SUMMARY MEMORANDUM AFTER CONDUCTING

A DETAILED STUDY WHILE OFFERING ~~A CONSUMING~~ Consulting

SERVICES RELATED TO LONG RANGE

ENVIRONMENTAL AND LAND USE PLANNING

GOVERNMENT OF GUAM
AGANA, GUAM

MEMORANDUM

TO: Director, Territorial Planning Commission

FROM: Barbara D. Webb, Consultant

SUBJECT: Summary Memorandum after conducting a detailed study while offering consulting services related to Long Range Environmental and Land Use Planning to include:

A. Formulation of a future environmental policy for Guam.

(1) Review of local environmental problems

(2) Discussion of problems

(3) Recommendation of future environmental policies to be adopted

(4) Discussion of methods of implementation

B. Preparation of local environmental impact legislation to include:

(1) Review and appeal procedures

(2) Criteria for application of act

(3) Scope and content of impact statements

In conducting research in preparation of formulating an environmental policy for Guam, several problem areas were discovered. Follow up research was conducted while drafting Environmental Impact Statement Legislation. Eight problem areas are identified in this memorandum. It is the feeling of this consultant, that attention should be paid to these problem areas before submittal of Environmental Impact Statement Legislation.

I. Engineered Base Map Series to establish a Data Base

A systematic sustained effort is needed to correlate all data into one comprehensive system. The past cannot be the foundation for the future. It must be superseded with something better. Guam has suffered through seven different coordinate systems. The past surveys and records, even up to this date, are in most situations so poor as to be completely unreliable.

To try to build on such data is folly. A firm solid foundation must be established.

In order to accomplish this a single, compatible land parcel and point identifier system that would facilitate the collection, storage, manipulation, and retrieval of all land-related data information about ownership, use, zoning and other public or private land use restrictions, tax records, utilities, natural resources, resource pollution, resource production and extraction, ecology, demography, transportation and public health must be set up. Such a system would facilitate automatic data processing for high volumne use, and would also be appropriate for manual filing and retrieval.

These maps and accompanying data must be kept current under a full maintenance program. The central filing agency should be expanded to collect & disseminate this data to appropriate agencies. This would enhance coordination among agencies and eliminate costly duplication. (See Memorandum, Proposals for a Guam Cadastre, from Chief of Cadastre, Billy G. Huckalby, To Director of Land Management, November 12, 1973; Land Use Survey Procedures, From Planner I, Territorial Planning Commission, To Planner IV, October 23, 1973.)

II. Government Code, Title XXXII, Section 31011, Administrative Procedures Building Code.

"(a)... shall within the next three years after August 15, 1952, conduct a survey of all buildings and structures in the territory of Guam. Following this, he shall establish and maintain a complete, current record on each and every building and structure surveyed. This record shall reflect the use, nature and physical condition..."

This information is a vital element in establishing base data. This twenty-two year old law has not been complied with.

III. Government Code, Title XIV, Section 13970, Survey of Government Land.

"All real property belonging to the Government of Guam for which certificates of title have not been issued, shall be surveyed and mapped for appropriate government use, and in order to accomplish the registration of such property."

The sum of $250,000 was appropriated in 1967 to accomplish the directives of the above law.

It was estimated in 1967 that it would take five years to accomplish the survey and registration of Government of Guam property. No systematic program was set up. In 1973, it was estimated, once again that it would take five years to accomplish this survey and registration.

Some preliminary study was prepared, some work on Harmon Field was accomplished, and a priority was given to the survey of shoreline areas. The great majority of public land is not registered.

At the present time no money remains for the continuation of this program. A bill is presently before the legislature seeking a $500,000 appropriation to complete the survey and registration of government land.

It is estimated that the Government of Guam has lost somewhere between 5 and 8% of land once thought to be public land in the past five years, however, no specific data is available.

Affirmative action must be taken immediately as the Government of Guam is presently in a defensive position when claims are brought against this property.

The public conceivably, could lose the majority if not all the land thought to belong to the government, if this land is not promptly registered. In addition, adequate planning is hampered without a thorough knowledge of what property belongs to the public and what belongs to the private sector.

IV. Grading Permits

No requirements are necessary for obtaining a grading permit. Either grading permits should not be issued until after a building permit is approved or some requirements for obtaining a grading permit should be developed to ensure proper planning. This is necessary to prevent unnecessary erosion and sediment deposition and ensure that no significant change of existing topographic characteristics occurs.

V. Building Permits

(a) A clear title to ensure that the individual claiming ownership to a particular parcel of property is the sole owner and that no encumbrances exist against the property is not a prerequisite to obtaining a building permit.

A certificate displaying clear title should be required. This is an assurance that at some future date no one can claim that the house that was built on property presumed to belong to A, really belongs to B. If B establishes a valid claim, A can be evicted from the house.

(b) The present Building Law, Title XXXII, Section 13023 states that the requirement of a boundary line survey may be waived. This requirement is waived in many cases.

The recently proposed Building Code, presently before the legislature states that an accurate boundary line survey may be required. This should be changed to "shall be required" for several reasons. Until two or three years ago, metal stakes were used by surveyors in making boundary lines. These can be altered by various means. Cement monuments are now required to be erected to mark the property boundaries. These monuments are more dependable and permit a more accurate check to ensure that proposed plans comply with the zoning regulations.

(c) Either a list of authorized signatures or an official stamp for each agency should be developed to ensure that Building Permit Applications are adequately reviewed. At the present time, no specific person or persons are responsible for reviewing building permit applications. This sometimes results in an inadequate review of development plans by appropriate agencies.

VI. Zoning Regulations

Existing zoning regulations are often inadequate. Some guidelines or performance standards are necessary to take into account the vast differences in the nature of the soil, in the slope and in the location of one parcel of land from another. Each parcel of land should be appraised on an individual basis in determining appropriate development plans.

VII. Territorial Planning Commission (TPC)

(a) It may be beneficial to establish requirements for a varied composition of the TPC to ensure a well balanced review of all development plans. This criteria has already been established for the Subdivision Development and Review Committee.

A suggestion for the composition of the TPC may be to include a representative from labor, management, the construction industry, environmental interest group, real estate group, architectural, engineering, and planning professions.

(b) Some attendance requirements are also needed.

VIII. Environmental Policy

The Government of Guam should go on record, either through a resolution or through legislation, to establish the importance of environmental as well as social and economic considerations in all planning and development. This would assist in establishing the responsibility of each person to the preservation and enhancement of the environment.

It would be beneficial if the problem areas identified in this memorandum would be considered and developed before submitting the proposed Environmental Impact Statement Legislation. Only in this way can a solid foundation for future planning and development be established.

Barbara D. Webb

BARBARA D. WEBB

APPENDIX

GOVERNMENT OF GUAM

AGANA

NOVEMBER 12, 1973

Memorandum

To: Director of Land Management

Via: Chief of Cadastre

From: Assistant Chief of Cadastre

PROPOSALS FOR A GUAM CADASTRE

In accordance with the written and verbal instructions of the Chief of Cadastre, a study of the future direction for a Guam Cadastre has been made. This report is the resulting outline of a proposed system which is recommended to the Department of Land Management as the most feasible solution.

First, certain basic assumptions are made on which to plan. Some of these assumptions deviate from past procedures, but we are living in an ever changing world and must look to the future and not to the past. Then a few, not necessarily all, of the basic components of a Cadastre are described.

With the above background, the basic management units are outlined in more detail. The main idea is to correlate all record and survey data relating to land ownership and location into a management system which can eventually be completely mechanized. This is designed around a digital parcel identifier system with all past and future records and surveys assimilated into the system for control of information input and future fast retrieval of any information needed.

Following are preliminary specifications for the graphical representations involved and an introduction to a proposed punch card mechanization of the present record data. The legal implications of the proposed Cadastre are briefly investigated. The immediate attention is not to legal details, but to the betterment of the present land records management filing system and to the related surveys needed.

BILLY G. MUCKABY

PROPOSALS FOR A GUAM CADASTRE

A Cadastre consists essentially of a Registry and the supporting survey data. The Registry may simply accept any instruments tendered for recording or it may verify instrument contents before accepting for recording. In the first instance, survey data is usually in the form of maps purporting to show the existing actual conditions and each map is thus simply a piece of evidence within the Registry. A user must evaluate each item of evidence in the chain of title, to assure himself of a clear title. With the verification of instrument and survey data in the second case, an up-to-date record within the Registry can be maintained which gives assurance of clear title.

The correlation of all data into an efficient land ownership records management system is the main purpose of a Cadastre. The final system provides a basis for a data bank which not only serves to assure title, but also can be invaluable in all aspects of land management. With modern advances in technology, such a system can be mechanized in a way never before possible. However, before we can make full use of all the potential of computers, microfilming, etc., we need to streamline our records and survey filing systems.

Due to the close inter-relation of surveying and the written records, any complete program in Cadastration of necessity must consider both aspects. It is not my intention to infringe in any way upon the responsibilities of the Deputy Recorder and Records Division. It is, however, my sincere hope that better correlation of all aspects of our common duties and responsibilities as public servants can be attained. As surveys on Guam have blundered through some seven different coordnnate systems, the record indices have amassed at least seven different methods for tracing ownership. The final goal of a Guam Cadastration Program should not be to add system number eight, but rather to correlate all data into one comprehensive system and bury the past.

I. Basic Assumptions

A. As an isolated island, Guam has one advantage and one unique topographic factor to consider. The advantage of isolation is that Guam does not have to consider the survey and records system of any adjacent lands or administrative authorities. This means Guam can develop its own unique system. This does not mean that other systems should not be thoroughly examined, but that we can be choosy and apply only what is useful to our problem. We should no longer, as has so often been done in the past, blindly copy other systems or even portions of other systems.

The topographic factor unique to Guam is the reef and bay areas. With the increasing importance of the sea to mankind, the reefs must be fully developed and administered. The reefs and bays are a relatively undeveloped resource and must be accounted for as "real property" just as dry land has been in the past.

WHY? NOT Necessary

Every square meter of land and reef must be considered as potentially 100% inhabitable. This concept of potential, complete saturation of the earths surface is the only basis on which any system can be developed without running the risk of having to make major revisions to areas and designation nomenclature within 20 years or less. The basic area unit of the system, (which I will explain later) and the basic digital identifier (explained later) must be so conceived and designed that they are flexible enough to survive the population and technology explosions now upon us.

The past cannot be the foundation for the future, it must be superseded with something better. The past surveys and records, even up to this very day, are in most situations so poor as to be completely unreliable. To try and build on such data is folly. All the past must be carefully sifted like sands on a beach to recover the lost and buried stones on which a firm foundation can be laid.

The entire land and reef area must be considered as one and systematically surveyed and recorded without any consideration to past or present ownership. As to the military, the world situation is in such turmoil that what is military today may be completely abandoned and relinquished to civilian control at any time. As to private ownership as opposed to public, in this crowded world the people are affected by all the environment and a government cannot limit its responsibilities to what has heretofore been generally considered as "public" lands.

Existing systems, (such as Torrens) must be critically examined in respect to modern society and technology. If, or when, major deficiencies are revealed, then no hesitation should be tolerated to institute new ideas. To hang on to old systems which are no longer efficient is a mark of insecurity and immaturity and not a desirable quality within a professional governmental organization.

A direct relationship between political administrative divisions and cadastral administrative divisions is not generally desirable. Due to ever changing aspirations of men, political divisions are often altered with little or no thought or consideration given to other administrative problmes. Such changes often cause confusion to Cadastral Division Administration. On the other hand, once a sound cadastre is firmly established, the basic cadastre units can remain unaltered by politics.

Within this concept, the cadastral basic units and/or sub-units (see below) are combined for political and other administrative purposes into super-units (see below) without any effect whatever on the cadastral data system.

A cadastre based on a rectangular grid system has limited use. Due to topographic conditions and real property historical development, land divisions rarely follow a rectangular pattern. Thus a grid system of maps, sheets, or areas, etc., has some technical advantages in simplicity and regular consistency, but does not have the flexibility which the natural land form and history dictates for a cadastre.

II. - Mathematical coordinates are loudly proclaimed by their supporters, but have not yet proven to be the Utopian solution which they purport to be. Pure coordinate systems presume no human error, which is never true. To ever be practical, every survey must be performed with absolute precision, which is a human impossibility.

II. Basic Components

A. The first consideration in a Cadastre is to decide on and define the basic unit of land area to which all other data relates. It is essential that this unit have both a unique legal definition and a unique physical description consistent with the most advanced state of the art of surveying. This does not specifically mean coordinates. Rather it means a unit bounded by legally correct descriptive boundaries which can be graphically portrayed and are either physically existant or appropriately monumented by natural or artificial monuments.

A basic unit could range in size from the total island to a two square meter cemetery plot. It could contain thousands of smaller units, or be one unique indivisible unit within itself. The ideal lies somewhere between the extremes. The basic unit must be small enough that the survey and record data related to the basic unit are not of such magnitude as to be unmanageable. It must also be large enough that the related survey and record data has practical use and meaning. To decide on a basic unit of specific area which would serve all possible real property situations is probably impossible. Instead, only an ideal median area can be used as a point of reference and each basic unit can then be designed depending on the current status of the land to be defined. It must always be kept in mind that the status of real property interests are constantly changing and rarely permanently set for any long period of time. The ideal median area defined below must be thus considered as very flexible.

After considerable study, the ideal median basic unit for Guam has been set at an area of 16 Hectares (40 acres). This basic unit is then divided into smaller sub-units or combined with other basic units to form super-units. The sub-units would define individual parcels for specific legal transactions and definitions of rights. The combined basic units would provide the framework for gathering more survey and record data together to improve the management efficiency at various administrative levels.

B. The second consideration is to decide on a narrative and/or numerical identifier to define the basic area unit, sub-units and super-units. The most significant factor affecting this component is, of course, the computer revolution. This would at first glance indicate a strict digital system and it most definitely deserves priority consideration. At the same time, from a non-professional layman's viewpoint and from a legal safeguard standpoint, the complete exclusion of a narrative identifier is not entirely acceptable. People are not yet ready to refer to such personal items as land by impersonal numbers. Also, a singular digital system without any secondary narrative description backup can cause serious complications with one misplaced digit.

Thus the recommended identifier is a digital system overlayed by a secondary narrative backup system. The digital system provides a unique, compact computer acceptable identification of each individual parcel within the Cadastre. At the sub-unit level, this unique digit would rarely be confused or cause trouble. At the basic unit level and in the super-unit administrative levels, a secondary narrative backup prevents serious mix-up in the data compilation and dissemination. These identifiers are elaborated on in more detail later in this report.

C. Since cadastration deals with real property which in all cases is a measurable physical quantity, then a basic framework for such mensuration is essential. On Guam, this is provided by the 1963 G. G. T. M. system of coordinates. My only comment on this aspect at this time is simply that all data must be referred to this one system and all references to other systems destroyed.

D. The next component of a Cadastre is the graphic presentation of all data in the system. This implies the development of a series of maps at various scales to provide a base on which to portray existing conditions and data. One scale will not serve all purposes, but a set of approximately six standard scales should suffice.

This graphical portrayal is never static, but rather constantly changing. A cadastral map must present up-to-date facts to be of value. At the same time, superseded data must be removed and not allowed to confuse the map user.

Maps in a cadastre can be divided into two general categories. Usually, the small and medium scales are considered as indices to guide the users to the specific data needed and do not necessarily provide any precise definition of data. Large scale maps are used to specifically define the boundaries of each and every parcel and as such are part of the legal record of each parcel shown thereon.

E. To compliment the graphical data is the supporting narrative data contained in the records. More correctly, the graphical data portrays all alterations of parcel boundary lines which the recorded data has established by properly executed documentation. The records provide a summary of all rights existing on each individual parcel.

It is this very intimate relationship which makes it essential that the surveys and records be considered as one. It is not possible for surveys to exist without firm records to provide the evidence essential to properly execute the survey. Once a survey is executed, then the records must reveal and perpetuate the new evidence in the chain of title. With a cadastre, the various components have points in common at which they meet and data is exchanged. Thus all surveys and records must have a common basic unit and a common parcel identifier.

III. Unit and Identifier Details

The core of the proposed cadastre is the basic unit with its unique identifier. The two must be simultaneously considered to develop the total picture. The division of the Basic Unit has a direct correlation with the division of the digital identifier as well as the grouping of the Basic Units into super-units has a direct effect on the expansion of the Digital Identifier. In the design stages of the various units and related identifiers of the cadastre, we begin with the Basic Unit and go in each direction. Now that the design stage is completed, it will be easier to present the total concept beginning at one end and proceeding to the other. That is, from the total island (and reef) to the smallest parcel that must be considered.

Before describing the various units and identifiers, it seems appropriate at this point to provide some background on the origin of the Basic Unit and identifier concept. Neither are an original idea of mine, but were borrowed from others with slight modifications to be more adaptable to Guam.

The decision to use a basic unit median area of 16 Hectares is related very loosely to the idea of a 40 acre plot of land. Most societies passed through an agricultural stage before entering the present industrial stage. An area of 16 Hectares (40 acres) was a median agricultural area. That is, one family might have survived on less than 16 Hectares, and many ownerships were much larger than this median. Future divisions on the land tend to break these 16 Hectares into single family dwelling units or denser and also commercial developments.

Thus a median area of 16 Hectares (40 acres) is very, very often a one owner situation or more. Single family development would mean approximately 200 parcels, plus roads. Density could increase to possibly 2,000 parcels with normal development and as many as 10,000 estimated in extremely dense high-rise developments. Based on the assumption of 100% saturation habitation in any one area, a basic unit median must be able to handle this load without forcing a revision to the system. With this maximum 10,000 assumed, a basic unit area of 16 Hectares is still a manageable unit to use as a base.

The digital identifier is based largely on the work of the American Congress on Surveying and Mapping, Lands Survey Division, Committee for the Improvement of Land Title Records.

Again, the "eleven digit numeric code" proposed by this committee has been slighly modified. Actually, this modification was primarily the addition of three digits where, I believe, the committee's proposed code had overlooked a critical point.

The eleven digits of the "code" would collapse at the final parcel identifier stage and more digits are necessary. At any rate, the identifier proposed herein will be compatible with the A. C. S. M. suggested code as further advancements are made in this direction on a national basis.

Beginning with the total island, the general divisions and their respective identifiers would be as follow:

A. Within the A. C. S. M. proposed code the Territory of Guam would be identified by the first two digits which would probably be "52". For local use, these need not be used. — may be needed on national basis

B. The third, fourth, and fifth digit in the A. C. S. M. code are used to identify counties. These are not needed on Guam for this purpose as all records are centralized in one place. However, they do have a proposed use on Guam which in effect broadens the future Cadastral System into a potential data bank for every possible use imaginable. As was mentioned earlier in this report, the various basic units and sub-units can be combined in a variety of ways for administrative purposes. The third, fourth and fifth digits represent a potential of nine hundred and ninety nine possible administrative combinations. It is this combining of units which would serve thus to define political divisions, voting precincts, school districts, highway sections, sewer districts, assessment districts, zoning, etc., for computerized filing and retrieving. All agencies could then use a common data bank and easily exchange information.

Within the administration of the Cadastre itself, a few digits could be set aside for administrative cadastral districts. This would still be for administrative purposes only and definitely does not mean a division of the centralized records system. Tenatively, four districts would be the most desirable for purposes of District Surveyor Administration. This provides a division of responsibility and authority within the Cadastre Office compatible with good office management of a few junior administrators responsible to the Chief Administrator. Considering the size of Guam, the area under each District Surveyor would be about the right size for one man to handle.

One other point on the administrative groupings. For administrative purposes it is occasionally necessary and often advantageous to transfer portions of one administrative district to another similar administrative district. Within the proposed system this is entirely possible without any effect whatever on the legal descriptions of the parcels involved. This is one point of flexibility of this proposed system. As we drop down into the next super-unit, this flexibility is more restricted.

C. - Getting closer to the heart of the proposed system, we have the sixth and seventh digits which I refer to as "GROUPS." Guam has been divided into 64 such "GROUPS" numbered from 18 through 81. A GROUP encompasses an area of approximately 900 Hectares and all groups are approximately equal regardless of past or present ownership and without any consideration of topography in keeping with the basic assumption of potential 100% saturation in land and reef use.

The boundaries of each GROUP are to be considered only slightly flexible. These boundaries are generally natural streams, major roads, and/or primary land division lines. Such lines are fairly permanent and rarely do ownerships (at present status) cross such boundaries. Even on roads, old lots may have crossed the right-of-way, but the present parcels are completely separated although the owner may still be the same.

The GROUP is not the basic unit, but rather a combination of several basic units. However, the GROUP would be the best size unit on which to set up the records system. As will be explained below, the primary reference will always be to the basic unit, but by combining up to a maximum of 100 basic units into one GROUP, a manageable records system is still feasible. Tenative thought is to index all records into GROUP listings as is now attempted on the messed-up municipality system. This separates the Cadastral index from politics completely.

Each GROUP is of such size that it could be graphically portrayed on a map at scale 1/10,000. This map would serve as an index to the basic unit location. The Island of Guam can thus be covered with 64 such maps and a directly related system of 64 indices to the pertinent records for each specific GROUP.

D. We finally come to the core of the proposed system which I refer to as a "PLAT". This is the basic unit with a median area of 16 Hectares. In relation to the A. C. S. M. code, this will be comparable to the eighth and ninth digit which is called a block. Although a "PLAT" will rarely have the rectangular shape of a city block, it is the same idea, only somewhat larger. A PLAT may actually include several blocks of, for instance, New Agana. The idea may be more closely related to the area often referred to as a tract, that is several blocks, large lots or streets surrounded by a definite boundary. More precisely, a PLAT is a reversed tract. That is, instead of dividing a single piece of land into related lots, blocks, streets, parcels, etc., a PLAT is a bringing together of a diverse group of un-related parcels, streets, lots and blocks into a manageable unit. The terminology "PLAT" was chosen to avoid confusion with the term "tract" and also as the word "PLAT" has a more significant meaning in a certain historical and legal sense than the word "tract".

The boundary of each PLAT is described as definitely as possible depending on the circumstances and data available.

Preferably, there should be no flexibility in the PLAT perimeter after it is once set. The system will take care of small transfers between adjoining PLATS but it should be avoided if at all possible. The perimeter can first be described by references to existing records in a form of adjoiner metes and bounds type description. As portions of the perimeter are more accurately surveyed and monumented, the description could use more definitive calls. Eventually, a precise, mathematically correct perimeter could be defined and a resulting area computed. With dense interior survey control and adequate perimeter monumentation, interior divisons would rarely cause any problems.

Within the digital identifier system, the PLAT digits are added directly after the GROUP digits to make a four digit numeral. This means a reference to, for instance, PLAT 5026 would mean PLAT 26 within GROUP 50. In practice the term GROUP would seldom be actually used. It has been described here to provide the relationship between the 64 divisions as shown on the proposed system island map and the terminology PLAT.

Each individual PLAT would be graphically portrayed at a scale of 1/1,000. Each PLAT would have to be kept up-to-date to portray the divisions existing at the instant moment. Legal recognition of the PLAT would then make it possible to transfer very simply by reference to the Official Cadastre Plat. This concept has much meaning and must be thoroughly defined and understood.

First in line with this concept is the principle that all records which affect a specific PLAT are one and the same as the PLAT. This is why the PLAT is the core of the entire system. In order to arrive at this point, several things must be done. To begin with, once a PLAT has been defined, an exhaustive and complete research of every record, ever existing, that effects the PLAT area must be recovered, indexed and examined. Once all the evidence is gathered, the rights of all parties involved could be determined. If not too many conflicts are uncovered, it may be possible to, in effect, quiet title the entire PLAT as of a specific date. From that date on, every closely checked record which specifically affect each plat would be indexed against the records of that specific PLAT. In some respects this would resemble a Torrens system of memorails recorded against each entire PLAT.

Once a PLAT was completed, the maintenance of the Cadastre would be fairly simple. As each record was presented for recording, it could be compared to the PLAT for conformance. Once recorded, any alterations to existing parcel lines would be made.

The next user of the Cadastre would then have an up-to-date presentation of the PLAT. All liens, etc., would be readily available from the cadastre record.

E. The smallest division in the Cadastre would be a "PARCEL." This has the normal meaning of one individual unique peice of land with one ownership. This ownership may consist of several separate persons but only in an "undivided interest" situation. The "PARCEL" has one specific area and a definite boundary with no interior division lines.

The PARCEL identifier as used here is more closely related to the definition of an assessors parcel identifier. The identifier of each parcel changes as each division or consolidation occurs. The old identifier than passes into a sort of dead file, still a part of the total records for the PLAT, but no longer used to identify any existing parcel. This concept allows correlation of records and at the same time uniqueness of identifier.

The present system of adding digital identifiers to the basic lot has become very cumbersome. The tract, block, and lot system is an improvement, but still has certain inherent deficiencies. If a lot in a certain tract is

further subdivided, or if two lots are consolidated, the resultant identifier again becomes cumbersome. The new PARCEL identifier will avoid this situation.

The proposed PARCEL identifier consists of two digits similar to the tenth and eleventh digits of the A. C. S. M. code. These are followed by a dash and three additional digits. The first two digits serve to relate all contiguous parcels within a PLAT. In an ideal situation this would be the individual lots of a city block and the surrounding streets to the centerlines. This configuration usually remains firm for anny years except in a major change such as urban renewal. However, the divisions between the interior lots do change with social and economic advancement of an area. Where this occurs, more digits are required to properly identify the new parcels created.

Let us take a simple case of a rectangular block with ten lots. The block would be identified by the tenth and eleventh digits and these would remain intact except in a case such as urban renewal. The adjoining half-streets would each be assigned a parcel number within the last three digits such as 101, 102, 103 and 104. The interior ten lots would each be assigned the next consecutive ten digits, 105 through 114.

Now when, say parcel 112 was divided into two parts, the new parcels would be designated by the digits 115 and 116. This would provide a unique identifier to the new parcels. The old identifier would still be within the PLAT records as a part of the past record, but no longer be used to identify an existing parcel.

In the same way a consolidation of parcels 108, 109 and 110 would be given the next consecutive digital identifier of 117. This would place the digits 108 through 110 in limbo, so to speak.

It is this placing of superseded digits into limbo, that makes the addition of these three critical digits to the identifier system necessary. The sample given here is simple, but it should be evident that the digits required could cover the entire possible range from 001 to 999. At the same time, the relationship of the new parcel to the superseded parcels is maintained. With the trend toward the density of multi-story condominiums, the value of this abundant supply of digits is imperative. In many situations only a few of these last three digits would ever be used or ever need altering, but the important thing is that they are available without disrupting the entire digital identifier systems by after thought additions.

F. The full identifier of a single parcel of land thus would look something like this:

00/000/0000/00-000

This would be reduced to:

0000/00-000

and still give a unique identity to a specific parcel within the Territory of Guam.

The first two digits are the national identifier of the Territory, while the next group of three digits are for administrative grouping of related parcels according to use. These are not needed to specify a unique parcel, as this can be accomplished by the remaining digits alone.

The group of four digits, 0000, identifies a specific GROUP-PLAT which has a median area of 16 Hectares. Within that specific GROUP-PLAT the following five digits, 00-000 define a unique PARCEL as it exists on a specific date. In its final form, this appears quite simple. To arrive at this point will require considerable revolution to existing concepts, procedures and statutes.

IV. Graphic Representations Involved

The maps required in the proposed system can be designed to portray all essential information for the Cadastre. A series of maps, at six different scales are recommended. Scales as given here are expressed in the form of representative fractions and are intended to use the "Systems International (Meters) as a base unit of measurement..

A. The first map needed is the total island area on one sheet which is convenient for general use. For this a scale of 1/62,500 is chosen on a sheet size of approximately 76.2 centimeters by 91.44 centimeters, (30 inches by 36 inches). At this scale, it is possible to outline the 64 GROUPS for general reference purposes. At the same time, the map can be printed on one sheet and is intended for upper level administration. This map has been prepared in a tentative form to accompany this report.

B. The second map needed is also of the total island at a recommended scale of 1/25,000. This is compatible with the normal topographic map series of the U. S. Geological Survey. This scale can be fitted onto a sheet of 106.7 centimeters by 228.6 centimeters, (about 42 inches by 90 inches). This map will serve as a working index to the 64 GROUP maps. This scale, with major cultural developments superimposed, makes it possible for users to locate a desired area to enter the index system. This is most useful at the top technical administrative levels.

C. At the third scale, we enter special area maps. The individual GROUP would be mapped at a scale of 1/10,000. This would be on a sheet of 61.0 centimeters by 91.4 centimeters, (or 24 inches by 36 inches). This sheet size would be a standard for this and all the larger scale map series. The GROUP series consisting of 64 sheets would be an index to the specific PLAT which the user needs.

The individual PLAT would be drawn on the three secceeding larger scales depending on the area to be shown.

D. In instances of large single wonerships, a PLAT map at scale 1/4,000 would be needed. This would accommodate a very large undivided ownership on one standard sheet.

E. Most PLAT maps would cover at or near the median area of 16 Hectares. For these a scale of 1/1,000 would be used. This is large enough to show individual parcels with the perimeter descriptions, etc., in detail.

F. In highly congested areas where enlarged details of specific parcels are needed, a scale of 1/400 is recommended. This would be of limited use to define specific PARCEL details. WHAT ABOUT SUBDIVIDED LOTS?

G. The series of scales outlined here follow a pattern common to map scale series design. This series is as follows:

400 X 2.5 = 1,000
1,000 X 4 = 4,000
4,000 X 2.5 = 10,000
10,000 X 2.5 = 25,000
25,000 X 2.5 = 62,500

This systematic graduation of scales is a very common cartographic map series and found to be most useful for practically every map need.

V. IBM Card Filing

With the assignment of a unique digital identifier to each land parcel, it is possible to index all records pertinent to a specific PARCEL on an IBM card system.

This would evolve into a complete mechanization of the entire cadastre. To attempt to mechanize the existing rec ording system with its variety of index system is not feasible and is a poor approach to the solution of our land records management problem. With the proposed digital identifier system, a complete computerized storage and retrieval of all data, is entirely possible and very feasible. It is this future objective that is the whole purpose of the proposed cadastre.

VI. Legal Implications WHAT about real property tax

The proposed system would eventually require changes to existing laws and regulations. The full extent of such changes would require extensive investigation by competent legal counsel.

However, a drastic change is not required immediately or necessarily desirable. The first result of grouping existing parcels into PLAT and GROUP areas would be an interior administrative re-organization of the filing system. The initial idea is to get all information of related parcels into more manageable units. The present designation of lots, tracts, Parcels, etc., would not need to be changed as yet.

The procedure for examining and quiet title action to a PLAT rather than to a single ownership may need new statutes. It would actually be simple a quiet title action on a group basis rather than on a individual basis. The economics of reviewing and investigating a package deal should be a consider-

able savings as compared to separate research and investigation. Many problems which might arise on boundaries could be solved by compromise and arbitrations. The perimeter of the PLAT may pose critical problems, but once settled for one PLAT, would have a domino effect in settling adjoining PLAT perimeters.

Caution must be advanced against any attempt to accept on face value, all existing Guaranteed Claims and Certificates of Titles. The Torrens system may have cleared most problems of legal ownership, that is, who really owns the land. However, exactly where a specific ownership exists, or if it actually is physically existant in some cases, is an entirely different species of animal. Sir Torrens, in his own later writings, expresses the realization that the physical location of the land, or the survey, is the weakest part of his system. The Torrens system, wherever in use, has continuously run into this problem. The institution of the proposed PLAT system with proper survey will provide a practical means of better survey location. Rather than dealing with several separated parcel surveys, we will be able to concentrate high accuracy survey procedures onto the perimeter of a group of related parcels. Once a precise perimeter can be established by the most advanced arts of surveying then the physical location of the whole will be much more definite than has ever been possible in the past. The parts inside the whole must equal the sum.

Once a PLAT has been completely surveyed and all title problems solved, then we can institute the new identifiers in the total sense.

No further reference to past designations or records is needed. The curtain principle takes full effect. For this, a well written new law for Cadastre must be provided.

VII. System Implementation

Now, we get to the big question. How do we do all this? We begin.

Let us begin by dividing the problem into its two basic items, surveys and records. The two technologies involved are widely different, but they must at all times follow parallel paths with frequent contact. So as we plan for each, we must relate to the parpllel activity of the other. In a Cadastre, a certain separation of these technologies is important. Although intimately interdependent, each acts as a check on and against the other. To fuse them completely will result in a system with no counter-checks. To divorce them completely (as is very nearly the present situation) means no cadastre exists.

The initial meeting ground for the two would preferably be at the PLAT level. This is the final product. However, from a more practical standpoint, it is advantageous to deal with the 64 GROUP areas in the beginning. It is not possible at this point to define, even in preliminary form, the perimeters of an estimated eventual 4,000 required PLAT areas. It is possible and entirely feasible to define with fair reliability, the perimeters of the 64

GROUP areas at this time. Once these are define, we can commence the assembly of both survey and record data in a coordinated and efficient program. The GROUP is thus the foundation on which we build our future.

A. The GROUP perimeters as tentatively drawn on the 1/62,500 island maps are vague in many places and must be refined. This is possible by the use of presently available source data such as the topographic maps, tax maps, private survey maps, etc., recorded or on file in the Department. Preliminary layout could be accomplished on the 1/25,000 island property map with tracing paper overlays for trial divisions. As the GROUP perimeters are settled, a new map at 1/25,000 would be prepared as the primary index into the system.

B. Next, a map at scale 1/10,000 must be prepared for each of the 64 GROUP areas. It would be possible at this scale to indicate all of the existing basic lots by current designation within the set perimeters. This would serve as a working index for the assembly of survey and record data into the proper GROUP. At this point, we could determine what lot, parcel, right-of-way, etc., belongs in each GROUP. With this, an extensive records research begin. Every document, map, etc., which affects a GROUP must be listed within the file system for that specific GROUP. Many records may affect more than one GROUP and must be listed under each GROUP which they relate to.

C. It is the magnitude of the GROUP filing system which requires the most work. An estimated 200,000 documents of various types are presently recorded or on file. This figure may be too low.

Also, probably half of these documents affect more than one parcel and an estimated 20% would effect more than one GROUP area. To correlate this mass of data into a GROUP filing system on an IBM card index set-up is proposed. The card data must be so designed to provide the GROUP index and must also provide a systematic accounting for every possible bit of information. Nothing can be overlooked in the records. This is critical to provide an eventual basis for quiet title action. The major items to index and cross-index on IBM cards would be as follow:

1. Original record identification nomenclature, that is volume and page, Guaranteed Claim Number, Certificate of Title Number, Document Number, etc. In addition, and more complicated, are the miscellaneous filed, but unrecorded maps.

2. Original legal designation nomenclature, such as tract number, lot number, parcel number, estate or place name, etc. These vary considerably and are not as easily indexed in any logical sequence.

3. Supplemental information as to type of document may be valuable, but is not essential at this stage. The initial goal is to account for every bit of recorded and filed data and stick it in the right pigeon hole - the GROUP identifier.

D. Concurrent with the record inventory by IBM, the survey data compilation must take similar lines. At this point, we are concerned with control data pertinent to each GROUP. Most of the data will be gathered in the record filing system with the addition of IBM cards for control data. This will at first be the G. G. T. N. control stations and then be densified by field location data needed to improve especially the perimeter of each GROUP. The IBM tabulated data will be supplemented by graphical data. The defining of PLAT perimeters must be initiated. This requires the preparation of 1/4,000 and 1/1,000 PLAT maps. As data begins to accumulate in a PLAT area, the perimeter can be more definitely defined until we are able to provide the precise survey location of each specific PLAT.

E. With survey and record data correlated on the GROUP level, we can begin an in-depth research and analysis of a PLAT area leading to final survey and quiet title action. Until we can be fairly certain of complete data on a PLAT area, any attempt at final examination is a waste of time. Thus, the IBM listing and correlation of all survey and record data must be completed first.

An important side effect of this process will be the elimination from the filing system of a vast volume of superseded, dead, useless data. As records are found to be superseded by later records, a weeding out process can take place. Possibly a reduction of over 50% to the present vault contents could result. These can never be destroyed, but could most certainly be placed in a dead storage area to simplify the active record files.

VIII. Final Conclusions

This report has not attempted to provide a definite set of specifications for the proposed future Cadastre. It is meant as an overview of a proposed improvement process for the Guam Land Records Management System- a Cadastre. Many details must yet be worked out, but hopefully the general concept has been revealed.

Readers may question what might appear as an oversight, the absence of certain items. No mention of the "Land Square" system has been made, although it was most seriously considered in the study. Some times a drastic break with parts must be made and the Land Square system is one item that must go.

Also, no provision has been made for a series of "rectangular grid cadastral maps." They were most certainly seriously considered and even contemplated as an essential intermediate step to the final product. I strongly feel, however, that we can safely and with considerably savings of work and money proceed directly to the final GROUP and PLAT map Cadastre. I am confident that a systematic approach to the solution of our survey and records problems via the GROUP-PLAT as herein defined is entirely feasible. I personally believe that 90% of this island is in very good survey condition if we could only bring about " S-Y-S-T-E-M-A-T-I-C "management. Once we organize the 90%, we can isolate the remaining 10% trouble spots and concentrate on a solution without delaying any longer the implementation of a system that can serve the majority.

Another item not mentioned was microfilm. I have found through personal experience that it is better to have completely organized records management system before mechanization such as microfilm or computers are utilized. The human mind must first create order out of chaos, machines can only cope with orderly and concise instructions. Microfilm, IBM and all possible mechanization must, most certainly, be considered in designing the system, but it is the end, not the beginning.

Finally, this Cadastre must be instituted yesterday.

GOVERNMENT OF GUAM
AGANA, GUAM 96910

October 23, 1973

MEMORANDUM

To: Planner IV, Territorial Planning Commission

From: Planner I, Territorial Planning Commission

Subject: Land Use Survey Procedures

A land use survey for Guam is presently being conducted by the master plan staff of the Territorial Planning Commission. It consists of an accumulation of existing land use data concerning every house and parcel of land on the island.

In essence, it is a three-phased compilation of data stemming from two sources--Department of Land Management and Department of Revenue and Taxation.

I. The first phase begins with data collection from the Department of Land Management, the purpose of which is to obtain a listing of every lot within each municipality and to identify their corresponding areas, ownership and document (deed) or certificate of title numbers. There are three steps within the first phase:

   A. The first is to research the master index of lots situated within the Record Section of Land Management. This entails obtaining every lot in numerical order and the most recent document or certificate of title number.

      NOTE: The purpose for retaining the numerical order of the lots is to prevent possible duplication of lots. Also, it is preferable to obtain a certificate of title number of the lot in place of a document number in order to trace changes in ownership.

B. The second step is to cross-check the information from the master index with the Record Section's running record of documents and certificate of titles. This entails gathering owner and area data which corresponds to the lot numbers and document or the certificate of title numbers located in the Record Section's public vault.

C. The last step of the first phase is to gather data concerning the tracts (i.e., subdivisions of basic lots). The Record Section also has a tract record containing the most recent owners and document or certificate of title numbers. The lot numbers and areas can be cross-checked with the Planning Division of Land Management (tract maps).

II. The second phase consists of data collection from the Department of Revenue and Taxation. The purpose of this is to obtain lot numbers as another cross-check of Land Management's data and to obtain use and character information of the buildings situated upon these lots. Data collection from Revenue and Taxation is accomplished utilizing two steps.

A. The first is to research tax cards concerning property appraisals, building conditions, number of stories and rooms and the buildings' primary and accessory uses. The tax cards are located in the Real Property Tax Division's files.

B. Due to the fact that the tax roll is updated every fiscal year, corrections may be absent from some of the cards. While the cards are being corrected, they are absent from the files. This constitutes the second step. In order to prevent duplication and preserve the numerical order, the gathering of these corrections should be done after the completion of the research on those cards in the file --this is also done for expediency. All the data collected from Revenue and Taxation is also placed on a standard form--a copy of which is included as an attachment.

III. The third phase is the compilation of both the data collected from Land Management and Revenue and Taxation. The purpose

of this phase is to combine lots with their respective buildings, include military and public lands and for computerization into a basic information system. This combination of data also serves as the final cross-check for all the information gathered.

A. The first step is to list the lots in numerical order along with the buildings on each lot. In this, both standard forms from the two sources are referred to.

B. Step two entails the coding of each use, utilizing the "Standard Land Use Coding Manual," a publication produced by the U.S. Department of Transportation. Also, ownership and improvements are coded, using a prearranged coding system.

C. Step three consists of examining official zoning maps, locating the lots on these maps and finding each lot's corresponding zone. All this information is also placed on a standard form.

D. Next, a grid number consisting of a combination of letters and numbers is assigned to each lot for easy location on a base map of the district.

E. The final step of phase three is to key-punch all the land use and related data on computer cards to produce a basic information system for Guam.

Techniques for updating the land use information is not included in the three phases. Basic data collection of the three phases is the essential part of the land use survey and since we are still operating within these three phases, updating procedures have not been thoroughly formulated.

As noted in the context of this discussion, accompanying the procedures for the Land Use Survey are the standard forms used for gathering information from the two sources and the form used for compilation for eventual computerization. Also, a copy of the format used for the computer card is included.

Michael Cruz

MICHAEL CRUZ

Attachments