VDC) of power. Dimension is truly the simplest most advanced GPS receiver commercially available today.

## Precision Geodetic Survey

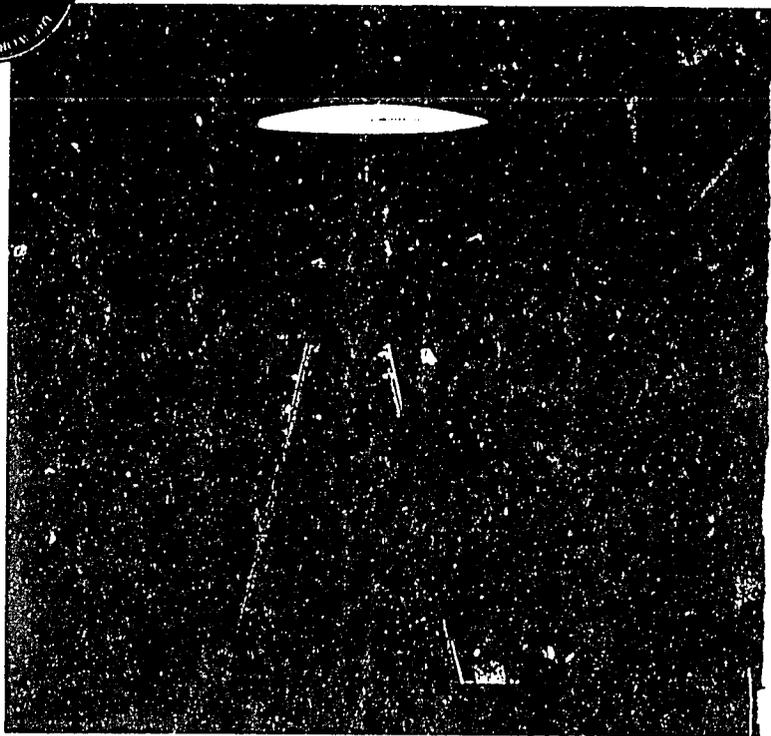
To maximize the accuracy of any survey, the same satellites must be tracked at all survey sites. Using the same "All-In-One" dedicated 12-channel C/A code tracking features of the XII series of GPS receivers, the need to coordinate satellite reception between sites is eliminated. Because the Dimension continuously tracks up to 12 satellites simultaneously on 12 separate and parallel channels, loss of lock on one channel has no impact on survey accuracy. The high precision of GPS carrier-phase measurements, together with appropriate adjustment algorithms, support a wide variety of land applications in surveying and mapping. In the geodetic survey configuration, conventional static, kinematic and pseudo-kinematic modes of operation are supported.

## Enhanced Data Collection

Dimension collects, computes and records GPS position data from all available satellites as fast as once per second. The standard 2 megabyte internal memory can store more than 37 hours of satellite data from six satellites at a 20 second recording interval and 22 hours of satellite data from ten satellites. Dual RS-232 ports provide data transfer and communications. One hour of recorded data can be transferred in under 10 seconds at 4,800 baud. An optional 4 Mb internal memory is available.

## Convenient Command Control

Dimension can be interfaced to various handheld input devices (MT CV-5 or HP-95) for command control. Stored data is readily integrated into existing data bases for fast, accurate map dates. Output fields are compatible with standard GIS formats.



## From Field to Finish

Fully compatible with Ashtech's comprehensive PRISM II™ and GPPS software packages, Dimension offers the best GPS performance features for the surveying professional. Ashtech software post-processes GPS data in static, kinematic and pseudo-kinematic modes and supports a variety of coordinate conversions. PRISM II provides a new multi-graphic interface with top-level packages including Mission Planning™, FillNet™, GPS/CADD™ and Survey Database Manager™. At the heart of the package are the processing algorithms which consistently produce precise baseline vectors and station positions.

A wide range of tools is included for presentation of station positions in any desired form. Three, five and seven parameter geodetic transformation is supported as well as many commonly used map projections.

Using GPS/CADD, point and vector information is imported directly into the Basic CAD module, facilitating generation of survey network plots for analysis and inclusion in final reports.

## Advanced Battery Technology

The Dimension is powered by the new Ashtech PowerDisk™ or PowerPole™. Both use rechargeable Nicad batteries, are waterproof and mount directly into the base of the Dimension. The PowerDisk can be mounted directly onto a Tribrach and both can be mounted directly onto a bipod and pole. The connection is made without cables. Multiple power disks can be joined to the receiver for increased operating time.



205

# Dimension Specifications

## Solution & Accuracy

### Measured & Computed Data

Position (SA off)	25 m rms*
Real-time Differential Position	1-3 m rms (PDOP ≤4)
Velocity (GDOP <4)	1 cm/sec (0.02 knot)
Static, Kinematic or Pseudo-kinematic Survey	1 cm +1 ppm
Dynamic GIS	10 Min - 1 dm
Static GIS	1-3 m
Time to first fix	Typically <1 minute
Update Rate	1 per second

## Environmental

### Receiver/Antenna

Temperature Range	
Operating	-20° to +60° C
Storage	-30° to +70° C
Humidity	100%
Weight	3.5 pounds
Speed (Max)	Does not exceed 1,000 nautical miles-per-hour
Altitude (Max)	Does not exceed 60,000 Ft.
<i>Higher altitude and velocities up to 25,000 nautical miles-per-hour options are available in the U.S. and under validated export license in other countries.</i>	

10 meters with Selective Availability (SA) engaged

### HP-95 Interface

Temperature Range	
Operating	0° to +40° C
Storage	0° to +60° C
Humidity	90% at 40° C
Weight	.75 pounds

### MT-CV5 Interface

Temperature Range	
Operating	-40° to +45° C
Storage	-20° to +65° C
Weight	26 oz.

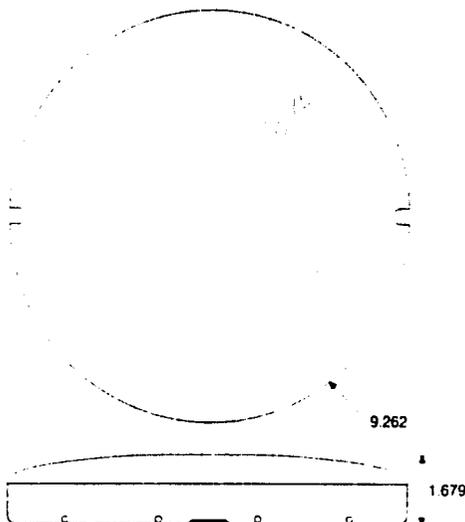
### PowerDisk™

Temperature Range	
Operating	-20° to +60° C
Storage	-30° to +50° C
Humidity	100%
Weight	2.5 pounds
Operating Time (Full Charge)	7 Hours

## PowerPole™

- Temperature Range
  - Operating -20° to +60° C
  - Storage -30° to +50° C
- Humidity 100%
- Weight 2.5 pounds
- Operating Time (Full Charge) 7 Hours

## Dimensions



Dimension. Ashtech PRISM II, Mission Planning, Fillnet, GPS/CADD, Survey Data Base Manager, PowerPole and PowerDisk are trademarks of Ashtech, Inc.

HP-95 is a trademark of Hewlett-Packard Corp.

CMT is a trademark of Corvalis Microtechnology, Inc.

Specifications are subject to change without notice.

## Standard Features

- 12 Channel C/A Code & Carrier
- 2 Mb Internal Memory
- 1 Second Data Recording Rate
- 4.1 Watt Power Consumption
- Two RS-232 I/O Ports (300-38,400 Baud max)
- External Battery Port
- Tripod-mountable
- Internal Antenna
- Built-in LED Status Display
- Waterproof
- Powerdisk/Powerpole provides battery power without cables

## Optional Features

- 4 Mb Memory Expansion
- Real-Time Differential (Remote only)

## Standard Accessories

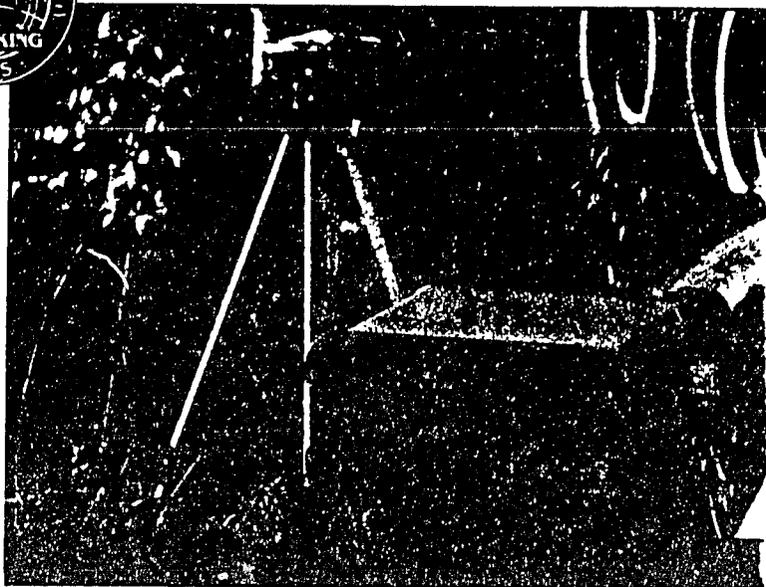
- Carrying Case
- HI Rod
- PowerDisk - Nicad
- Battery Charger
- Rotatable Tribrach Adapter
- RS-232 Cable
- Receiver operating manual (Shipping weight of standard Dimension package is 22 pounds)

## Optional Accessories

- PowerPole, 6' - Nicad
- PowerDisk - Nicad
- HP-95 Interface Kit
- HP-95 Interface Cable
- HP-95 AC Power Adapter
- HP-95 GPS Interface Software
- CMT CV-5 Operator Interface Kit
- Rotatable Tribrach Adaptor
- External Battery Cable
- PRISM II Software Package



# Ashtech Z-12™ PS Receiver



## GPS Capability with Anti-Spoofing Turned On

Ashtech's "Dual-Line Digital" Z-12 GPS Receiver sets the standard in GPS receiver performance and technology for precise surveying and navigation applications. This revolutionary new receiver permits uninterrupted use even when Anti-Spoofing is turned on. When Anti-spoofing is turned on, the Z-12 receiver automatically activates its Z-Tracking™ mode which mitigates the effects of AS. When AS is off, the Z-12 automatically returns to P-Code mode.

Z-12 is a new receiver. It is the result of major improvements in areas of receiver design: RF, digital processing hardware, and substantial algorithmic improvement. As a result, not only does the receiver deliver unmatched performance in "Z" mode, but the performance in "P" mode is world-class (substantially improved the performance of the pioneering Ashtech P-12).

The technological advance represented by this receiver is even more dramatic under Anti-Spoofing (A/S) conditions where the Z-Tracking Z mode observables enjoy an over 13 dB SNR advantage over their "P-codeless" (cross-correlation) competitors while maintaining the P-mode's freedom from receiver caused systematic errors. Indeed, the receiver measures the same things in both modes: C/A carrier phase and pseudo-range, P1 carrier phase and pseudo-range, P2 carrier phase and pseudo-range, all with full (not half) carrier wavelengths. There are no "glitches" associated with a mode change, no changes in the already negligible systematic errors. For the overwhelming majority of users, the performance of the receiver when A/S is enabled is indistinguishable from the "A/S off" performance.

Ashtech receiver's patented Z technique is the only available technology that offers an over 13 dB improvement in SNR over cross-correlating receivers along with full wavelength carrier waves on both P-code bands when A/S is enabled.

## Minute-a-Minute Surveying

Dual-frequency reception eliminates ionospheric refraction effects, which means medium-to-longer baselines can be measured more accurately. High-quality measurements on both the L1 and L2 bands in the Z-Tracking mode or the P-Code mode also enable significantly shorter station occupation time — this translates into increased productivity for high-precision survey crews. Centimeter-level surveying of baselines of one mile using one minute station occupation times has been successfully demonstrated in Z-Tracking Mode!

## Seconds vs. Minutes

A 13 dB SNR advantage means a factor of 20 less in integration time for the same observable RMS. Based on actual measurements on real satellites, we need to integrate for 10 seconds to the cross correlation competition's 5 minutes. There are two great advantages to having shorter correlation times for the same SNR:

- The ability to track rapidly varying ionosphere with full observable accuracy. This cannot be accomplished with cross correlating receivers.
- Acquisition transients settle in seconds while the competition has to wait minutes before their A/S observables reach equivalent accuracy.

The ability to derive any useful information at low elevations is critically tied to SNR. When faced with low SNR, the user has a terrible choice: either integrate for such a long time that there is essentially no data at low elevations, or accept huge errors. For all non-classified "A/S on" solutions, the SNR falls off with elevation angle as the square of normal code SNR. That is, if the P mode SNR drops (with elevation angle) by a factor of 4, all civilian A/S techniques yield a drop in the SNR of a factor of 16.

## Better Jam Immunity

Because of Ashtech's Dual-Line Digital processing capability, jam immunity is substantially improved over other single bit receivers. The receiver does not lose lock near transmitters or high voltage power lines. The result is higher productivity, robust performance and virtually no restrictions due to an encrypted satellite signal.

## PNAV "On-the-Fly" Ambiguity Resolution

Ashtech's newest application software package is called PNAV (for Precision Navigation). This software, combined with dual-frequency data from Z-12 receivers provides a powerful new capability in GPS. PNAV is a precision trajectory package providing post-processed positions and can provide centimeter level accuracy on-the-fly. This capability is especially valuable for creation of robust photogrammetric flight trajectories.

A PNAV survey version which produces vectors for network adjustments is a standard feature of the PRISM II™ software package.



# Z-12 Technical Specifications

## Measurement Precision

<b>A (&gt;25°)</b>		
Carrier phase	(25 Hz)	0.15 cm
	(1 sec)	0.02 cm
Pseudo-range	(10 sec)	20.00 cm
	(5 sec)	3.60 cm

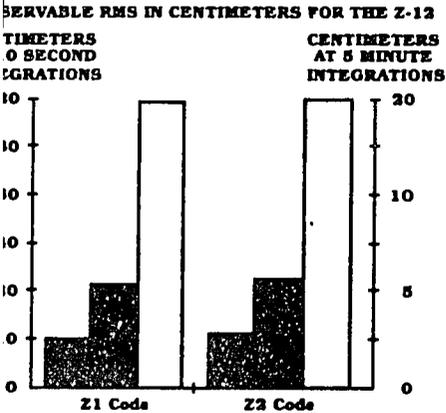
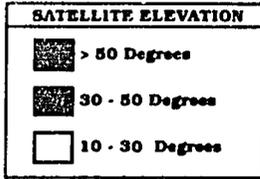
<b>Code A/S Off (&gt;25°)</b>		
Carrier phase	(10 sec)	0.10 cm
	(5 min)	0.02 cm
Pseudo-range	(10 sec)	5.00 cm
	(5 min)	0.90 cm

2 Carrier phase	(10 sec)	0.10 cm
	(5 min)	0.02 cm
2 Pseudo-range	(10 sec)	7.00 cm
	(5 min)	1.30 cm

Real-Time Differential Position (PDOP<4) <1 m

Static, Rapid Static or Pseudo-Kinematic Survey 5 mm + 1 ppm

## Code A/S On (Z-Tracking)



## Systematic Errors (Between Satellites)

Pseudo-Range (all bands)	< 1.00 cm
Carrier Phase (all bands)	< 0.01 cm

When P-Code GPS receivers have been FGCC tested and are capable of performing first order survey (report available upon request).

Z-Tracking, PNAV and PRISM II are trademarks of ASHTECH Inc.

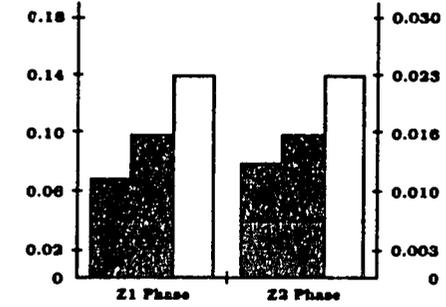
Specifications are subject to change without notice

## Environmental

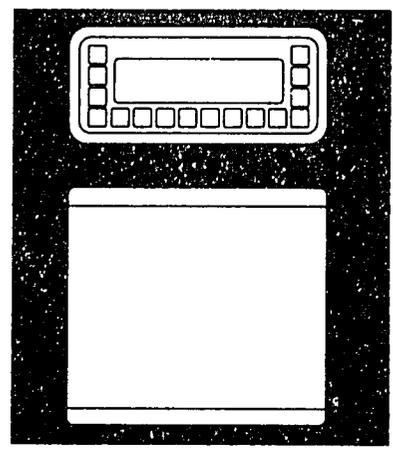
Waterproof to	5 psi
<b>Temperature Ranges</b>	
Receiver/data Logger	
Operating	-20° to +55°C
Storage	-30° to +75°C
Antenna	
Operating	-40° to +65°C
Storage	-55° to +75°C
<b>Humidity</b>	100%
<b>Weight</b>	
Receiver	8.8 lbs
Antenna	3.75 lbs
<b>Speed (Max)</b>	Does not exceed 1,000 nautical miles-per-hour
<b>Altitude (Max)</b>	Does not exceed 60,000 Ft.

Higher altitude and velocities up to 25,000 nautical miles-per-hour options are available in the U.S. and under validated export license for other countries.

OBSERVABLE RMS IN CENTIMETERS FOR THE Z-12



## Dimensions



## Standard Features

- 12 Channel "All-In-View" operation
- Automatic Switching to Z-Tracking when A/S is activated.
- Full wavelength carrier on L1 and L2
- 21 Watt power consumption (typical)\*
- 10 - 32 VDC input
- 2 Power inputs
- Audible alarm for low power
- Internal RAM data recorder
- 8-Line by 40-character display
- 4 RS-232 ports (115,200 baud max)
- Static, rapid static, kinematic, pseudo-kinematic surveys
- Waypoint navigation
- Real-time data outputs
- 1 PPS timing signal
- Cold start - 2 Minutes to first data
- Warm start - <30 Seconds to first data
- 1 Year warranty

## Standard Accessories

- Precision geodetic antenna
- 10-meter antenna cable
- External power cable
- RS-232 data cable (Z-format)
- Battery and charger
- Rotatable Tribrach adapter
- High-impact shipping case
- Receiver operating manual (Shipping weight of standard Z-12 package is 48 pounds)

## Optional Features

- External frequency standard input 1 to 20 MHz in 10KHz steps
- Real-time differential GPS RTCM format
- Expanded internal memory

## Optional Accessories

- Survey Tribrach
- Kinematic bipod and pole
- 10, 30 and 60-meter antenna cable Expandable to 150 meters w/line amps
- External battery
- Battery charger 110/120 VAC
- PRISM II™ Software Package
- PNAV Software Package

\*Display off/with LNA

