

GUAM MEMORIAL MEDICAL CENTER



Volume 2

MASTER PLAN REPORT

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FOR GUAM MEMORIAL MEDICAL CENTER



PROJECTED
HEALTH CARE NEEDS
AND LONG RANGE
FACILITY MASTER PLAN

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MARCH 1973

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PART I

**HISTORICAL BACKGROUND
OF GUAM MEMORIAL
MEDICAL CENTER**

HISTORICAL BACKGROUND OF GUAM MEMORIAL MEDICAL CENTER

Guam Memorial Medical Center is the only nonmilitary hospital on Guam, a territory of the United States. Prior to 1950, all medical care on the Island was provided by the United States Navy and missionary groups.

- 1950 The United States Navy's Fleet Hospital No. 111 in Tamuning was given to the Government of Guam. The facility contained a group of one-story, sheet metal structures joined by enclosed corridors. These became the first buildings of Guam Memorial Hospital.
- 1952 Because trained nurses were in such short supply, a school and residence for the training and housing of nurses was constructed. The building (Wing "F") was ready for occupancy in 1952. However, by
- 1954 1954 the disinterest shown by the Guamanians in becoming trained nurses made it impractical to continue the program. At the same time, the six-story unit (Wing "C") was completed. Planned as a tuberculosis hospital, the unit contained 160 beds, an x-ray department, a laboratory, a delivery suite, and a surgical suite. The poor condition of the sheet metal buildings, along with the almost discontinued nurses' training program, convinced the Government to convert the nursing school and residence facility (Wing "F") to a general hospital, as it is now functioning. However, the building, with the rooms located only on one side of the corridor, does not meet the requirements for efficient hospital functions or fire safety standards. A new structure (Wing "G") containing the Dietary and Laundry Departments was constructed between the converted general hospital and the special medicine facility. Locating this building between two inpatient nursing units has created a bottleneck to the proper utilization of the nursing floors.
- 1962 In 1962 Guam Memorial Hospital, as well as other properties on the island, was almost completely destroyed by typhoon Karen. The injured staff and patients of the severely damaged Guam Memorial Hospital were taken to the Navy hospital which, fortunately, was able to continue functioning.
- 1963 The United States Government and the Government of Guam provided the funds necessary to repair the damages to the hospital building and to make certain changes in the additions and locations of departments. The offices and clinics of the U.S. Public Health Service were located on the first and second floors of Wing "C". The tuberculosis patients were placed on the third and fourth floors, with the NINDB on the fifth floor and neuropsychiatric patients on the sixth floor.

1965 In 1965 a change in policy affected the existing Neuropsychiatric Department. Since all neuropsychiatric patients were either treated in the Navy Hospital or were sent to Hawaii, it was decided to discontinue the NP unit and turn the area over to the expanding Pediatric Department. The vacated pediatric space was occupied by physical therapy which functioned there until 1969 when it moved to the fourth floor of Wing "C".

1969

An extended care unit was installed on the fourth floor of Wing "C" after it became possible to reduce the required area for the TB unit by occupying only the third floor. Reduction in the TB incidence rate made this possible.

1972 The "Guam Memorial Hospital" title was changed to "Guam Memorial Medical Center."



PART II

**PHYSICAL INSPECTION
OF EXISTING
HOSPITAL FACILITIES**

INTERVIEWS

The following list of all those individuals interviewed regarding the proposed, new Guam Memorial Medical Center includes members of the Hospital Staff, the Government of Guam, the Chamber of Commerce, the Public Health Service, and Comprehensive Health Planning. Also included is a meeting held with the Medical Society at their July session.

The members of the hospital staff were most cooperative and generous of their time in providing us with all the pertinent information concerning the present operation of the hospital. Included herewith, in capsulated form, is a resume of the information gained from the staff concerning the various departments of the hospital. This material has been of considerable value to us in developing the program for the new facility.

In discussion with government and public health officials, there was mutual agreement as to the dire need of replacing the existing, outmoded, substandard, and inefficient medical facility with a new, modern Medical Health Care Center.

INDIVIDUALS INTERVIEWED

GUAM MEMORIAL MEDICAL CENTER

Robert A. Findley, Ph.D., Administrator
Herbert J. Johnston, Assistant Administrator
Edward Cruz, Administrator in Charge of Business Affairs
John McAndrews, Director, Service Departments
Jack McCanns, Administrator in Charge of Medical Health
Sister M. Laclare Beres, Director, Nursing Service
Leon Concepcion, MD, Chief of Pediatrics
Allen C. Service, MD, Chief of Emergency Services
Benjamin S. Sison, MD, Chief of Medicine
Wesley Olson, MD, Chief of General Practice
Leung Chen, MD, Chief of Laboratory
Loreto Amparo, MD, Chief of Radiology
Percival Ong, MD, Chief of OPD
Frank Haendel, MD, Chief of Psychiatric Services
Glorito Sagisi, MD, Chief of OB-GYN
Ramon A. Tinsay, MD, Chief of Surgery
Adelaida Villar, RN, Head Nurse, Mental Health
Blanche Stephens, RN, Head Nurse, Surgical Suite
Veronica Camacho, RN, Head Nurse, Extended Care Facility

Mary Villegas, RN, Supervisor, CCU Project Administrator
Esperanza Dulay, RN, Head Nurse, Surgical Nursing Unit
Brihida Aguigui, RN, Head Nurse, Outpatient Department
Ana Carbullido, RN, Head Nurse, Surgical-West Nursing Unit
Brigida Carpo, RN, Head Nurse, Extended Care Facility
Marleen Crump, RN, Head Nurse, Inhalation Therapy
Luz Hechanova, RN, Head Nurse, Tuberculosis
Anna Morcilla, RN, Head Nurse, Central Sterile Supply
Isabel Santos, RN, Head Nurse, Medical-East
Aida Salumbides, RN, Head Nurse, Medical/Surgical-West Nursing Unit
Sister M. Francine, RN, Head Nurse, Inservice Instructor
Rosario Patty, Dietitian
Antonio Cruz, Pharmacist

GOVERNMENT OF GUAM

Carlos Camacho, Governor
Gregorio Sanchez, Director, Bureau of Budget & Management Research
Adrian C. Sanchez, Senator, Chairman, Committee on Health & Welfare
Frank F. Blas, Director, Department of Commerce
Juan S.M. Palomo, Director, Department of Labor
John Gilliam, Economist, Department of Commerce
Segundl Aguon, Deputy Director, Department of Administration
Peter Toves, Director, Department of Public Works
Charles Brister, Assistant Director, Department of Public Works
Gerald S.A. Perez, Director, Department of Land Management
Paul Seibert, Assistant Director, Department of Land Management
R. Streuding, Chief Surveyor, Department of Land Management

CHAMBER OF COMMERCE

Admiral Carlton Jones, Retired, Executive Secretary

PUBLIC HEALTH

Franklin S. Cruz, Director
Joaquin Camacho, Deputy Director
Mary Sanchez, RN, Head Nurse
William McGriff, DDS, MPH, Chief Public Health, Dental Officer
Benjamin S. Sison, MD, Chief of Medicine

COMPREHENSIVE HEALTH PLANNING

Betty Guerrero, Chairman

MEDICAL SOCIETY

July Meeting

PHYSICAL INSPECTION OF EXISTING HOSPITAL FACILITIES

The present hospital complex is totally unsuitable for consideration as a direct patient care facility. A representative from United States Public Health Service, after visiting the hospital in 1962, said, "The hospital complex is so inefficiently arranged that no amount of money spent on restoration or changes would result in a hospital which might be said to conform to standards for medical practice and patient care which Guam may be expected to require now or in the future."

The existing hospital violates all design criteria of modern hospital construction to provide quality patient care and safety. It would be redundant to identify and list all the deficiencies which have been reviewed and criticized again and again in studies and reports prepared by consultants and governmental personnel. Let us suffice to say, none of the present buildings should be considered for any activity related to direct patient care.

ACUTE CARE NURSING UNITS

MEDICAL—EAST NURSING UNIT

Location: Second Floor—"G" Wing Left

1. Capacity: 19 beds
2. Occupancy Rate: 95 to 100 percent

MEDICAL-SURGICAL—WEST NURSING UNIT

Location: Second Floor—"F" Wing

1. Capacity: 23 beds
2. Occupancy Rate: 100 percent
Usually about equal in medical and surgical patients.

SURGICAL—WEST NURSING UNIT

Location: Third Floor—"F" Wing

1. Capacity: 26 beds
2. Occupancy Rate: 90 percent
3. Average Length of Stay: 7 days
Orthopedic patients usually placed in this nursing unit because of larger rooms.

SURGICAL NURSING UNIT

Location: Third Floor—"G" Wing Left

1. Capacity: 19 beds
2. Occupancy Rate: 100 percent plus
3. Average Length of Stay: 7 days

MATERNITY NURSING UNIT

Location: Fourth Floor—"G" Wing—Right and Left

1. Capacity:

29 maternity beds

40 nursery bassinets, including: One Nursery — 26 bassinets
One Nursery — 13 bassinets
Suspect Nursery — 1 bassinet

2. Occupancy Rate: 100 percent plus

3. Average Length of Stay:

Normal Deliveries: 3 to 4 days.

Caesarean Sections and Deliveries with Complications: 6 to 7 days.

PEDIATRIC NURSING UNIT

Location: Sixth Floor—"C" Wing

1. Capacity: 40 beds

2. Occupancy Rate: 65 to 90 percent

3. Comment:

- a. Size of existing nursing unit adequate.
- b. Overflow adult patients sometimes housed in this unit.
- c. Public Health Service maintains pediatric diagnosis and preventive medicine clinics on Monday and Thursday mornings. Referrals from these clinics are to private or hospital contract physicians.
- d. There are now no isolation rooms; however, there is a definite need for two or three.
- e. It is a common practice for a mother to stay overnight in the room with her child.
- f. There is a large number of visitors to this nursing unit in spite of efforts to keep them to a minimum.

INTENSIVE CARE NURSING UNIT (ICU)

Location: Third Floor—"C" Wing

This is a completely new department made operative quite recently.

1. Capacity: 8 beds
2. Monitoring:
4 beds having permanent monitoring with nurses' station readout.
2 additional portable monitoring units available for other beds.
3. Patient Occupancy: Estimated average use: 2 surgical patients
2 medical patients
4 coronary patients.

LONG-TERM CARE NURSING UNITS

EXTENDED CARE NURSING UNIT

Location: Fourth Floor—"C" Wing

1. Capacity: 32 beds
2. Occupancy Rate: 100 percent. There is a waiting list of approximately 200 prospective patients at this time.
3. Length of Stay: Indeterminate. Patient discharge usually terminal.
4. Comment:
 - a. Most patients are confined to wheelchairs or stretchers.
 - b. No day rooms, so patients spend much time in corridors.
 - c. 90 percent of patients are on baby food diets.

PHYSICAL MEDICINE AND REHABILITATION NURSING UNIT

Location: Second Floor—"F" Wing

1. Capacity: 16 beds
2. Average Length of Stay: 6 months

3. Comment:

- a. Rehabilitation patients constitute 50 percent of total.
- b. This nursing unit is utilized at times to house patients waiting for admission to the extended care unit.

TUBERCULOSIS NURSING UNIT

Location: Third Floor—"F" Wing

- 1. Capacity: 16 beds
- 2. Occupancy Rate: 90 to 100 percent
- 3. Average Length of Stay: 3 to 4 weeks
- 4. Comment:
 - a. This nursing unit is sometimes used to house overflow medical patients.
 - b. Food service utilizes completely disposable dishes and utensils.
 - c. Patients have considerable liberty of movement after their cultures are pronounced negative.

MENTAL HEALTH NURSING UNIT

Location: Third Floor—"C" Wing

- 1. Capacity: 20 beds
- 2. Occupancy Rate: 75 percent
- 3. Length of Stay: Indeterminate. However, an inordinate number of patients are chronic and should be housed in another facility if it were available.
- 4. Comment:
 - a. 20-bed nursing unit is probably adequate.
 - b. Recently implemented day care program serving average of 10 patients has reduced inpatient load.
 - c. No isolation or security room available for which there is a definite need.
 - d. Drug- or alcohol-abuse patients average one admission per day.

OBSTRETICS—DELIVERY SUITE

Location: Fourth Floor—"G" Wing Right

1. Existing Facilities: Delivery Rooms — 2
Labor Room — 1 containing 5 beds
2. Deficiencies:
 - a. No provision for Caesarean sections (now performed in surgery).
 - b. No recovery room facilities.
 - c. No fathers' waiting room.
3. Present Work Load: 195 to 200 infants delivered per month.

SURGICAL SUITE

Location: Third Floor—"G" Wing Right

1. Existing Facilities:
Operating Rooms: 3 with normal support functions
Recovery Room: 2 beds
2. Operating Schedule: 7 a.m. to 3:30 p.m., 5 day per week
3. Surgery Workload: Averages 250 procedures per month or about 4 procedures per room per day.
4. Surgical Staff Doctors:
4 Surgeons (2 chest, 1 cardiovascular, 1 general)
2 ENT
6 GYN
1 Opthamologist
1 Orthopedic
1 Plastic (50 to 60 percent outpatient procedures)
5. Anesthesia: 1 Anesthesiologist
2 Anesthetists
6. Emergency (after 3:30 p.m.): 2 Registered Nurses
1 Surgical Technician

7. Comment:

- a. Immediate need—6 operating rooms, including facilities for cystology.
- b. Caesarean sections which are now performed in surgery and completely disrupt surgery schedules should be done in the delivery suite.
- c. Recovery room should include isolation facilities. Combination recovery room for both surgery and delivery suites would be acceptable.
- d. Existing facility totally inadequate.
- e. Surgical instruments and utensils are now processed and sterilized in the surgical suite. Sterile linen packs are processed and supplied by central sterile supply.

PATHOLOGY

CENTRAL LABORATORY — MORGUE, AUTOPSY

Location: First Floor—"G" Wing Right

1. Existing Functions Provided:

Chemistry
Hematology
Microbiology
Bacteriology
Microscopy
Histology
Blood Bank
Morgue
Autopsy

2. Phlebotomy procedures are done in the laboratory.

3. Blood Bank:

- a. Donors: 75 per month average
- b. Cross Matches: 100 per month average
- c. Blood Supply Inventory: 20 to 30 pints

4. Autopsies:

- a. Performed on 80 percent of deceased.
- b. Medical Examiner Cases: 50 percent of total.

5. Morgue:

- a. Average Occupancy: 6 cadavers
- b. Maximum Occupancy: Frequently 16 to 20
- c. Average Holding Time: 5 days
- d. Cadaver Refrigeration: 5 compartments (completely inadequate)
- e. Morticians: Presently none located on Guam.
- f. Embalming: Presently no embalming performed except on cadavers transported off island. One part-time embalmer available.

RADIOLOGY

Location: Third Floor—"G" Wing Right

1. Existing Facilities: Diagnostic X-ray and fluoroscopy—3-room department

2. Deficiencies:

- a. Entire facility substandard in size and area.
- b. Patients' dressing areas and toilet rooms.
- c. Inadequate and poorly located for efficient operation.
- d. No office areas for technologists and technicians.
- e. No area for doctors' dry and wet viewing.
- f. Inadequate space for exposed film filing and sorting.

3. Comment:

- a. Present radiography load—24,000 film exposures per annum.
- b. Deep radiotherapy not provided on Guam. These cases are referred off island.

- c. Additional radiography facilities available on the island include those of:

Catholic Medical Center
Seventh Day Adventist Clinic

These facilities service approximately 10 percent of the work load.

- d. Four X-ray rooms should be provided in the new facilities, including one large enough for special procedures.

INHALATION THERAPY

Location: First Floor—"G" Wing Left

1. This function, as a department, has been operational for only 1 year.
2. Department is responsible for supplying all medical oxygen for the medical center.
3. Department provides inhalation therapy for both inpatient and outpatient needs. Present daily load: 14 inpatients and 2 outpatients.
4. Department is responsible for maintaining, servicing, and cleaning all inhalation therapy equipment.

PHARMACY

Location: First Floor—"G" Wing Right

1. Scope of Operation:
 - a. Services and fills both inpatient and outpatient prescriptions.
 - b. Staffed 24 hours per day.
 - c. Handles 200 to 225 prescriptions per day.
 - d. Compounding: Very limited. Most pharmaceuticals used are pre-packaged.
 - e. Two pharmacists on duty during the day. One pharmacist on duty at night.

2. Comment:

- a. Existing facility is quite inadequate in size, but immediate plans are being made for its enlargement.
- b. Unit dose system for inpatients is preferred but has not been implemented due to inadequate budget.

EMERGENCY AND OUTPATIENT CLINIC

Location: First Floor—"G" Wing Right and Left

1. Existing Facilities:

Emergency Operating Room
Treatment Room
Examining Rooms: 5
Observation Alcove: Capacity, 5 stretchers
Utility and Storage Rooms
Waiting Area

2. Clinic Patient Load: 125 to 150 patients per day

Case Load Percentages:

Emergencies	10%
Outpatients (scheduled)	50%
Walk-Ins (unscheduled)	20%
Doctors' Office Patients	20%

3. Clinic Schedules:

Medical and Surgical General: Monday through Friday, 8 a.m. to 5 p.m.

Specialty Medical (Diabetes-Cardiovascular): Monday, Wednesday, Thursday, 1 p.m. to 5 p.m.

Pediatric: Monday, Wednesday, Thursday, 8 a.m. to 5 p.m.

Neuropsychiatric-Neurology: Tuesdays, Fridays, 1 p.m. to 5 p.m.

OB-GYN: Monday through Friday, 8 a.m. to 5 p.m.

4. Comments:

- a. Currently, all patients (emergency, walk-in, and scheduled outpatient) enter through the same department.
- b. An unusual clinic procedure (approximately 20 percent of cases)—doctors treat their office patients at the hospital, i. e., patients follow physician to the hospital if he is not in his office.

CENTRAL STERILE SUPPLY

Location: Third Floor—"G" Wing Right

1. Existing Facilities: Entirely inadequate in size and arrangement.
2. Operational Procedures:
 - a. Central Supply does not process or sterilize surgical and obstetrical instruments and utensils; they are processed within each department.
 - b. Central Supply prepares and sterilizes surgical packs, draperies, etc., for surgery and OB.
 - c. Central Supply is responsible for dispensing all medical supplies, except pharmaceuticals, to all departments of the hospital (both inpatient and outpatient).
3. Present Scheduling for Supply Disbursement:
 - a. CSR requisitions supplies from purchasing-general stores twice weekly to keep adequate supplies on hand for disbursement.
 - b. Deliveries made to nursing units twice daily, refilling standard stock items to normal quantities required.
 - c. Surgery and OB suites supplied daily.
 - d. Outpatient emergency radiology laboratory, etc., supplied by department requisition.
4. Comment: Discussion with CSR Department personnel with regard to Central Services becoming the distribution center for all supplies; both medical and nonmedical indicated enthusiastic agreement.

DIETARY (CENTRAL KITCHEN AND STAFF DINING)

Location: Second Floor—"G" Wing Right

1. Existing Facilities:

Central Kitchen

Day Storage

Bulk Food Storage

Walk-In Coolers for Vegetables, Dairy Products, Meat, and Fish

Walk-In Freezer

Walk-In Cooler for Garbage



PART III

**PAST AND PRESENT
HOSPITAL STATISTICS**

PAST AND PRESENT HOSPITAL STATISTICS

The following tabulations, charts, and graphs illustrate past and present statistics as they affect the work load at the Guam Memorial Medical Center.

Contained in this section are the following illustrations:

1. Admissions by origin (by districts).
2. Admissions by origin (by regions).
3. Map of Guam showing patient origin (by regions).
4. Admissions by age groups (tabulation).
5. Admissions by age groups (chart).
6. Monthly admissions, acute and others (1968-1972).
7. Monthly admissions by services (1968-1972).
8. Total yearly admissions of general patients and others (1968-1972).
9. Graph of general patients and others (1968-1972).
10. Graph of Pediatrics admissions and patient days (1963-1972).
11. Graph of Medical admissions and patient days (1963-1972).
12. Graph of Surgical admissions and patient days (1963-1972).
13. Graph of OB-GYN admissions and patient days (1963-1972).
14. Graph of Special Medicine admissions and patient days (1963-1972).
15. Chart of patient days for general patients, Special Medicine, Neuropsychiatric, and Extended Care patients.
16. Past and present bed count by service (1969-1972).
17. Bed utilization per thousand population (1963-1972).
18. Emergency/outpatient visits (1963-1972).

ADMISSIONS BY ORIGIN
(Survey Conducted January 2 to 16, 1972 – 15 days)

<u>Origin</u>	<u>Survey</u>	<u>Factor</u>	<u>Annual</u>	<u>Chart</u>
Agana	19	22.6	430	400
Agana Heights	15		340	400
Agat	45		1,020	1,000
Asan	2		50	100
Barrigada	32		730	700
Chalan Pago	15		340	400
Dededo	88		2,000	2,000
Harmon	10		230	200
Inarajan	12		270	300
Maina	6		140	200
Maite	5		120	100
Mangilao	22		500	500
Merizo	8		200	200
Mongmong	9		200	200
Ordot	1		20	100
Santa Rita	23		520	500
Sinajana	12		270	300
Talofofo	10		230	200
Tamuning	48		1,100	1,100
Toto	10		230	200
Tumon	8		200	200
Umatac	4		100	100
Yigo	15		340	400
Yona	18		400	400
Other	3		70	100
Total	440			10,200
Per Day	30			
Factor = $\frac{10,214}{30} = 340 \text{ days/year}$				
$\frac{340}{15} = 22.6$				

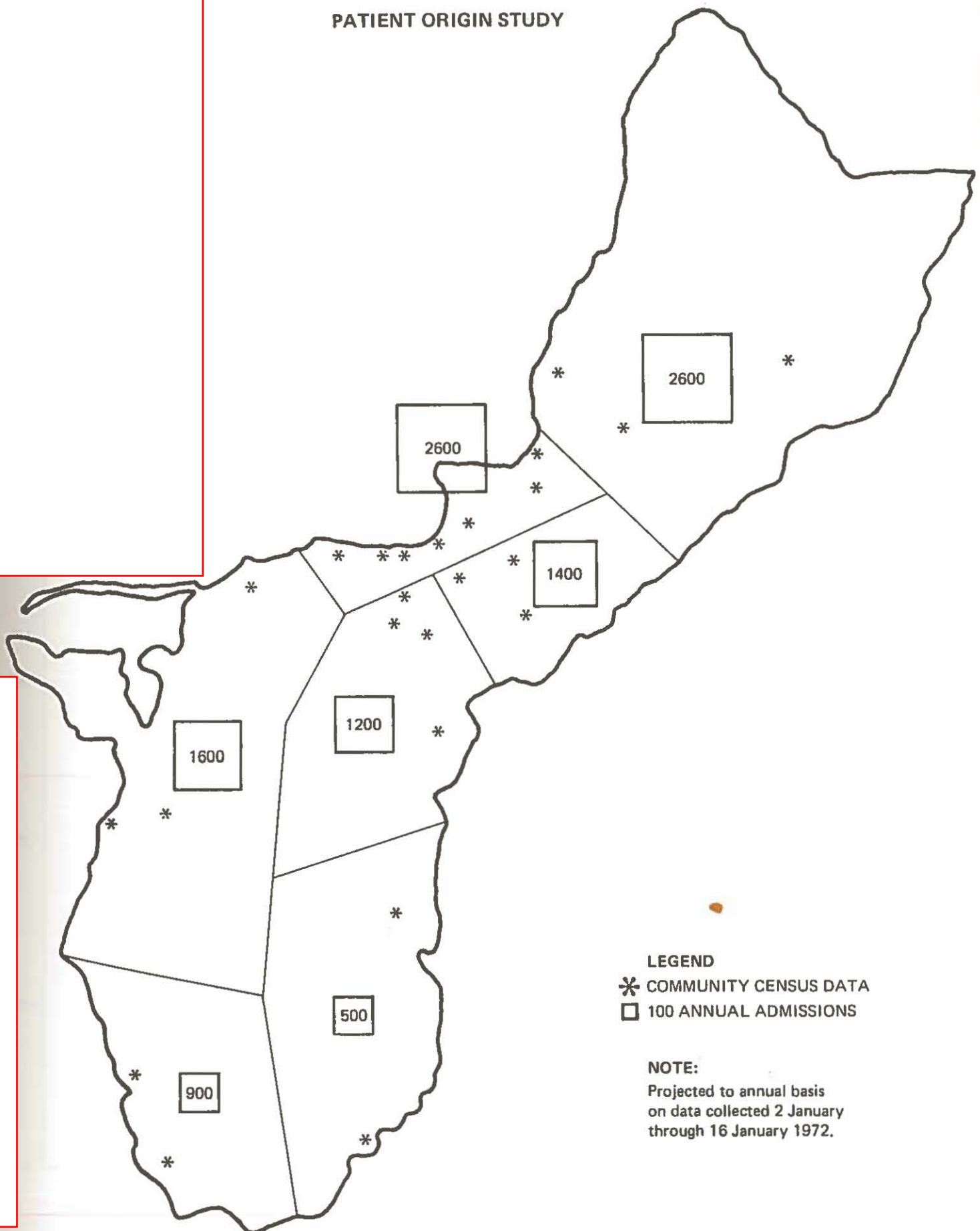
ADMISSIONS BY ORIGIN
(Breakdown by Regions)

<u>Region</u>	<u>Total</u>
Merizo Umatac	300
Talafofo Inarajan	500
Agat Santa Rita Asan	1,600
Chalan-Pago Ordot Sinajana Yona	1,200
Mangilao Barrigada Toto	1,400
Dededo Harmon Yigo	2,600
Agana	2,600
Total	10,200

ADMISSIONS BY AGE GROUPS
(January 2 to 16, 1972 – 15 days)

<u>Age</u>	<u>Survey</u>	<u>Annual</u>	<u>Chart</u>
0-4	118	2,667	2,700
5-12	20	452	500
13-15	10	223	300
16-40	219	4,950	5,000
41-64	62	1,401	1,400
65-	14	316	300
Total			10,200

PATIENT ORIGIN STUDY



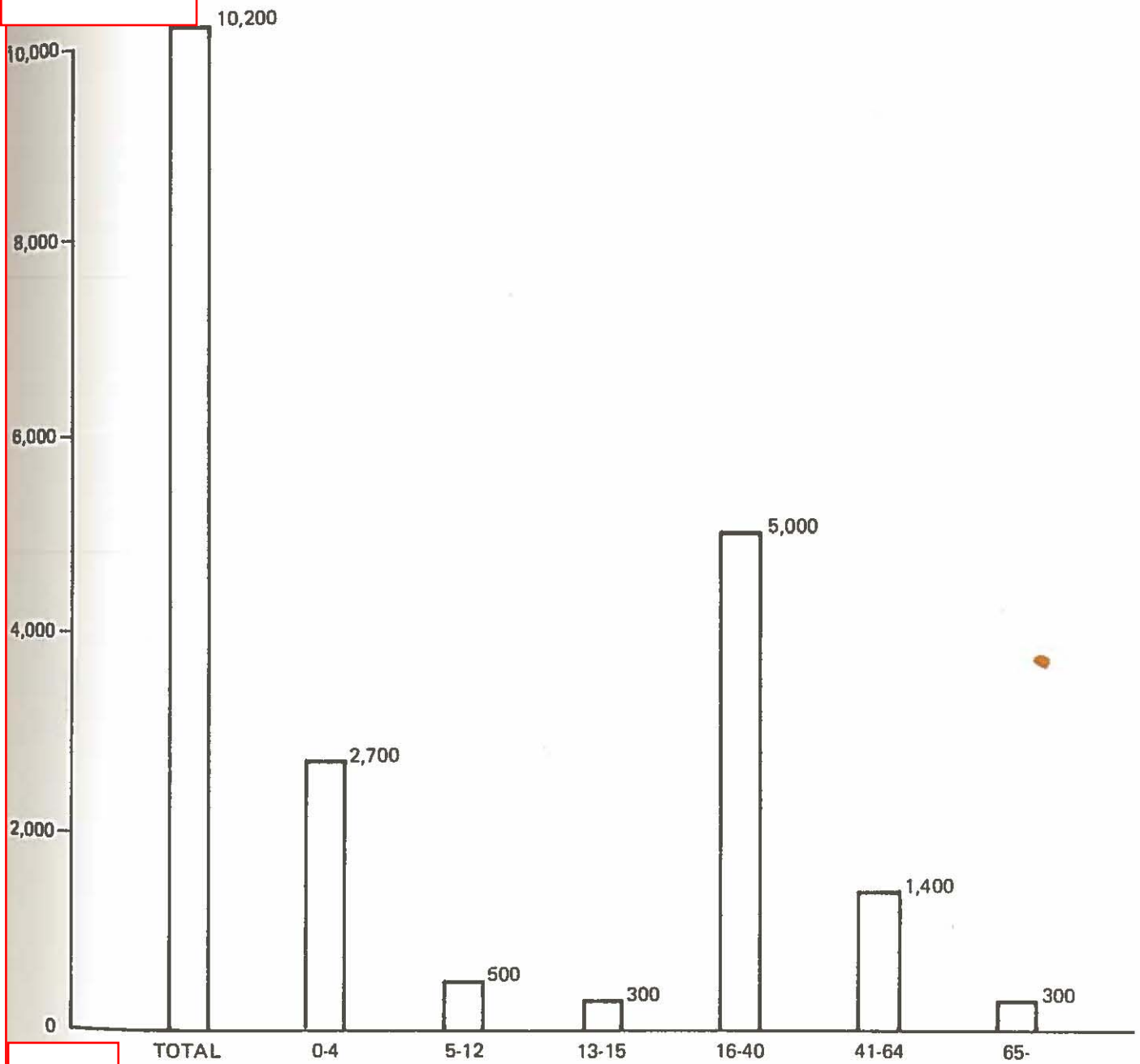
LEGEND

- * COMMUNITY CENSUS DATA
- 100 ANNUAL ADMISSIONS

NOTE:

Projected to annual basis
on data collected 2 January
through 16 January 1972.

ADMISSIONS BY AGE GROUPS



NOTE: Projected to annual basis on data collected 2 January through 16 January, 1972.

MONTHLY ADMISSION STATISTICS COMPARISON
ACUTE SERVICE (PEDIATRICS, MEDICAL, SURGICAL AND OB/GYN)
OTHER SERVICES (Extended Care, SM, NP, and PM and R)

<u>Month</u>	1968/69		1969/70		1970/71		1971/72	
	<u>Acute</u>	<u>Other</u>	<u>Acute</u>	<u>Other</u>	<u>Acute</u>	<u>Other</u>	<u>Acute</u>	<u>Other</u>
July	413	14	507	18	571	8	597	24
August	429	31	550	14	580	20	640	26
September	446	25	566	14	571	28	683	29
October	479	25	528	10	634	30	644	53
November	458	33	523	18	591	20	568	63
December	466	22	487	16	534	20	580	55
January	441	18	533	17	627	38	650	64
February	471	17	499	13	562	29	577	68
March	496	25	560	20	610	29	623	53
April	515	17	566	13	587	32	603	73
May	469	11	540	14	554	19	655	69
June	<u>507</u>	<u>20</u>	<u>569</u>	<u>19</u>	<u>591</u>	<u>15</u>	<u>565</u>	<u>40</u>
Totals	5,590	258	6,428	186	7,012	288	7,385	617

PATIENT FLOW BY MONTH, ADMISSION BY SERVICES
(Fiscal Years 1968/69, 1969/70, 1970/71, 1971/72)

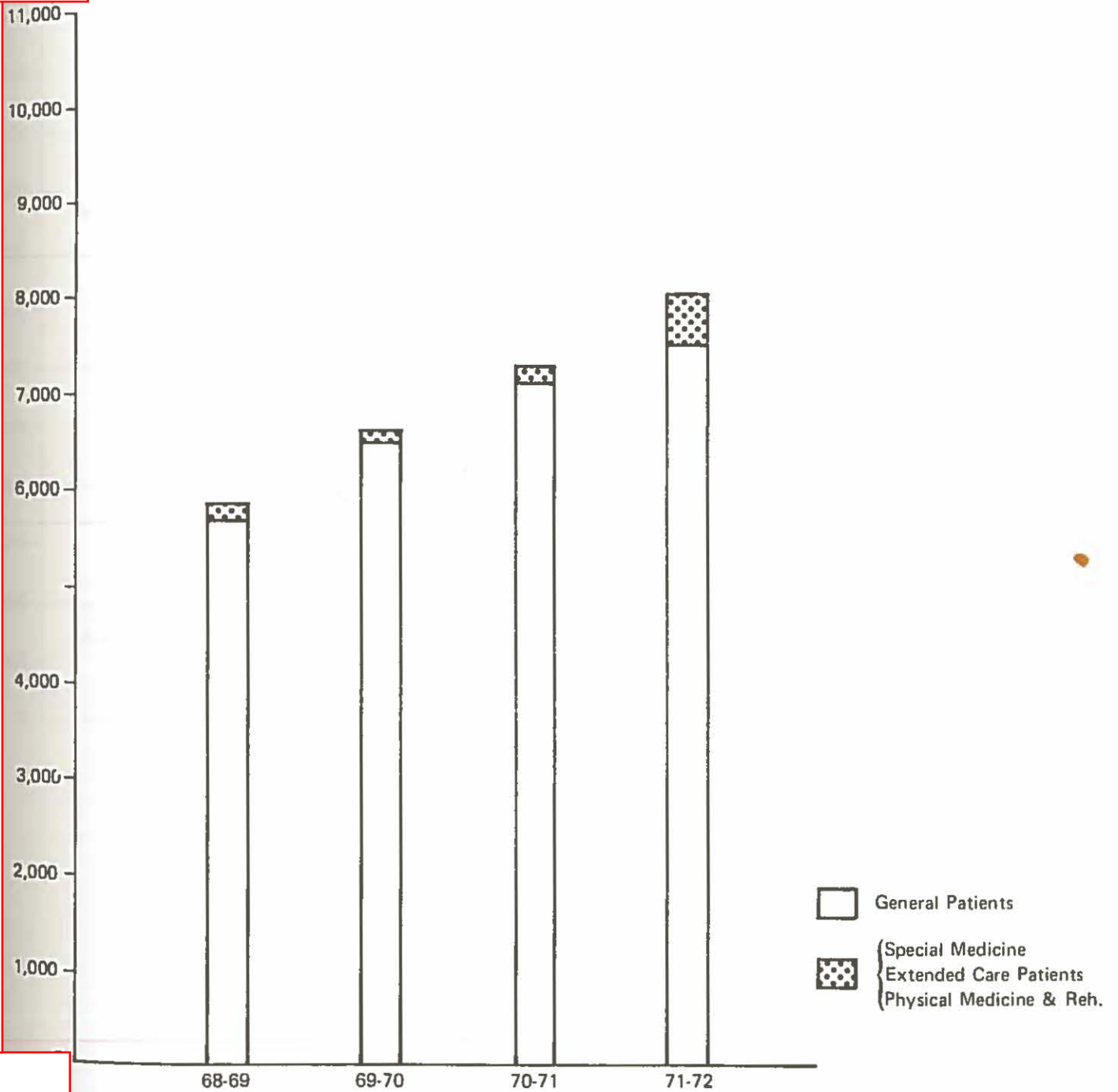
Month	Pediatrics				Pediatrics-Newborn				Medical				ECF			
	68/69	69/70	70/71	71/72	68/69	69/70	70/71	71/72	68/69	69/70	70/71	71/72	68/69	69/70	70/71	71/72
July	72	100	110	123	1	2	0	1	43	56	34	52	7	4	2	0
August	97	109	140	149	0	1	0	0	61	59	43	48	18	2	2	0
September	89	113	118	142	0	0	0	0	54	45	45	61	12	4	2	1
October	99	98	107	127	0	0	0	1	54	63	52	62	9	2	0	0
November	103	107	114	92	0	1	0	0	42	37	43	55	16	5	0	0
December	101	85	102	92	1	2	0	0	50	43	42	48	8	1	0	0
January	95	118	133	132	0	0	1	1	42	48	40	56	2	2	0	1
February	97	116	132	114	1	0	0	1	42	44	43	48	1	1	1	0
March	88	126	164	135	0	0	0	0	56	54	42	50	1	4	0	0
April	79	132	135	120	0	0	0	0	67	51	42	31	2	1	0	1
May	90	114	106	132	1	1	0	0	54	56	37	66	0	1	1	0
June	131	147	105	94	1	0	1	0	45	48	49	47	1	0	0	0
Totals	1,141	1,365	1,466	1,452	5	7	2	4	610	604	512	624	77	27	8	3

Month	NP				Surgical				Obstetrical				SM			
	68/69	69/70	70/71	71/72	68/69	69/70	70/71	71/72	68/69	69/70	70/71	71/72	68/69	69/70	70/71	71/72
July	3	7	2	10	119	126	142	162	178	162	211	205	4	7	4	6
August	8	9	10	12	112	136	140	164	159	177	189	209	5	3	8	11
September	4	5	9	14	121	122	143	158	182	215	199	252	9	5	10	6
October	10	2	10	14	129	124	152	165	197	176	248	218	6	6	13	21
November	6	4	9	3	135	128	159	146	178	191	209	210	11	9	6	29
December	8	6	11	12	133	121	147	152	181	188	183	219	6	9	8	21
January	7	8	10	13	127	122	157	150	164	176	221	241	10	7	10	16
February	11	5	12	6	112	130	137	153	165	151	189	203	5	7	5	26
March	16	9	11	9	138	151	157	153	156	161	167	215	8	7	11	12
April	10	5	13	5	131	163	136	146	190	159	206	231	5	7	15	23
May	5	9	7	12	128	135	137	168	159	165	195	229	6	4	8	19
June	8	8	8	11	125	127	147	142	154	186	216	211	11	11	5	8
Totals	96	77	112	121	1,510	1,585	1,754	1,859	2,063	2,107	2,433	2,643	85	82	103	198

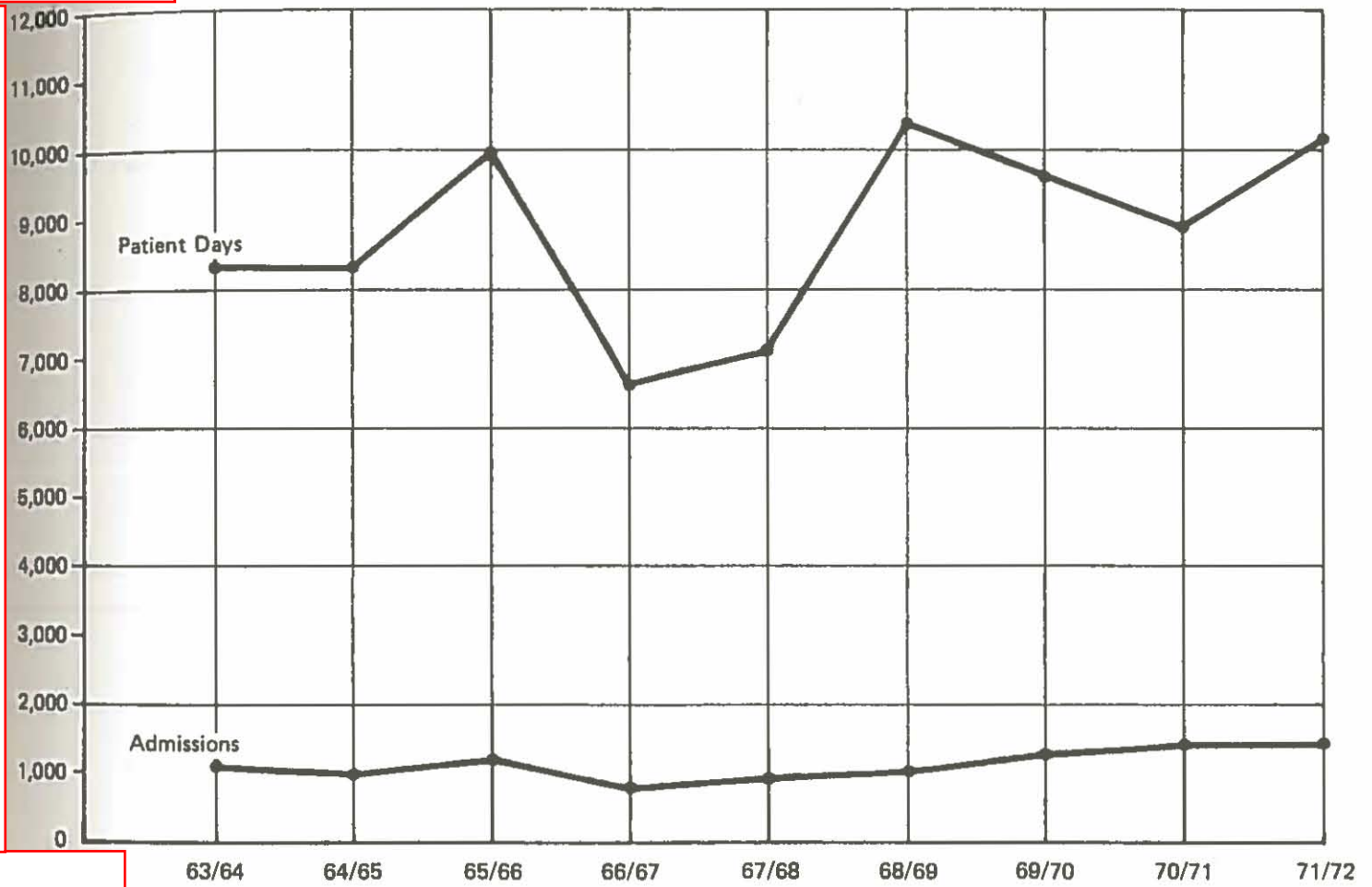
PATIENT FLOW BY MONTH, ADMISSION BY SERVICES
(Fiscal Years 1968/69, 1969/70, 1970/71, 1971/72)

Month	Medical-Surgical				Physical Medicine and Rehabilitation			
	68/69	69/70	70/71	71/72	68/69	69/70	70/71	71/72
July	0	61	74	54			0	8
August	0	68	68	70			0	3
September	0	71	66	70			7	8
October	0	67	75	71			7	18
November	0	59	66	65			5	31
December	0	48	60	69			1	22
January	13	69	75	70			18	35
February	54	58	61	58			11	35
March	58	68	80	70			7	32
April	48	61	68	75			4	44
May	37	69	79	60			3	38
June	<u>51</u>	<u>61</u>	<u>73</u>	<u>71</u>	—	—	<u>2</u>	<u>21</u>
Totals	261	760	845	803	--	--	65	295

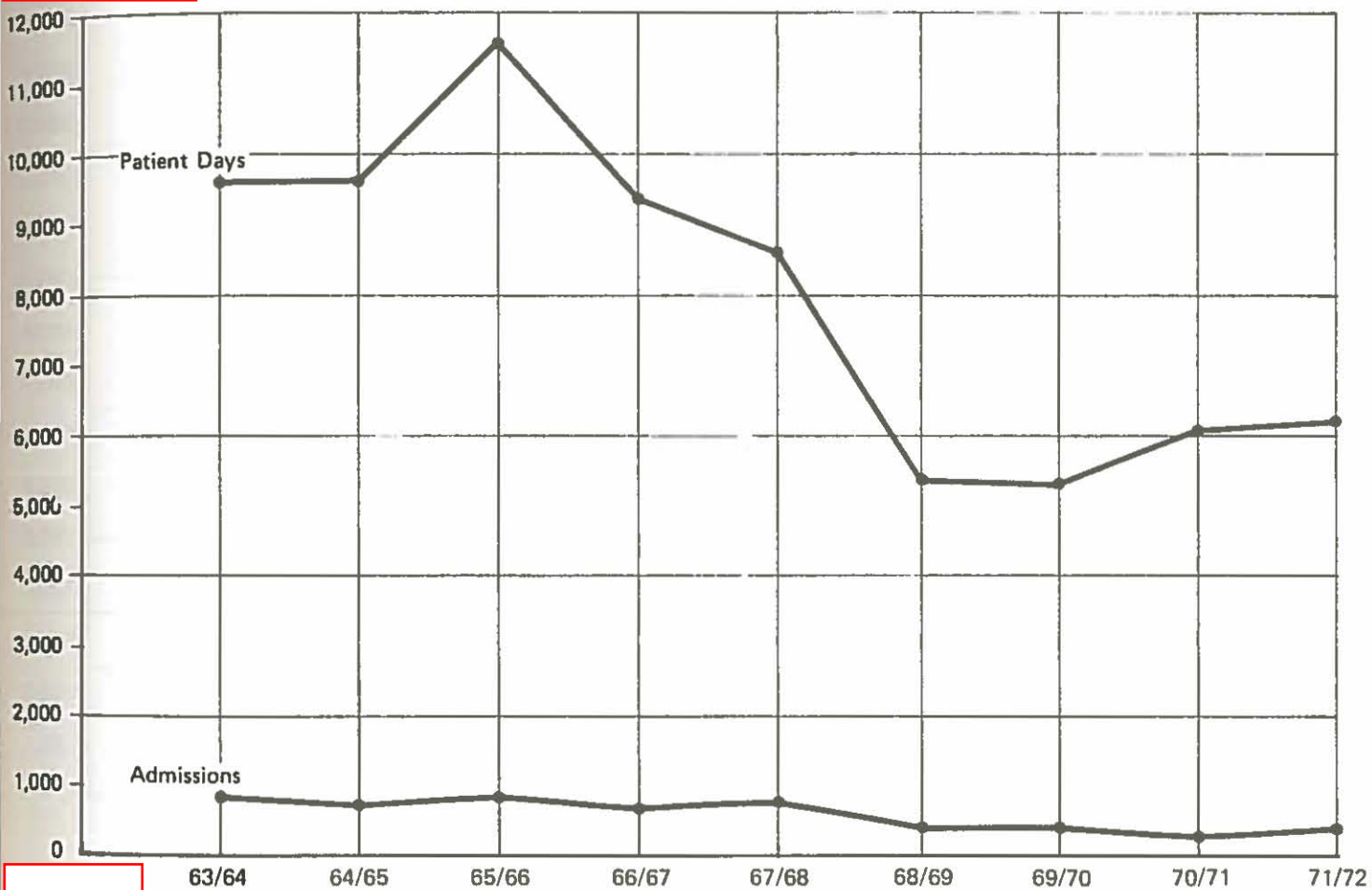
ADMISSIONS



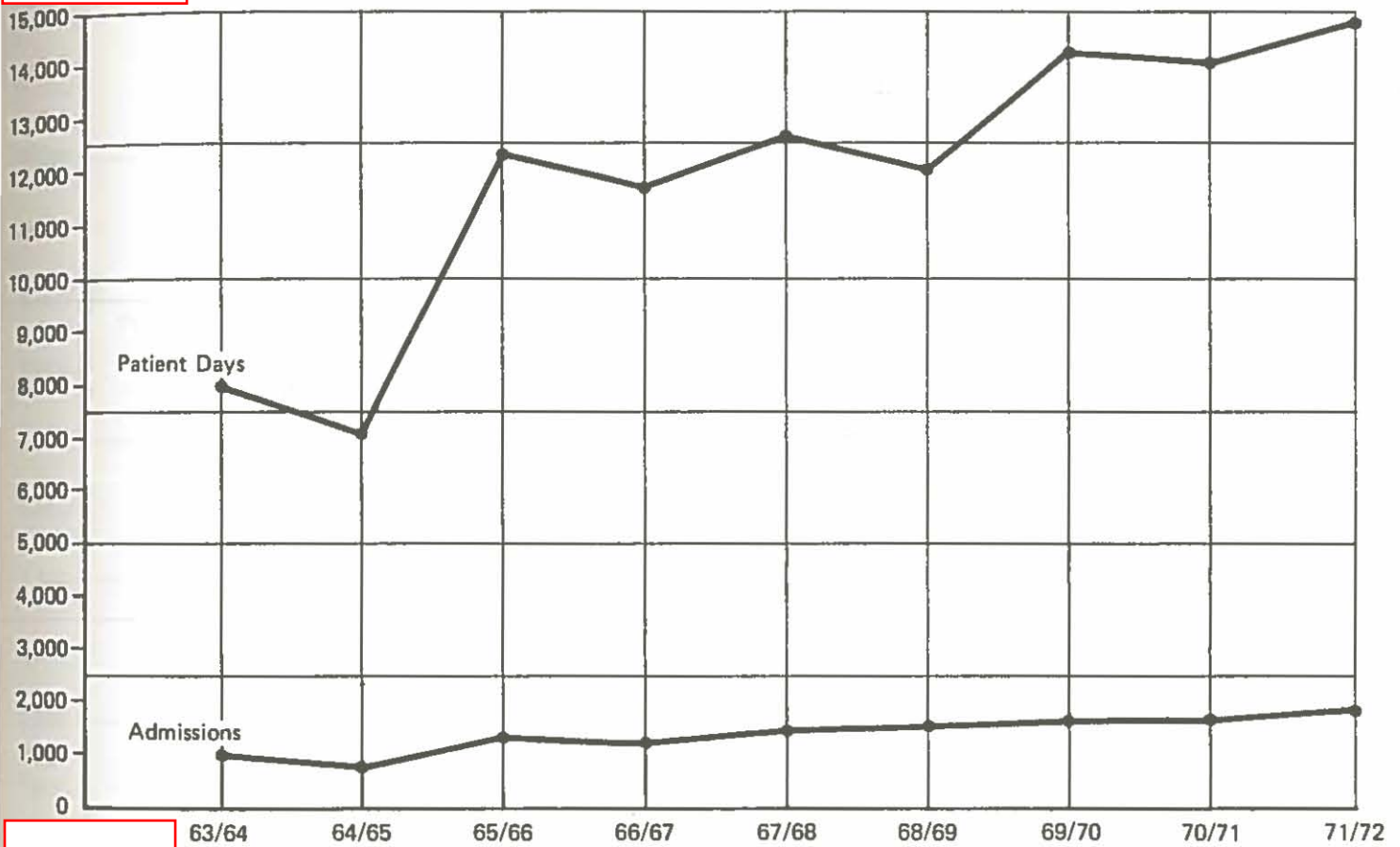
PATIENT DAY-ADMISSIONS RELATIONSHIP, PEDIATRICS



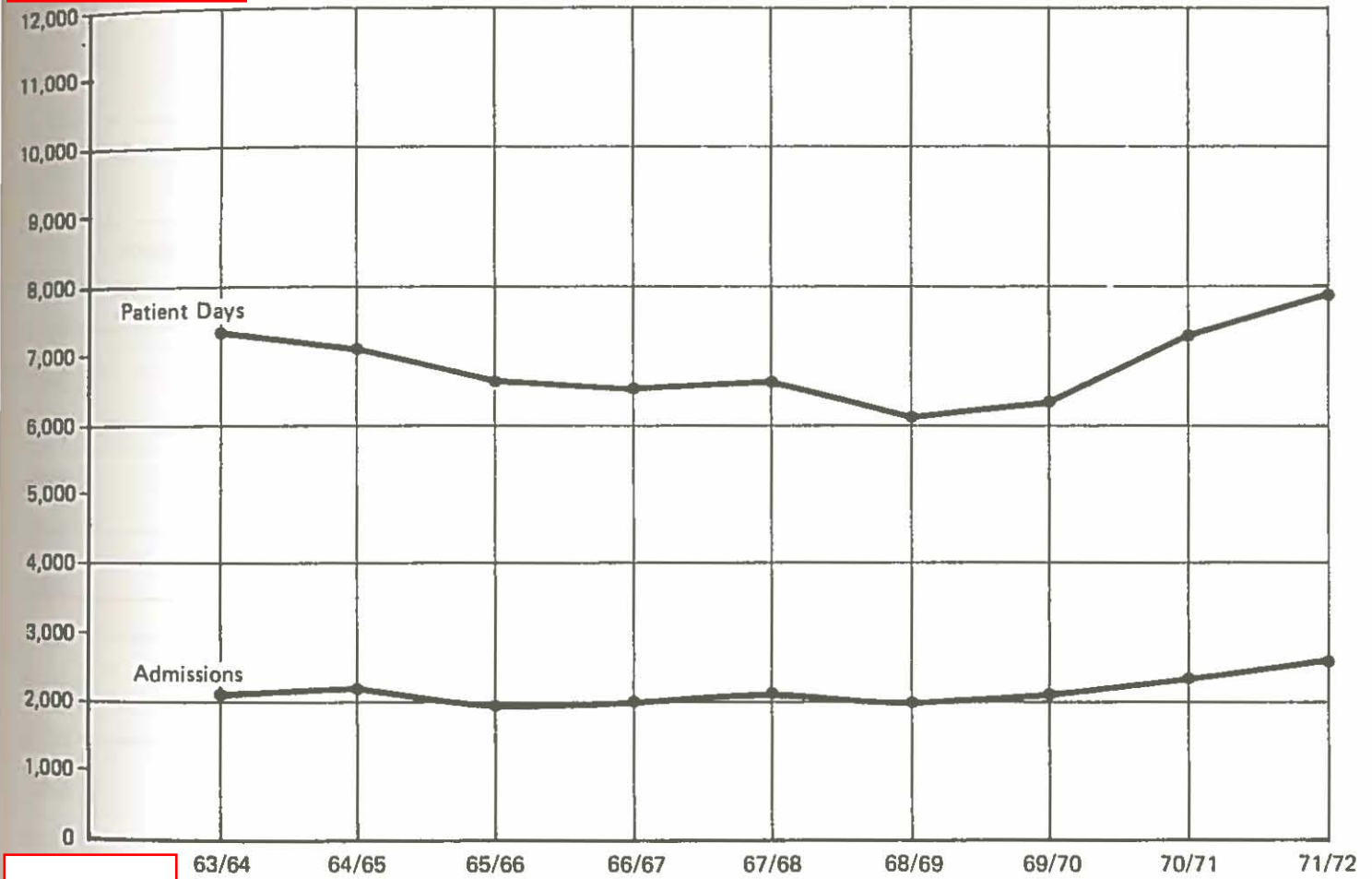
PATIENT DAY-ADMISSIONS RELATIONSHIP, MEDICAL



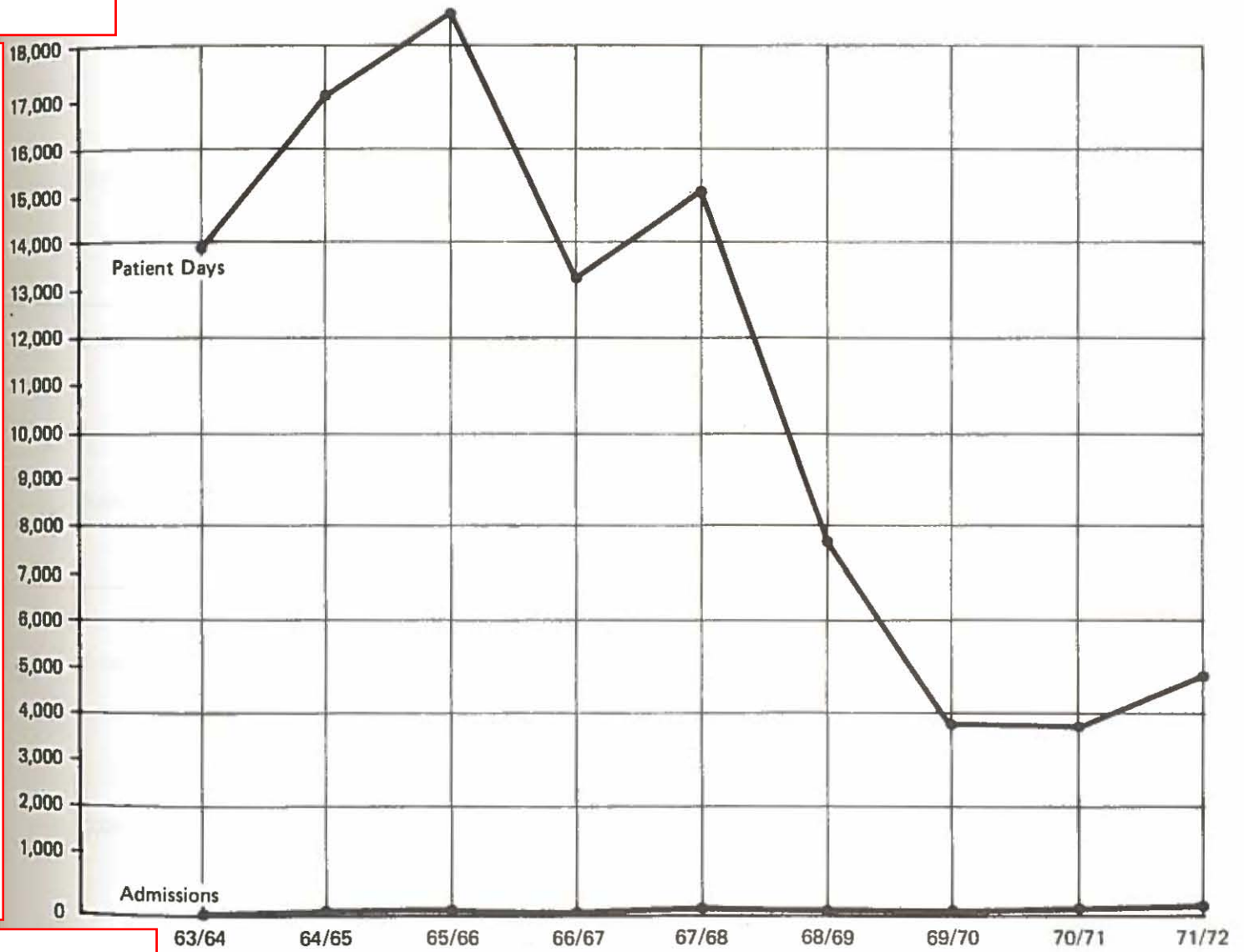
PATIENT DAY-ADMISSIONS RELATIONSHIP, SURGICAL



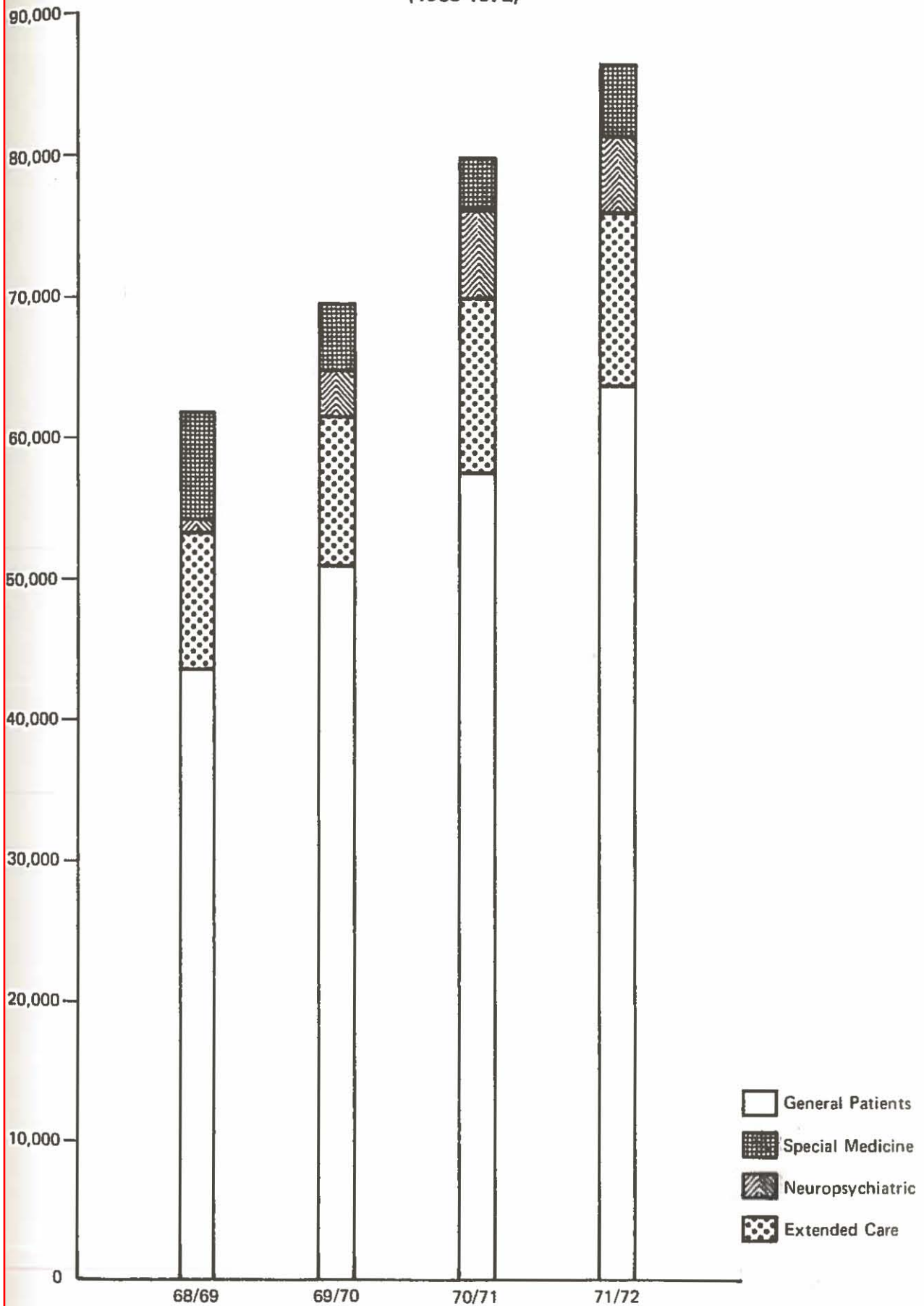
PATIENT DAY—ADMISSIONS RELATIONSHIP, OB/GYN



PATIENT DAY—ADMISSIONS RELATIONSHIP, SPECIAL MEDICINE



PATIENT DAYS
(1968-1972)



BEDS BY SERVICE

Service	1969	1970	1971	1972
Pediatric	40	40	40	40
Medical	19	19	19	19
Surgical	45	45	45	45
Medical-Surgical	23	23	23	23
OB/GYN	29	29	29	29
Bassinets	32	32	32	32
Subtotal	156	156	156	156
Special Medicine	35	16	16	16
Neuropsychiatric	12	12	20	20
Extended Care Facility	33	33	33	33
Physical Medicine & Rehabilitation	00	00	16	16
Subtotal	80	61	85	85
Total	236	217	241	241

BED UTILIZATION PER THOUSAND POPULATION

Year	Population	Inpatient Per Thousand			
		All Services		Acute Services	
		Admissions	Patient Days	Admissions	Patient Days
1963	50,087	---	-----	---	---
1964	52,431	134	1,030	100	740
1965	54,869	123	1,020	90	756
1966	57,425	129	1,174	94	790
1967	60,090	113	915	80	680
1968	62,884	83	690	82	648
1969	65,804	90	729	85	629
1970	67,892	97	805	95	629
1971	71,000	103	876	100	740
1972	74,000	108	1,068	100	700

NOTES:

1. Average hospitalization based upon eight prepaid plans is 450 patient days per 1,000 enrollees.
2. National average is 150 admissions per 1,000 population.

EMERGENCY/OUTPATIENT VISITS

Year	Population	Outpatients Per Thousand
1963	50,087	---
1964	52,431	819
1965	54,869	927
1966	57,425	782
1967	60,090	633
1968	62,884	648
1969	65,804	564
1970	67,892	563
1971	71,000	625
1972	74,000	630

NOTE:

National average is 750 outpatient visits per 1,000 population.



PART IV

PROJECTED FUTURE HOSPITAL NEEDS

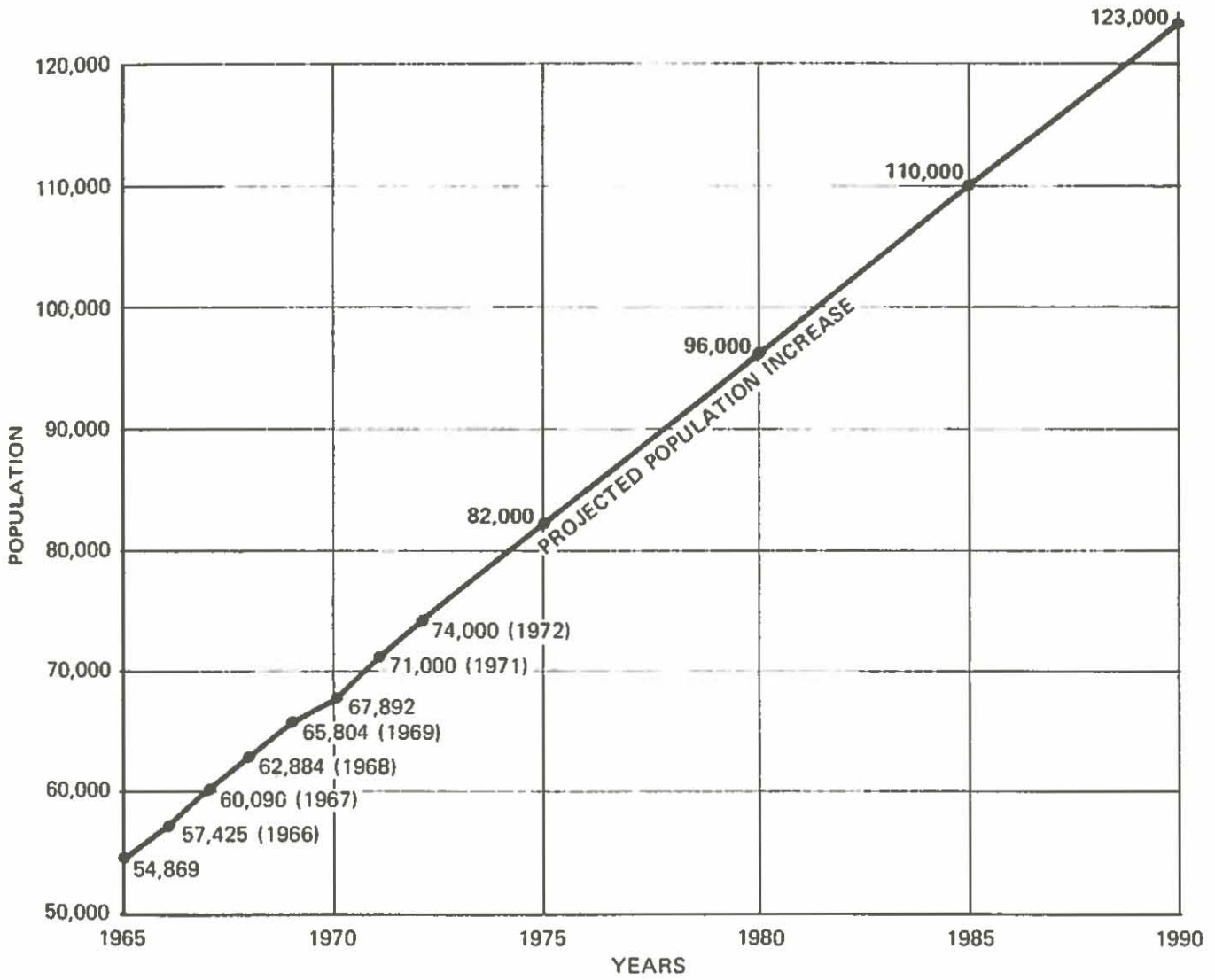
PROJECTED FUTURE HOSPITAL NEEDS

Tabulations and graphs in this section illustrate future needs of the Guam Memorial Medical Center. These determinations are based on the past and present statistics, as well as on anticipated future requirements.

Contained in this section are the following illustrations:

1. Graph of estimated population increase (1965-1990).
2. Tabulations of inpatient statistics of acute services (1963-1972, projected to 1990).
3. Graph of inpatient statistics of acute services (1971-1972, projected to 1990).
4. Tabulation of inpatient statistics of other than acute services (1963-1972, projected to 1990).
5. Graphs of inpatient acute and other services (1964-1972, projected to 1990).
6. Tabulation of projected bed needs for acute and other services (1975-1990).
7. Tabulation of projected emergency/outpatient department visits by functions (1972-1990).
8. Tabulation of projected emergency/outpatient department visits by specialty (1963-1972, projected to 1990).
9. Tabulation of projected emergency/outpatient department visits by divisions (1975-1990).
10. Chart of emergency/outpatient department showing percentages of patient visits by service.
11. Chart of emergency/outpatient department showing percentages of distribution of patient visits.

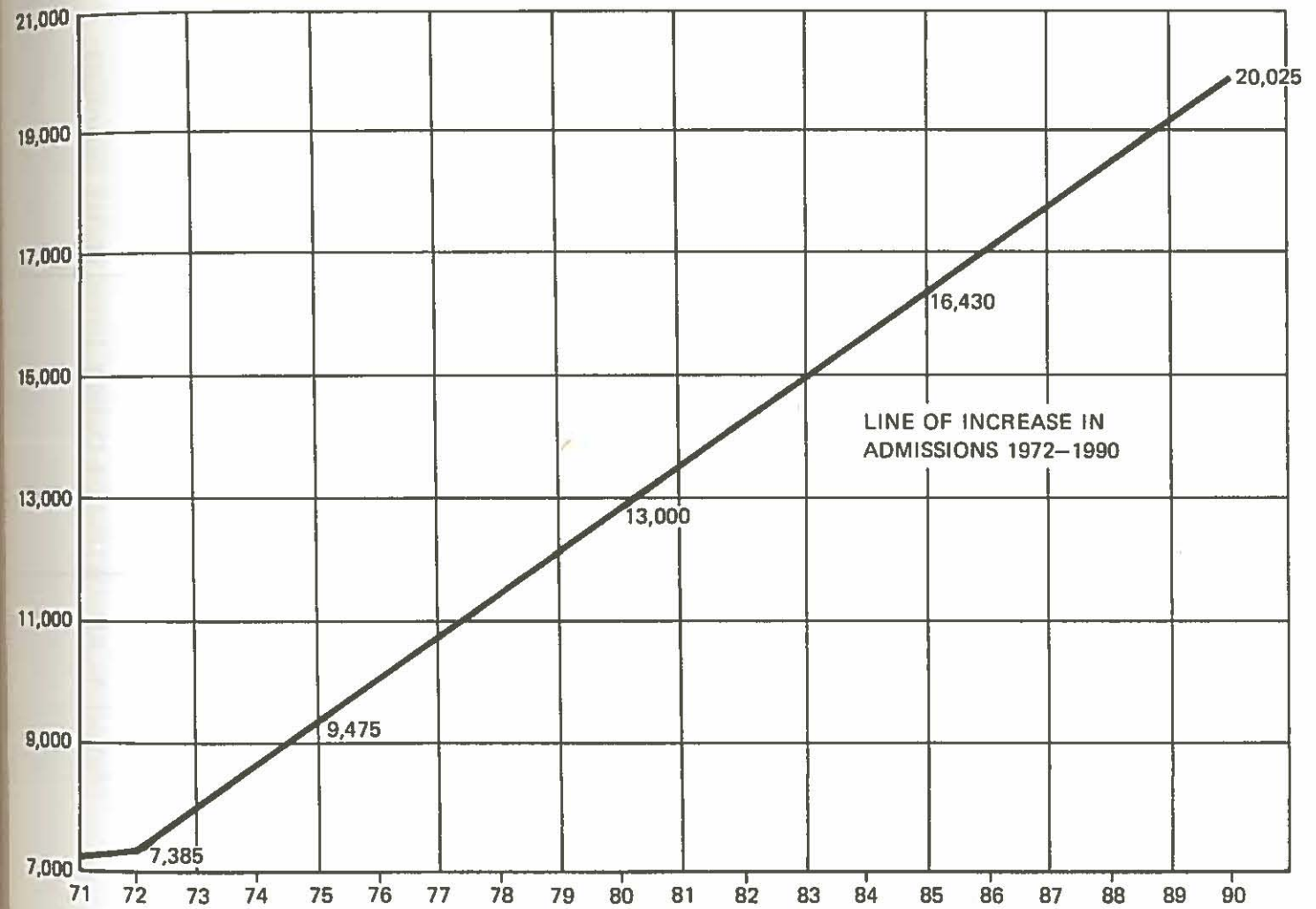
GUAM MEMORIAL MEDICAL CENTER



INPATIENT STATISTICS OF ACUTE SERVICES

Service	1963/ 1964	1964/ 1965	1965/ 1966	1966/ 1967	1967/ 1968	1968/ 1969	1969/ 1970	1970/ 1971	1971/ 1972	1975	1980	1985	1990
<u>Pediatrics</u>													
No. of Beds	23	23	27	18	19	--	41	41	41	45	60	90	110
No. of Admissions	1,167	1,051	1,238	838	909	1,146	1,372	1,468	1,456	2,000	2,950	3,900	4,850
Average Patient Stay	7.2	8.0	8.1	7.8	7.8	9	7	6	7	--	--	--	--
Percent Occupancy	--	--	--	--	--	--	66	64	70	--	--	--	--
Percent Increase	--	--	--	--	--	--	20	07	00	--	--	--	--
<u>Medical</u>													
No. of Beds	26	26	32	26	24	--	19	19	19	30	60	90	120
No. of Admissions	877	701	819	695	741	610	604	512	624	925	1,400	1,900	2,375
Average Patient Stay	11.0	13.7	14.2	13.5	11.7	9	9	12	10	--	--	--	--
Percent Occupancy	--	--	--	--	--	--	84	90	94	--	--	--	--
Percent Increase	--	--	--	--	--	--	00	00	21	--	--	--	--
<u>Surgical</u>													
No. of Beds	22	19	34	32	35	--	45	45	45	60	90	120	150
No. of Admissions	1,012	801	1,286	1,202	1,400	1,510	1,585	1,754	1,859	2,200	2,775	3,350	3,900
Average Patient Stay	7.9	8.9	9.6	9.8	9.0	8	9	8	8	--	--	--	--
Percent Occupancy	--	--	--	--	--	--	83	88	92	--	--	--	--
Percent Increase	--	--	--	--	--	--	06	11	06	--	--	--	--
<u>Medical-Surgical</u>													
No. of Beds						--	23	23	23	30	30	30	30
No. of Admissions						261	760	845	803	1,325	2,225	3,100	3,975
Average Patient Stay	--	--	--	--	--	9	9	8	9	--	--	--	--
Percent Occupancy						--	79	85	89	--	--	--	--
Percent Increase						--	190	11	00	--	--	--	--
<u>OB/GYN</u>													
No. of Beds	20	19	18	18	18	--	29	29	29	45	45	60	60
No. of Admissions	2,176	2,288	2,080	2,048	2,131	2,063	2,107	2,433	2,643	3,025	3,650	4,180	4,925
Average Patient Stay	3.4	3.1	3.2	3.2	3.1	3	3	3	3	--	--	--	--
Percent Occupancy	--	--	--	--	--	--	66	76	78	--	--	--	--
Percent Increase	--	--	--	--	--	--	02	11	09	--	--	--	--
<u>Total</u>													
No. of Beds	149	154	184	149	166	--	157	157	157	210	285	390	470
No. of Admissions	5,232	4,841	5,423	4,783	5,181	5,590	6,428	7,012	7,385	9,475	13,000	16,430	20,025
Average Patient Stay	7.7	8.3	9.1	8.1	8.3	7.6	7.4	7.4	7.4	--	--	--	--
Percent Occupancy	--	--	--	--	--	--	75.6	80.6	84.6	--	--	--	--
Percent Increase	--	--	--	--	--	--	43.6	08	7.2	--	--	--	--

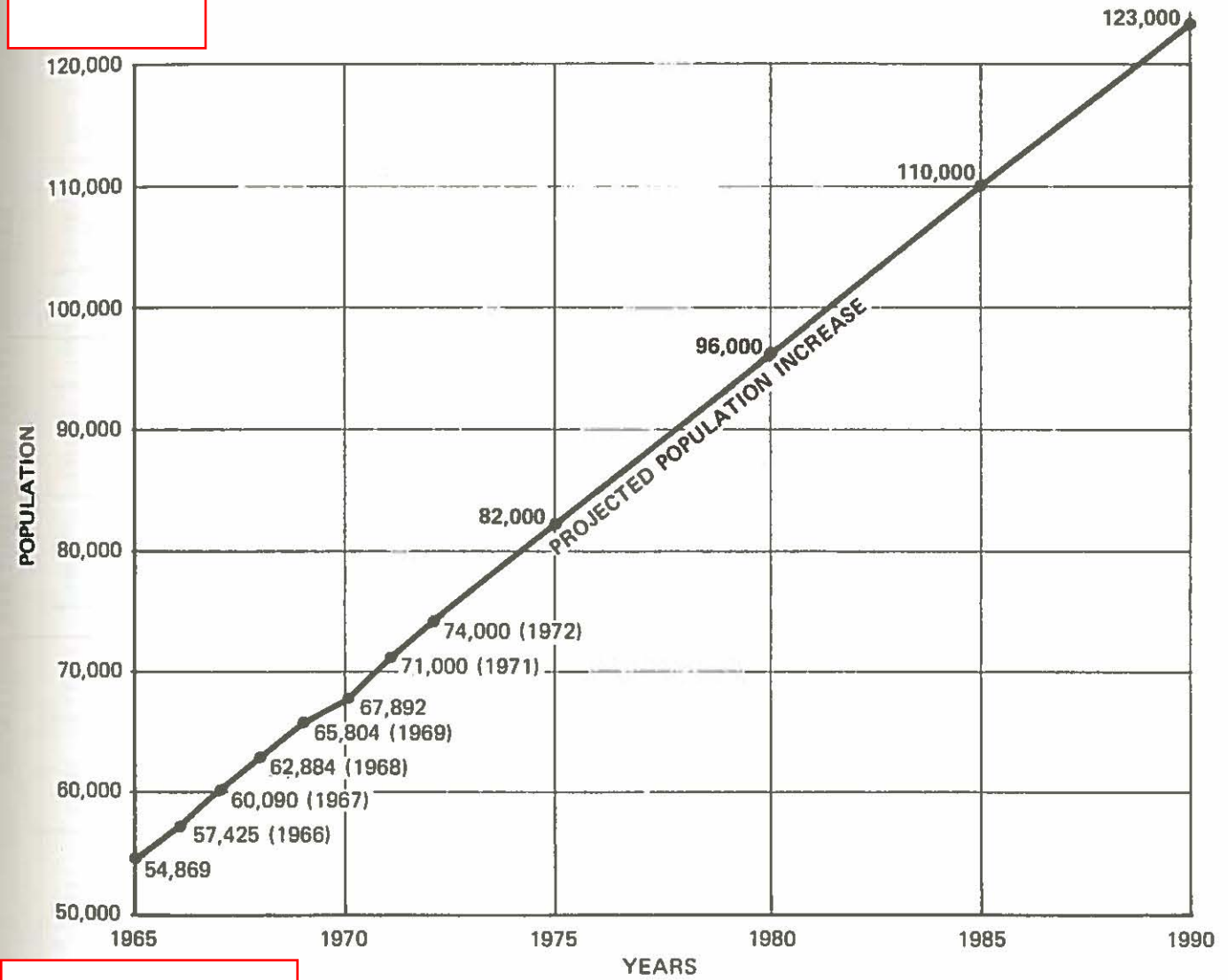
ACUTE SERVICES PROJECTIONS, HOSPITAL ADMISSIONS



INPATIENT STATISTICS OF ACUTE SERVICES

Service	1963/ 1964	1964/ 1965	1965/ 1966	1966/ 1967	1967/ 1968	1968/ 1969	1969/ 1970	1970/ 1971	1971/ 1972	1975	1980	1985	1990
<u>Pediatrics</u>													
No. of Beds	23	23	27	18	19	--	41	41	41	45	60	90	110
No. of Admissions	1,167	1,051	1,238	838	909	1,146	1,372	1,468	1,456	2,000	2,950	3,900	4,850
Average Patient Stay	7.2	8.0	8.1	7.8	7.8	9	7	6	7	--	--	--	--
Percent Occupancy	--	--	--	--	--	--	66	64	70	--	--	--	--
Percent Increase	--	--	--	--	--	--	20	07	00	--	--	--	--
<u>Medical</u>													
No. of Beds	26	26	32	26	24	--	19	19	19	30	60	90	120
No. of Admissions	877	701	819	695	741	610	604	512	624	925	1,400	1,900	2,375
Average Patient Stay	11.0	13.7	14.2	13.5	11.7	9	9	12	10	--	--	--	--
Percent Occupancy	--	--	--	--	--	--	84	90	94	--	--	--	--
Percent Increase	--	--	--	--	--	--	00	00	21	--	--	--	--
<u>Surgical</u>													
No. of Beds	22	19	34	32	35	--	45	45	45	60	90	120	150
No. of Admissions	1,012	801	1,286	1,202	1,400	1,510	1,585	1,754	1,859	2,200	2,775	3,350	3,900
Average Patient Stay	7.9	8.9	9.6	9.8	9.0	8	9	8	8	--	--	--	--
Percent Occupancy	--	--	--	--	--	--	83	88	92	--	--	--	--
Percent Increase	--	--	--	--	--	--	06	11	06	--	--	--	--
<u>Medical-Surgical</u>													
No. of Beds						--	23	23	23	30	30	30	30
No. of Admissions						261	760	845	803	1,325	2,225	3,100	3,975
Average Patient Stay	--	--	--	--	--	9	9	8	9	--	--	--	--
Percent Occupancy						--	79	85	89	--	--	--	--
Percent Increase						--	190	11	00	--	--	--	--
<u>OB/GYN</u>													
No. of Beds	20	19	18	18	18	--	29	29	29	45	45	60	60
No. of Admissions	2,176	2,288	2,080	2,048	2,131	2,063	2,107	2,433	2,643	3,025	3,650	4,180	4,925
Average Patient Stay	3.4	3.1	3.2	3.2	3.1	3	3	3	3	--	--	--	--
Percent Occupancy	--	--	--	--	--	--	66	76	78	--	--	--	--
Percent Increase	--	--	--	--	--	--	02	11	09	--	--	--	--
<u>Total</u>													
No. of Beds	149	154	184	149	166	--	157	157	157	210	285	390	470
No. of Admissions	5,232	4,841	5,423	4,783	5,181	5,590	6,428	7,012	7,385	9,475	13,000	16,430	20,025
Average Patient Stay	7.7	8.3	9.1	8.1	8.3	7.6	7.4	7.4	7.4	--	--	--	--
Percent Occupancy	--	--	--	--	--	--	75.6	80.6	84.6	--	--	--	--
Percent Increase	--	--	--	--	--	--	43.6	08	7.2	--	--	--	--

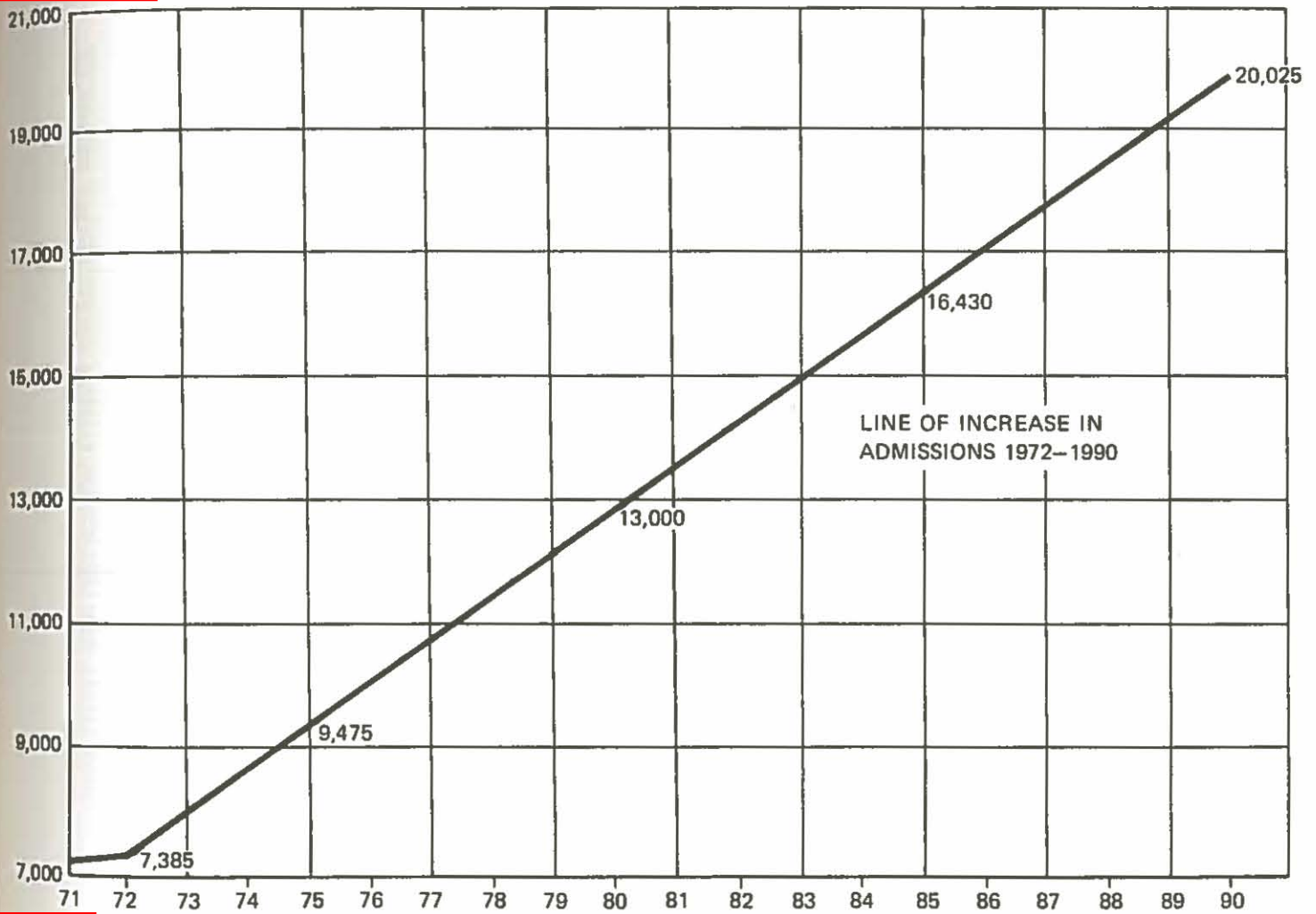
GUAM MEMORIAL MEDICAL CENTER



INPATIENT STATISTICS OF ACUTE SERVICES

Service	1963/ 1964	1964/ 1965	1965/ 1966	1966/ 1967	1967/ 1968	1968/ 1969	1969/ 1970	1970/ 1971	1971/ 1972	1975	1980	1985	1990
<u>Pediatrics</u>													
No. of Beds	23	23	27	18	19	--	41	41	41	45	60	90	110
No. of Admissions	1,167	1,051	1,238	838	909	1,146	1,372	1,468	1,456	2,000	2,950	3,900	4,850
Average Patient Stay	7.2	8.0	8.1	7.8	7.8	9	7	6	7	--	--	--	--
Percent Occupancy	--	--	--	--	--	--	66	64	70	--	--	--	--
Percent Increase	--	--	--	--	--	--	20	07	00	--	--	--	--
<u>Medical</u>													
No. of Beds	26	26	32	26	24	--	19	19	19	30	60	90	120
No. of Admissions	877	701	819	695	741	610	604	512	624	925	1,400	1,900	2,375
Average Patient Stay	11.0	13.7	14.2	13.5	11.7	9	9	12	10	--	--	--	--
Percent Occupancy	--	--	--	--	--	--	84	90	94	--	--	--	--
Percent Increase	--	--	--	--	--	--	00	00	21	--	--	--	--
<u>Surgical</u>													
No. of Beds	22	19	34	32	35	--	45	45	45	60	90	120	150
No. of Admissions	1,012	801	1,286	1,202	1,400	1,510	1,585	1,754	1,859	2,200	2,775	3,350	3,900
Average Patient Stay	7.9	8.9	9.6	9.8	9.0	8	9	8	8	--	--	--	--
Percent Occupancy	--	--	--	--	--	--	83	88	92	--	--	--	--
Percent Increase	--	--	--	--	--	--	06	11	06	--	--	--	--
<u>Medical-Surgical</u>													
No. of Beds						--	23	23	23	30	30	30	30
No. of Admissions						261	760	845	803	1,325	2,225	3,100	3,975
Average Patient Stay	--	--	--	--	--	9	9	8	9	--	--	--	--
Percent Occupancy	--	--	--	--	--	--	79	85	89	--	--	--	--
Percent Increase	--	--	--	--	--	--	190	11	00	--	--	--	--
<u>OB/GYN</u>													
No. of Beds	20	19	18	18	18	--	29	29	29	45	45	60	60
No. of Admissions	2,176	2,288	2,080	2,048	2,131	2,063	2,107	2,433	2,643	3,025	3,650	4,180	4,925
Average Patient Stay	3.4	3.1	3.2	3.2	3.1	3	3	3	3	--	--	--	--
Percent Occupancy	--	--	--	--	--	--	66	76	78	--	--	--	--
Percent Increase	--	--	--	--	--	--	02	11	09	--	--	--	--
<u>Total</u>													
No. of Beds	149	154	184	149	166	--	157	157	157	210	285	390	470
No. of Admissions	5,232	4,841	5,423	4,783	5,181	5,590	6,428	7,012	7,385	9,475	13,000	16,430	20,025
Average Patient Stay	7.7	8.3	9.1	8.1	8.3	7.6	7.4	7.4	7.4	--	--	--	--
Percent Occupancy	--	--	--	--	--	--	75.6	80.6	84.6	--	--	--	--
Percent Increase	--	--	--	--	--	--	43.6	08	7.2	--	--	--	--

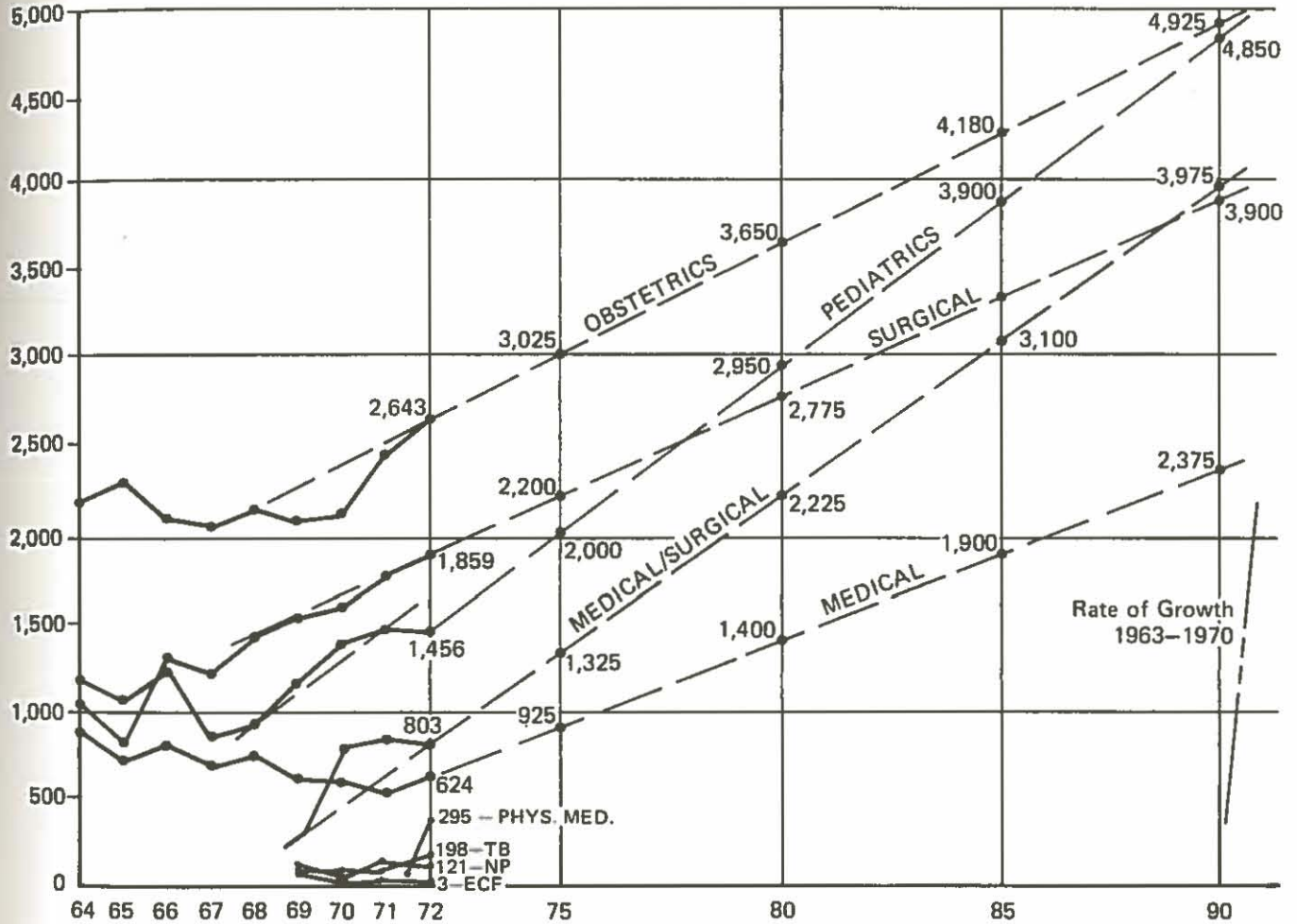
ACUTE SERVICES PROJECTIONS, HOSPITAL ADMISSIONS



INPATIENT STATISTICS OF OTHER THAN ACUTE SERVICES

Service	1963/ 1964	1964/ 1965	1965/ 1966	1966/ 1967	1967/ 1968	1968/ 1969	1969/ 1970	1970/ 1971	1971/ 1972	1975	1980	1985	1990
<u>Special Medicine</u>													
No. of Beds	38	47	53	36	41	--	35	16	16	20	20	30	30
No. of Admissions	56	80	91	70	126	85	82	103	198	250	325	400	490
Average Patient Stay	248.6	214.7	214.0	189.5	120.1	94	50	38	26	26	20	22	20
Percent Occupancy	--	--	--	--	--	--	32	69	89	90	90	85	90
Percent Increase	--	--	--	--	--	--	--	25	90	--	--	--	--
<u>Neuropsychiatric</u>													
No. of Beds						--	12	18	20	20	20	20	20
No. of Admissions						96	77	112	121	125	135	150	160
Average Patient Stay	--	--	--	--	--	15	46	52	44	50	46	41	41
Percent Occupancy						--	82	89	73	85	85	85	90
Percent Increase						--	00	45	08	--	--	--	--
<u>Long-Term Care</u>													
No. of Beds						--	33	33	33	30	30	30	30
No. of Admissions						77	27	8	3	--	--	--	--
Average Patient Stay	--	--	--	--	--	--	347	358	365	--	--	--	--
Percent Occupancy						--	95	98	100	--	--	--	--
Percent Increase						--	--	--	--	--	--	--	--
<u>Physical Medicine & Rehabilitation</u>													
No. of Beds								16	16	20	20	20	20
No. of Admissions								65	295				
Average Patient Stay	--	--	--	--	--	--	--	64	17				
Percent Occupancy								72	87				
Percent Increase								--	21				
<u>Total</u>													
No. of Beds							80	83	85	90	90	90	90
No. of Admissions							186	288	617				
Average Patient Stay	--	--	--	--	--	--	148	128	115				
Percent Occupancy							69.6	82	87.25				
Percent Increase							--	--	39.66				

PROJECTION OF ADMISSIONS THROUGH 1990



PROJECTED BED NEEDS

Service	1975	1980	1985	1990
Pediatrics	45	60	90	120
Medical	60	60	90	120
Surgical	60	90	120	150
Medical/Surgical	30	30	30	60
Obstetrics/GYN	45	45	60	60
Intensive Care	20	35	50	50
Subtotal	260	320	440	560
Physical Medicine & Rehabilitation	20	20	20	20
Neuropsychiatric	20	20	20	20
Special Medicine	20	20	30	30
Long-Term Care	30	30	30	30
Beds	350	410	530	650
Extended Care Facility (Nursing Home)	100	100	100	100

EMERGENCY/OUTPATIENT DEPARTMENT
(Projected Visits Based on 90 Percent Increase
in 5-Year Periods Commencing 1965)

Service	1972 ^a	1975	1980	1985	1990
General Medical	19,000	32,300	45,900	61,370	85,000
General Pediatric	9,000	15,200	21,600	28,880	40,000
Surgery	20,000	38,000	54,000	72,200	100,000
Others	3,000	9,500	13,500	18,050	25,000
	51,000	95,000	135,000	180,500	250,000

Breakdown By Functions

Emergency	5,100	9,500	13,500	18,050	25,000
Walk-In	10,200	19,000	27,000	36,100	50,000
Outpatients	25,500	47,500	67,500	90,250	125,000
Private Physicians	10,200	19,000	27,000	36,100	50,000
Totals	51,000	95,000	135,000	180,500	250,000

^a Due to circumstances, calculated at 15 percent increase over 1971.
Actual visits were 46,590.

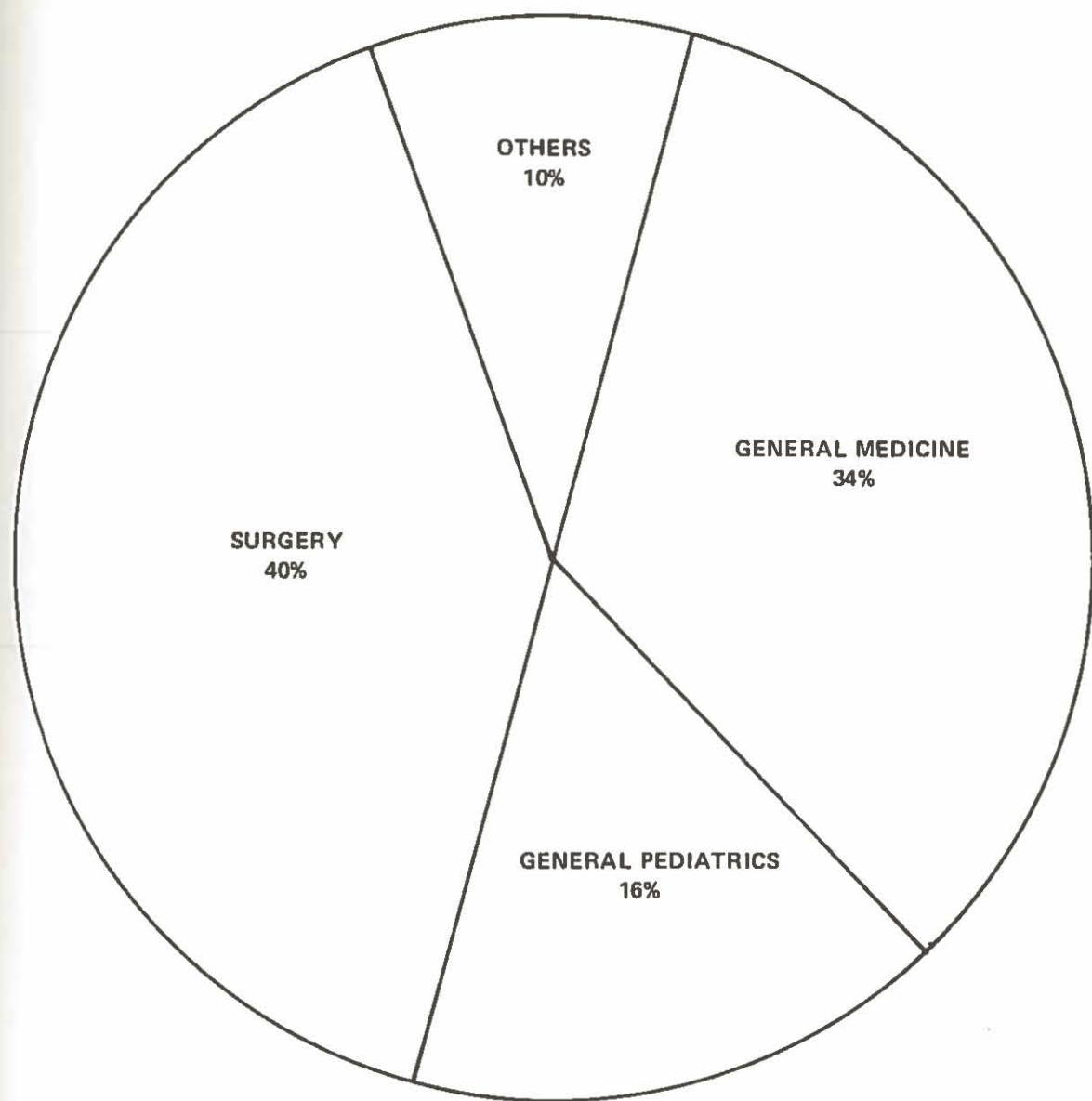
OUTPATIENT/EMERGENCY VISITS

Services	1963/ 1964	1964/ 1965	1965/ 1966	1966/ 1967	1967/ 1968	1968/ 1969	1969/ 1970	1970/ 1971	1971/ 1972	1975	1980	1985	1990
Cardiac					626	486	412	346	138				
Dermatology					83	42	20	17	32				
Diabetes					1,577	1,349	940	939	611				
EENT					302	137	169	282	1,175				
Genito-Urinary					698	620	281	146	107				
GYN					2,093	1,798	794	440	561				
Medical					13,558	13,100	14,435	16,746	18,181				
NP					52	31	25	59	62				
Orthopedic					101	27	51	30	78				
Pediatric					7,102	6,089	6,661	7,889	8,539				
Surgical					13,649	13,555	14,685	17,468	17,100				
Plastic					6	8	15	17	6				
Total	43,000	51,000	45,000	38,023	39,847	37,242	38,488	44,379	46,590	95,000	135,000	180,500	250,000

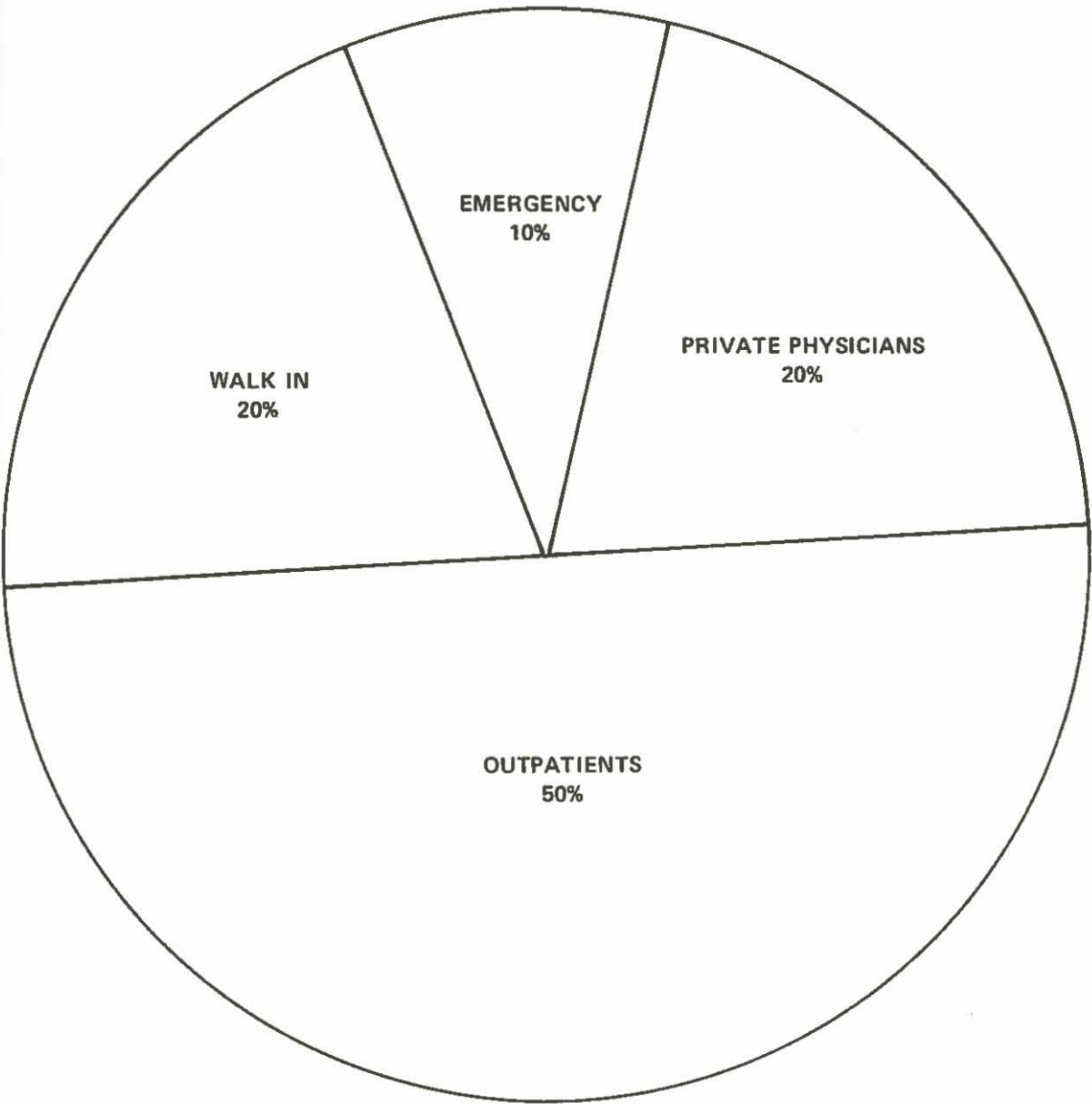
EMERGENCY/OUTPATIENT DEPARTMENT
(Projected Units Through 1990)

<u>Service</u>		1975	1980	1985	1990
<u>Emergency</u>		9,500	13,500	18,050	25,000
Daily		26	37	50	70
<u>Walk-In Clinic</u>		19,000	27,000	36,100	50,000
General Medicine	34%	6,460	9,180	12,274	17,000
General Pediatrics	16%	3,040	4,320	5,776	8,000
Surgery	40%	7,600	10,800	14,440	20,000
Others	10%	1,900	2,700	3,610	5,000
<u>Daily Patients</u>					
General Medicine		18	25	35	47
General Pediatrics		10	12	16	22
Surgery		20	30	40	55
Others		5	8	10	14
Total		53	75	101	138
<u>Outpatient Clinic</u>		47,500	67,500	90,250	125,000
General Medicine	34%	16,150	22,950	30,685	42,500
General Pediatrics	16%	7,600	10,800	14,440	20,000
Surgery	40%	19,000	27,000	36,100	50,000
Others	10%	4,750	6,750	9,025	12,500
<u>Daily Patients</u>					
General Medicine		44	63	83	117
General Pediatrics		20	30	40	55
Surgery		52	74	101	137
Others		13	18	25	34
Total		129	185	249	343
<u>Private Physicians</u>		19,000	27,000	36,100	50,000
Daily		53	75	101	138
Total Annual Visits		95,000	135,000	180,500	250,000
Total Daily Visits		235	335	451	619

EMERGENCY/OUTPATIENT DEPARTMENT
(Patient Visits by Service)



EMERGENCY/OUTPATIENT DEPARTMENT
(Patient Visits Distribution)





PART V

**ENGINEERING
INVESTIGATIONS**

ENGINEERING INVESTIGATIONS

Evaluation Reports on the Structural, Mechanical, and Electrical Conditions at the Existing Hospital

In a separate volume, Thomas J. Davis, Inc., Architects and Engineers of Agana, Guam, and Los Angeles, California, surveyed the Guam Memorial Hospital and documented the conditions of the existing facilities structurally, mechanically, and electrically. Briefly stated, the following conclusions were reached.

STRUCTURAL

In general, the buildings are deficient structurally in the following respects:

- They do not meet modern code requirements for resistance to seismic forces.
- Minimum modern code requirements for concrete reinforcement in columns and some other components are not met.
- Live loads in certain areas are minimal and preclude the use of these areas for all but departments with very light live load requirements.
- Deterioration of exterior concrete surfaces has occurred, and cracks and spalling are evident in many areas.

Our Engineering Department has studied the Thomas J. Davis Evaluation Report in detail. The existing structures are obviously inadequate for resistance to seismic forces that may be expected to occur on Guam. We have evaluated various methods of strengthening the existing buildings, especially Wings "C" and "G," to make them safe structurally, as follows:

Wing "C" - Six Floors

- Alternative "A" - Retain all six floors and reinforce structure extensively by adding concrete shear walls, reworking foundations and strengthening concrete columns.

Cost - \$309,500, or approximately \$5.50 per square foot for 56,000 square feet.

- Alternative "B" - Remove top two floors to reduce seismic loads with a minimum of new foundation work, shear walls, and column reinforcing.

Cost - \$265,000, or approximately \$7.10 per square foot for 37,500 square feet.

- Alternative "C" - Remove top three floors and do no reinforcing of existing structure.

Cost - \$266,750, or approximately \$9.50 per square foot for 28,100 square feet.

Wing "G" - Right and Left - Four Floors

- Alternative "A" - Retain all four floors and reinforce structure extensively by adding concrete shear walls, reworking foundations and strengthening concrete columns.

Cost - \$220,000, or approximately \$5.65 per square foot for 38,750 square feet.

- Alternative "B" - Remove top two floors to reduce seismic loads and do a minimum of structural rehabilitation.

Cost - \$243,000, or approximately \$12.55 per square foot for 19,375 square feet.

Wing "F" - Three Floors

- Alternative "A" - Retain all three floors and reinforce structure extensively.

Cost - \$118,000, or approximately \$3.50 per square foot for 33,300 square feet.

- Alternative "B" - Remove top floor to reduce seismic load. Minor reinforcing to structure.

Cost - \$168,500, or approximately \$7.60 per square foot for 22,150 square feet.

As evidenced by these exploratory figures, it would be uneconomical to reduce seismic loads by removing upper floors, particularly when viewed at the structural cost per square foot of usable floor space.

Our mechanical engineers have estimated very roughly that rehabilitating, adding to, and remodeling the existing plumbing, air conditioning, heating, and fire protection systems will cost approximately \$11.75 per square foot.

To the above figures would have to be added the costs of remodeling the various areas — including new partitions, electrical wiring, floor coverings, ceilings, wall coverings, equipment, etc., which are difficult to estimate at this stage of planning. Total costs for complete refurbishing would in our opinion approach the cost of a completely new structure.

In view of the above studies and estimates, we make the following recommendations in regard to the existing physical plant:

1. Complete remodeling and renovation of the existing structures for use as a permanent part of the proposed new Medical Center would be unwise and uneconomical for the following reasons:
 - a. Plan layout of existing facilities precludes their efficient use for most hospital functions.
 - b. The high cost, and the inconveniences and difficulties of completely remodeling the existing structure, particularly while maintaining normal hospital functions during construction.
 - c. Difficulty of integrating old structures architecturally with the new Medical Center.
2. Due to the deterioration and unreliability of the existing Mechanical Plant, its replacement with a new facility is appropriate as Phase I of the new construction program.
3. If available funds are not adequate to complete both Phases I and II of the Construction Program, temporary use of existing facilities in portions of Wings "C" and "G" could be utilized for the following functions:
 - a. Hospital Administration
 - b. Outpatient Clinics
 - c. Long-Term Inpatient Nursing Units for SM, Extended Care, Neuropsychiatric, and Physical Rehabilitation.

The existing facilities should be used in their existing condition as much as possible with only minimum expenditures made to make them usable for the functions outlined. Their use should indeed be temporary, and a program for housing these functions in the new Medical Center should have top priority due to the seismic hazards involved. This is particularly apropos to the long-term inpatient nursing units.

MECHANICAL

The present hospital mechanical facilities are in very poor condition in general. There is a lack of facilities that are functional, as well as rapid building equipment and system deterioration.

The hospital utility systems in most cases are overtaxed and operating inefficiently due to loading capacities, deterioration, and inherent economic function.

An Engineering Valuation Report, in a separate volume, presented by Thomas J. Davis, Inc., indicates the existing facility conditions in some detail.

In order for the present mechanical systems to continue functioning for another 5 years with some degree of efficiency and practicability, the following basic rehabilitation would be needed:

1. Boiler Plant

- a. Refurbish boilers, clean tubes, replace accessory valves, replace insulation, repaint, and replace necessary pipe and fittings.
- b. Install minimum required boiler feed-water chemical treatment system.
- c. Refurbish domestic water heaters, recondition and replace accessories, repair insulation, and repaint units.
- d. Provide domestic hot water circulating pumps and piping to furnish better service to the building.
- e. Replace water softening system.
- f. Replace and repair deteriorated boiler room pipe insulation.

2. Hospital

a. Plumbing

- (1) Domestic cold water service pressure must be increased to provide adequate water pressure to upper floors.
- (2) Plumbing piping systems are in good condition.

b. Airconditioning

The various A/C systems are relatively new and are functioning satisfactorily. It is not recommended that changes be made in the A/C systems due to the high cost involved. Some equipment replacement will be necessary over the next 5-year period.

c. Fire Protection

- (1) Portable fire extinguishers should be properly identified, marked, and located.
- (2) Maintenance shop should be provided with an automatic sprinkler system.

ELECTRICAL

The present hospital facilities in general are in very poor condition. The engineering report presented by Thomas J. Davis, Inc., indicates the conditions in detail. There is a lack of facilities that are functional, as well as rapid building and facility system deterioration due to material and equipment inadequacies, and restriction of replacement and maintenance provisions due to personnel and funding deficiencies.

The hospital utility systems in most cases are overtaxed and operating very inefficiently due to loading capacities, deterioration, and inherent economical function.

At the present time, there is inadequate electrical power service to serve the new hospital. There is an existing 2,500 KVA substation near the hospital which is being increased an additional 1,500 KVA. This substation serves the existing hospital, and the service is 4,160-volt, 3-phase, 60 Hz, delta.

There is a new 10,000 KVA, 13,800-volt substation located at the John F. Kennedy Hospital site which is scheduled for construction in April 1973. This new substation will eventually be increased to 20,000 KVA. All new substations will be completed in less than 2 years.

Service from the new substations will be available to the hospital site by the time hospital construction is completed.

Presently, the plant energy source is limited to electrical power served by the Guam Power Authority; water served by the Guam Public Utility Agency; and oil served by ESSO, Mobil, or Guam Oil and Refinery Company. Guam Oil and Refinery Company is starting production of propane in a limited quantity which will be increased in the near future. They feel that production will be adequate to serve the hospital by the time construction is completed, if desired.

Power interruptions occur quite frequently. Load shedding is required from time to time; normal emergency power interruptions last approximately 3 days at a time, with typhoon emergency outage lasting from several days to over a week.

There are no network loop systems available for multiple power service source at this time.



PART VI

**SERVICES AND
DEPARTMENT AREAS
BED AND SERVICE NEEDS**

SERVICES AND DEPARTMENT AREAS – BED AND SERVICE NEEDS

Elements in the development of a Long-Range Master Plan for Guam Memorial Medical Center include:

MASTER PLAN ELEMENTS

- Hospital, 650 Beds
- Central Plant
- Convalescent Facility
- Mental Health Center
- Outpatient Clinic Facility
- Medical Examiner Facility
- Medical Office Building
- Residential Units
- Automotive Shops

PHASING SCHEDULE STUDY FOR IMPLEMENTATION OF MASTER PLAN
FOR GUAM MEMORIAL MEDICAL CENTER

MASTER PLAN PHASING

Phase I, 1973-1974

Central Plant for 405-Bed Hospital Needs Expandable to 620 Beds,
Includes Laundry/Storage

Phase II, 1973-1977

1976 Hospital
410-Bed Chassis
350-Bed Nursing Units

1977 OPD in "G" Wing
Morgue/Autopsy in "C" Wing for Medical Examinations
Convalescent Facilities in "C" Wing
Mental Health Facilities in "C" Wing

1977 Raze "H" Wing

Phase III, 1978-1980

1980 Hospital - Add 60 Beds
1980 Raze "F" Wing

Phase IV, 1982-1985

1984 Central Plant
Expand to Serve
650-Bed Hospital

1985 Hospital
Increase Chassis to 650 Beds
Increase Nursing Units to 530 Beds
Outpatient Clinic Facilities

1985 Raze "G" Wing

PHASING SCHEDULE STUDY FOR IMPLEMENTATION OF MASTER PLAN
FOR GUAM MEMORIAL MEDICAL CENTER (Continued)

Phase V, 1988-1990

1990 Hospital
 Add 120 Beds

Phase VI, Plus, 1990-

New Convalescent Facility
Medical Examiner Facility
Outpatient Clinic Facility
New Mental Health Center
Residential Units
Medical Office Building
Expanded Central Plant

PROJECTED AREA REQUIREMENTS

	Beds	1975 NSF	1980 NSF	1985 NSF	1990 NSF
<u>Recapitulation</u>					
Administration		22,445	22,445	26,520	26,520
Ambulatory Clinics		17,100	17,100	25,300	29,800
Ancillary Services		31,085	31,085	44,195	46,195
Inpatient Care		70,360	84,855	110,950	128,850
Operational Services		43,240	43,240	64,235	92,420
Total		184,320	198,725	271,200	323,785
<u>Administration</u>					
Admitting		1,650	1,650	2,000	2,000
Business Office		2,540	2,540	2,800	2,800
Communication Center		2,145	2,145	2,700	2,700
Hospital Administration		1,970	1,970	2,300	2,300
Medical Library		1,430	1,430		
Medical Records		3,760	3,760	5,000	5,000
Medical Social Services		910	910	1,100	1,100
Nursing Administration		1,670	1,670	2,000	2,000
Personnel		1,140	1,140	1,300	1,300
Public Areas		4,700	4,700	5,600	5,600
Public Services		720	720	720	720
Purchasing Office		710	710	1,000	1,000
Staff Lounge		600	600		
Subtotal		22,445	22,445	26,520	26,520
<u>Ambulatory Clinics</u>					
Administration		1,060	1,060	1,300	1,300
Emergency		4,285	4,285	6,000	6,000
Hemodialysis		2,700	2,700	4,000	4,000
Medical Clinic (Adult)		1,920	1,920	3,000	4,000
Pediatric Clinic		1,660	1,660	2,500	3,500
Specialty Clinic		1,300	1,300	2,000	3,000
Surgical Clinic		2,405	2,405	4,000	5,000
Walk-In Clinic		1,860	1,860	2,500	3,000
Subtotal		17,100	17,100	25,300	29,800

PROJECTED AREA REQUIREMENTS (Continued)

	Beds	1975 NSF	1980 NSF	1985 NSF	1990 NSF
<u>Ancillary Services</u>					
Inhalation Therapy		1,025	1,025	1,200	1,200
Labor - Delivery		6,495	6,495	6,495	6,495
Laboratory		7,530	7,530	12,000	12,000
Neurophysiology		850	850	1,200	1,200
Pharmacy		1,730	1,730	2,300	2,300
Physical Medicine - Rehabilitation		2,300	2,300	3,000	3,000
Radiology		3,850	3,850	6,000	8,000
Surgical Suite		7,305	7,305	12,000	12,000
Subtotal		31,085	31,085	44,195	46,195
<u>Inpatient Care</u>					
Ambulatory Care	32	6,490	6,490	6,490	6,490
ICU-CCU	20	4,205	6,500	9,000	9,500
Medical Service	48	9,735	13,840	19,300	24,800
Newborn Nursery	32	2,320	3,310	4,500	4,500
OB-GYN Service	45	9,295	9,295	12,320	12,320
Pediatric Service	45	9,075	12,180	18,100	24,500
PMR Service	20	4,580	4,580	4,580	4,580
Psychiatric Service	20	5,520	5,520	5,520	5,520
Special Medicine	20	4,840	4,840	6,340	6,340
Surgical Service	70	14,300	18,300	24,300	30,300
Subtotal		70,360	84,855	110,950	128,850
<u>Operational Services</u>					
Automotive Shop		815	815	2,465	2,465
Central Services		4,050	4,050	6,000	6,000
Central Stores		14,865	14,865	20,000	26,000
Dietary Services		8,290	8,290	15,000	15,000
Housekeeping		1,550	1,550	2,200	2,200
Laundry		4,000	4,000	5,400	5,400
Maintenance Shops		3,670	3,670	5,170	5,170
Mechanical Plant		6,000	6,000	8,000	8,000
Subtotal		43,240	43,240	64,235	92,420



PART VII

MASTER PLAN

**SITE UTILIZATION ANALYSIS
AND PHASED DEVELOPMENT**

MASTER PLAN - SITE UTILIZATION ANALYSIS AND PHASED DEVELOPMENT

The existing site of Guam Memorial Medical Center is an essentially triangular-shaped parcel of approximately 42 acres. The broad base of the property lies to the south and fronts on San Vittores Drive. This baseline is also on the end of Hospital Road, which continues onto the site, crossing San Vittores and leading into the front entrance of the existing hospital.

Vehicular access to the hospital site is shared between traffic from the east on San Vittores and from the south on Hospital Road.

The northeastern and western portions of the property contain randomly placed residential units, both single-family and duplex. The central (northern) portion of the property contains the existing hospital buildings. A large area of the center and eastern portions of the property is vacant and unimproved.

Parking requirements of the master plan call for more than 500 cars, including those for employees, physicians, and patient/visitors. Buildings, of whatever configuration, which must be included within the overall master plan and are in addition to the hospital proper, are:

- Outpatient Diagnostic and Treatment Building
- Medical Office Building
- Convalescent/Nursing Home

Additionally, the existing hospital building is considered for continued use even after completion of the initial phase of new construction. While all health care functions are planned to be housed eventually in new facilities, current economics on Guam may require use of the existing hospital building for other than health-related purposes.

The foremost requirement relating to site utilization to accommodate the replacement hospital facility is to maintain uninterrupted operation of the existing hospital throughout the course of construction of new facilities. This requirement includes not only the continued delivery of health care within the structure, but also safe access to the hospital for supplies, patients, staff, and emergency vehicles.

Building placement alternatives available to the planners are essentially three:

- A – Easterly portion
- B – Central portion
- C – Westerly portion

ALTERNATIVE A

Placement of the master planned hospital building on the eastern portion of the site is inhibited by the relatively narrow wedge of usable land. Traffic circulation around the new building would conflict with the existing building. Service traffic to the new building would be hazardous, since it would pass directly in front of existing residences scheduled to remain in use.

Service traffic to the new building would add severely to existing congestion on San Vittores Drive and tend to increase hazards of vehicular access to the hospital.

The bulk of the required 500-car parking would be forced toward concentration on the west side of the existing road to the existing hospital, without proper relationship to building access.

The site boundary on the south inhibits proper placement of the future outpatient building. The mass of the new structure, forced into too close proximity to this site boundary, would dominate and overwhelm the existing private dwellings to the south of San Vittores depreciating property values and producing adverse environmental impact.

The main advantage of Alternative A lies with retention of all existing residences for whatever length of time may be required.

See Photo - "Alternative A."



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**MASTER PLAN
ALTERNATE A**

ALTERNATIVE B

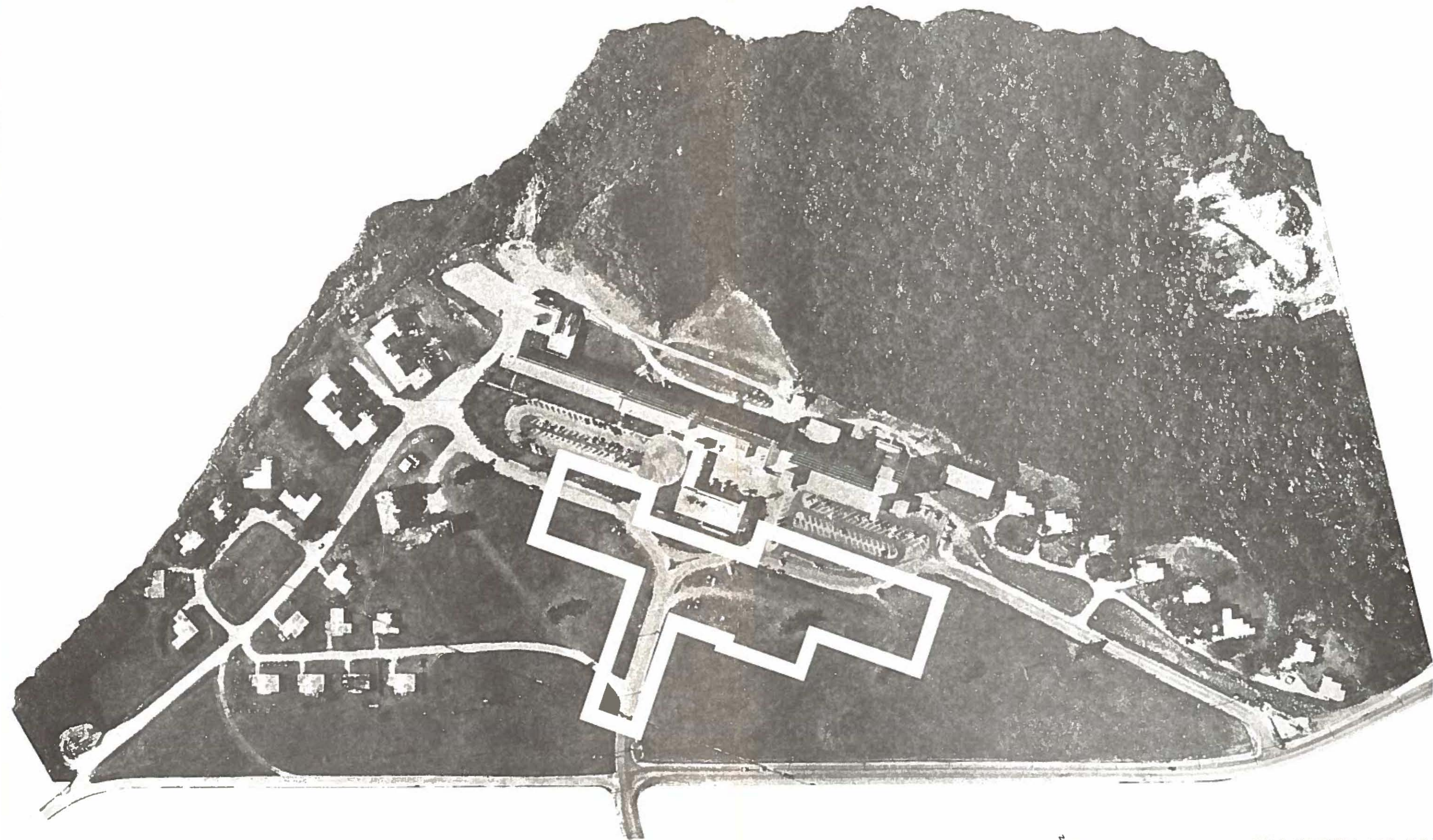
Placement of the master planned hospital building on the central portion of the site essentially blocks proper and convenient access to the existing hospital. It would concentrate major building location in the center of the site, and at the ultimate 600-bed capacity configuration offers extremely poor utilization of the periphery of the property for future hospital-related development.

Parking would of necessity be forced into the areas east and west of the new building preventing proper orientation of designated parking to designated building entrances. Traffic, of whatever type, to the rear of the new structure would be congested by the existing building on one side and cause hazardous conditions in front of the existing residences on the other.

Environmentally, new construction in this location, considering the mass of the new structure, would seriously depreciate the value of this most desirable property with respect to terrain and view.

Singular advantage of this alternative, similar to Alternative A, is retention of existing housing units.

See Photo - "Alternative B."



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**MASTER PLAN
ALTERNATE B**

ALTERNATIVE C

Placement of the new hospital building on the western portion of the site permits the most economical operation of the existing hospital during construction. Temporary rerouting of existing roads or relocation of existing parking is not required, thereby conserving vital capital funds for the new building project.

Relationships of building functions as planned permit proper routing of all severe traffic to the western end of San Vittores Drive. This will eliminate congestion of private vehicle traffic elsewhere on the site or along the Hospital Road-San Vittores flow line.

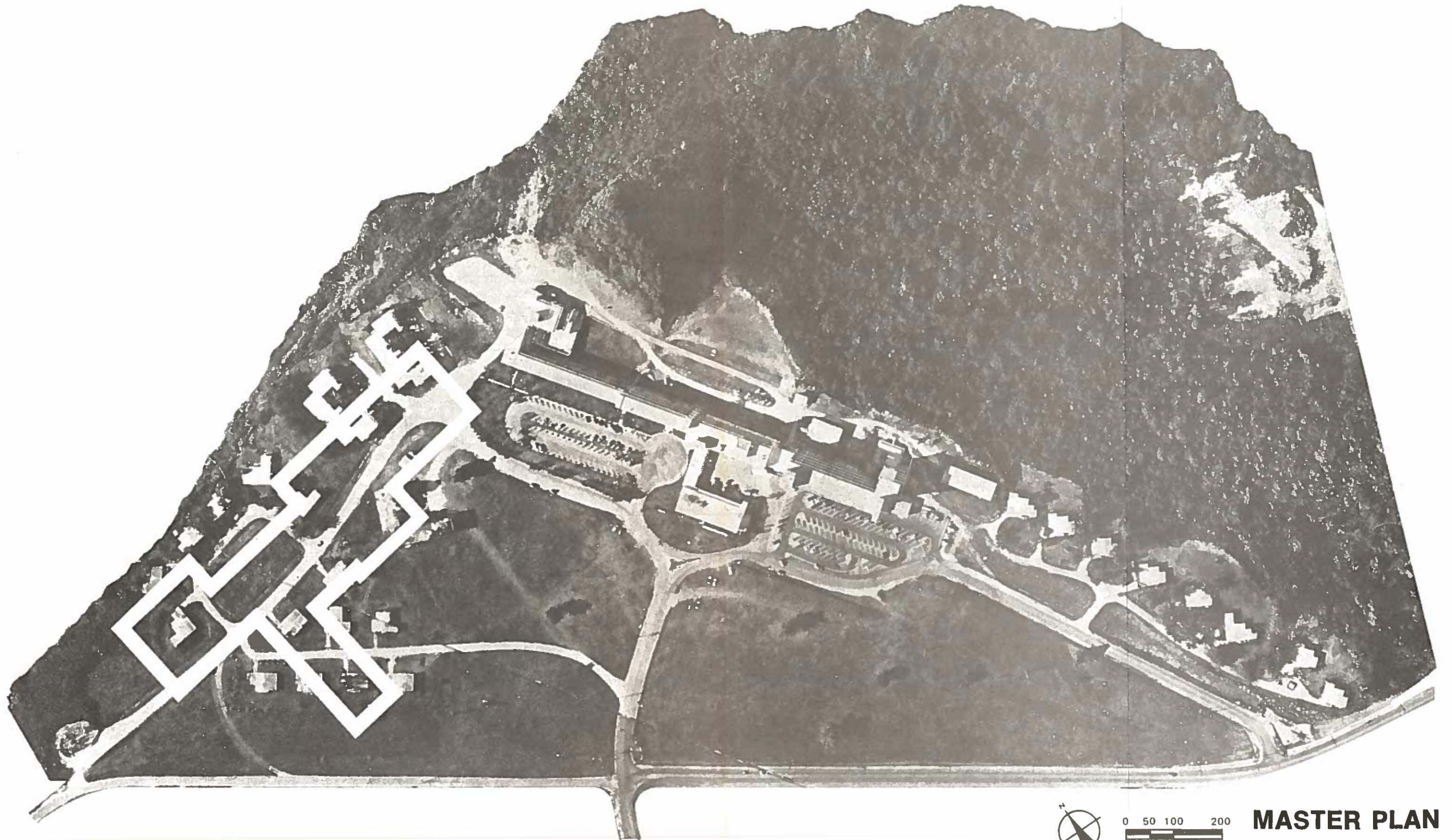
Building placement permits proper distribution of segregated parking areas in relation to points of entry to both new and existing hospital structures.

This alternative produces four strong planning advantages:

- The new hospital can expand to an ultimate 600-bed capacity without physical encroachment on existing hospital structure.
- The existing hospital structure, with but minor modifications to parking layouts, can be retained for nonhealth-related functions for an indefinite period of time.
- The Medical Office Building, at whatever point in time it appears feasible, may be constructed in proper relationship to the hospital even if the existing hospital building remains in place and in use.
- The most desirable northern and eastern portions of the site are preserved for the future development of hospital-related service, such as convalescent single-story facilities and/or highly attractive staff housing. Especially regarding staff housing, this alternative would be compatible with land utilization to the south of San Vittores Drive plus having excellent residential environment.

The singular objection to Alternative C is the necessity of demolishing existing housing units.

See Photo - "Alternative C."



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**MASTER PLAN
ALTERNATE C**

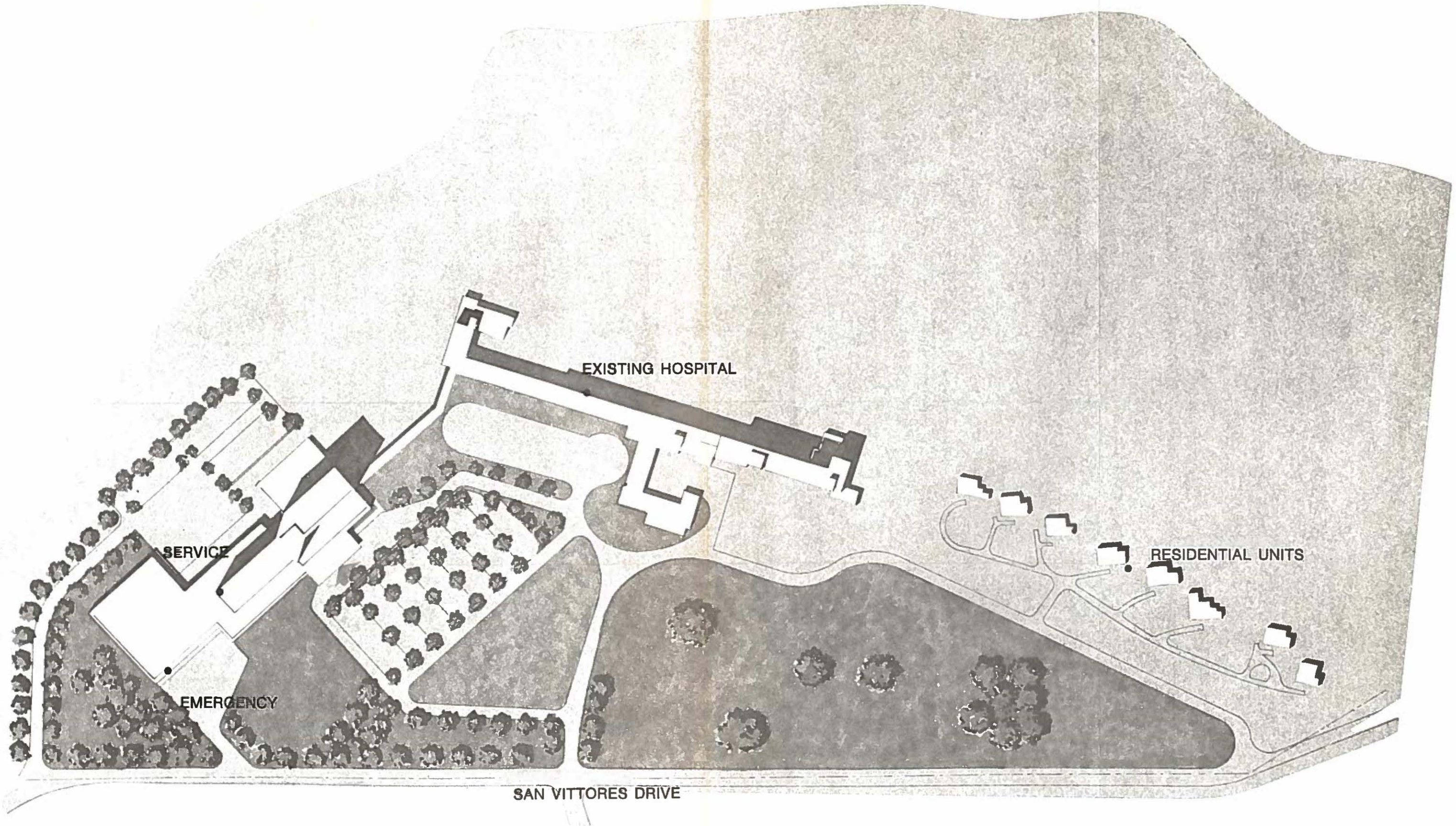
CONCLUSIONS AND RECOMMENDATIONS

Analysis by the DMJM planning team of the three alternatives produced our recommendation in favor of Alternative C.

Recognizing severe short-term penalties in connection with the loss of the existing personnel housing, the planning team nevertheless stressed, in its several presentations to the Board of Trustees and hospital administrator, the advantages of the very long-term requirements of the hospital building. In consideration of the present housing shortage which exists on Guam, it might appear necessary, on first analysis, to retain all housing units. However, proper long-range planning which takes cognizance of the prime purpose of the property — namely, health care facilities, not residences — cannot justify compromise of the prime function of the land use.

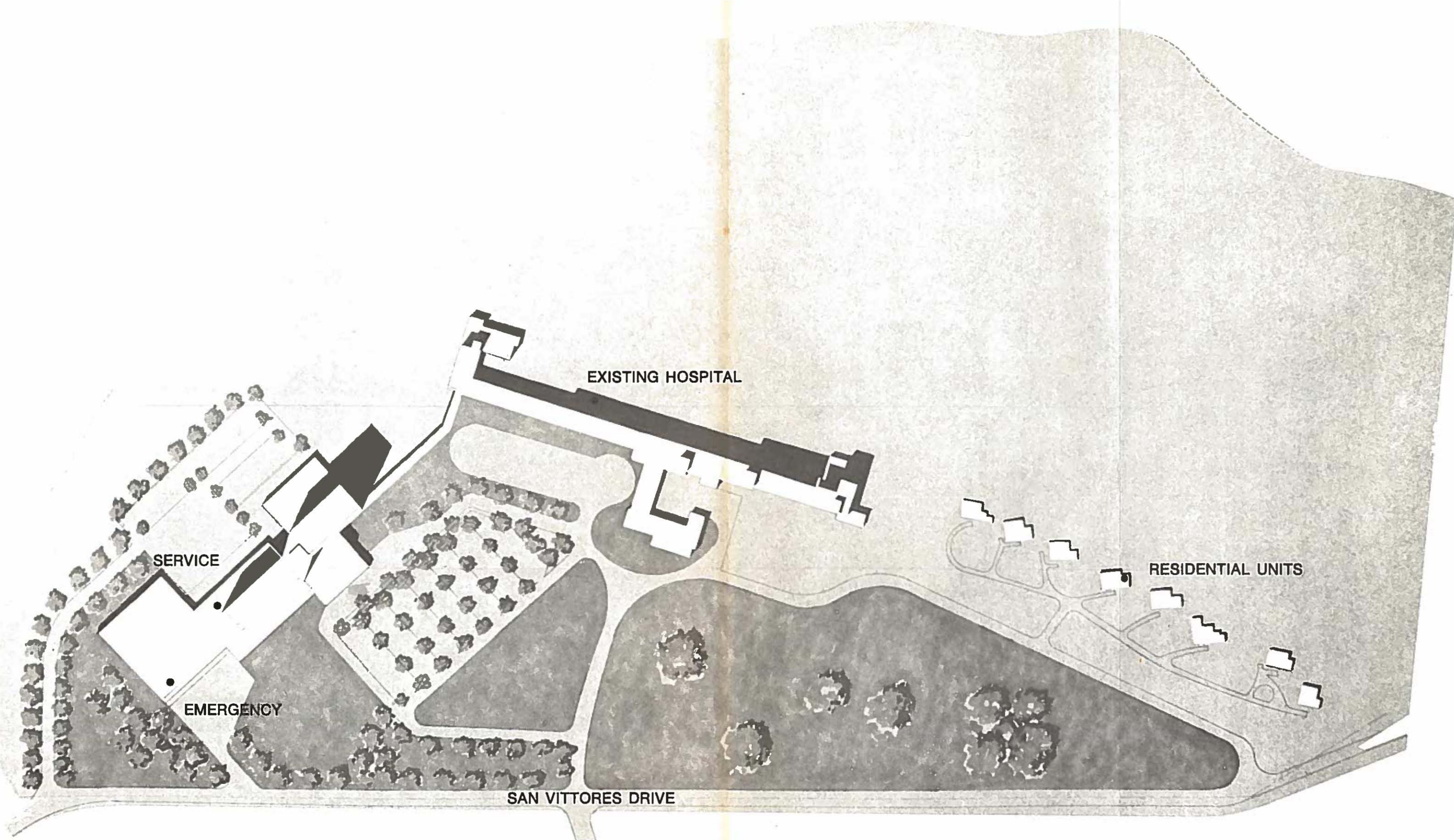
Upon completion of the schematic plans for the first phase of the new hospital construction and determination of final siting, it may very well be possible to retain a small number of the housing units on the western portion of the property. This point, however, has not been previously suggested since it is premature and could prove misleading.

In summary, DMJM feels that Alternative C of the Site Utilization Analyses offers the Guam Memorial Medical Center the greatest opportunity of achieving a highly functional and flexible new facility best able to deliver health care to the people of Guam.



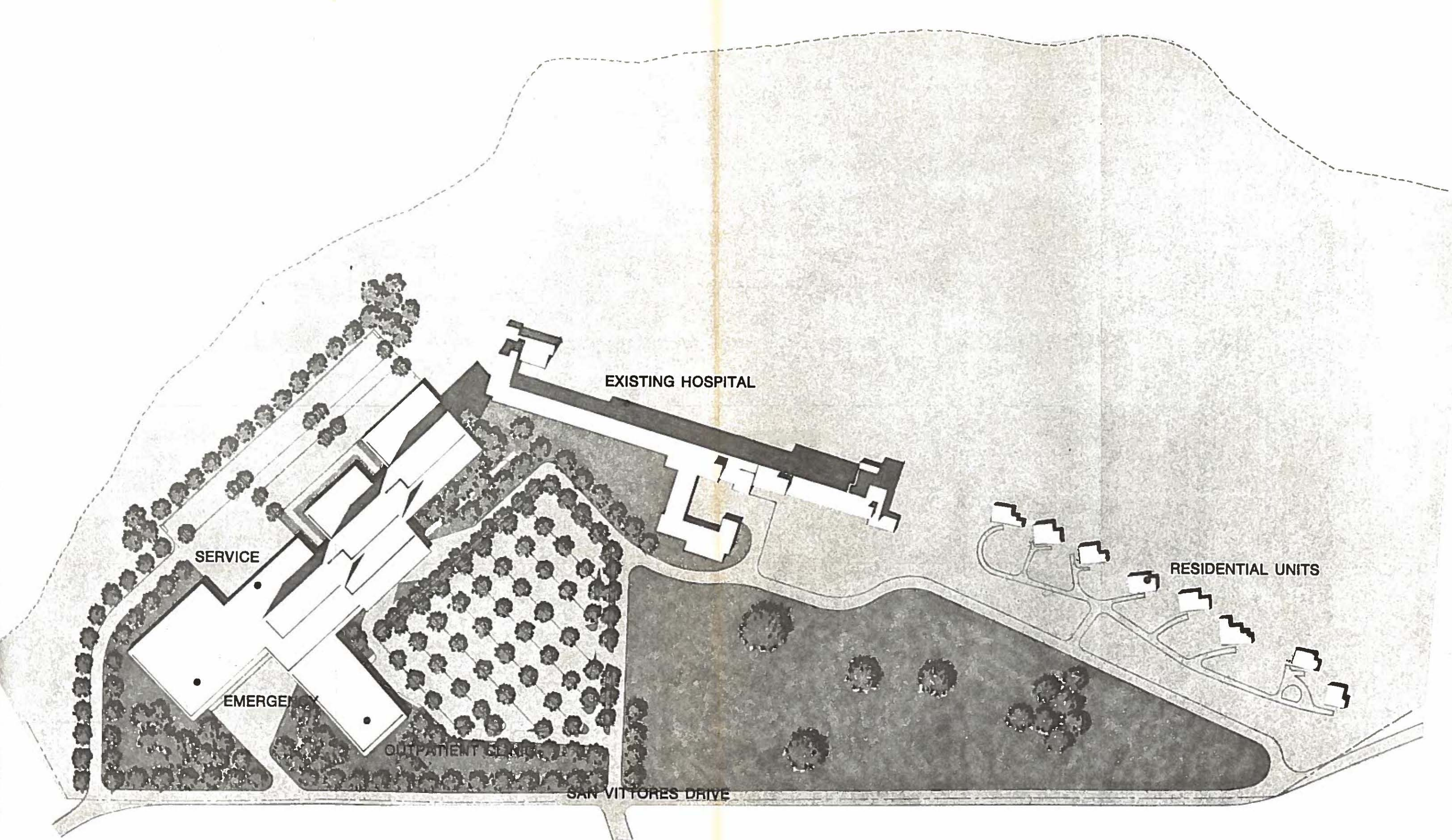
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**MASTER PLAN
FIRST PHASE**



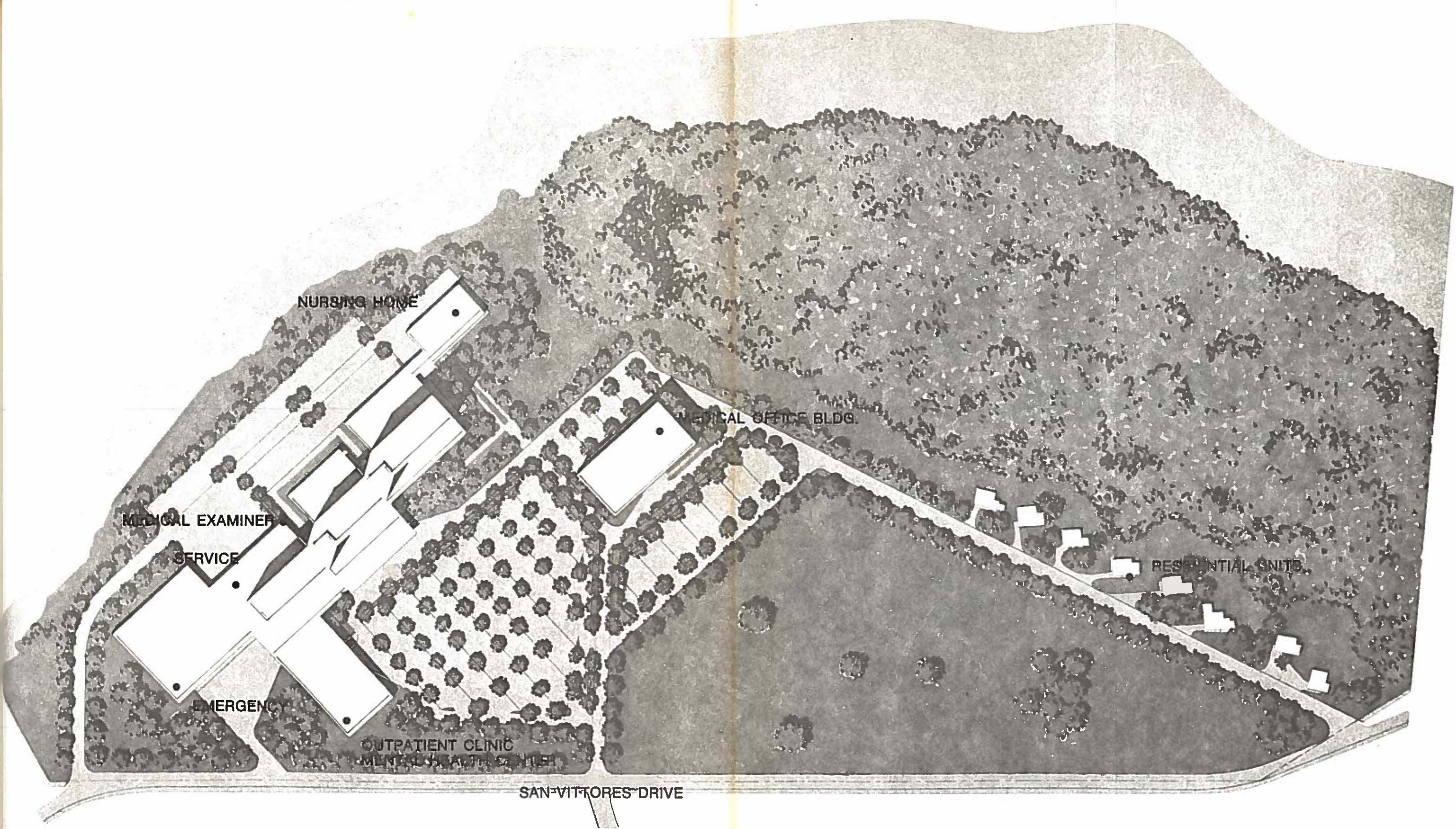
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**MASTER PLAN
SECOND PHASE**



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**MASTER PLAN
THIRD PHASE**



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MASTER PLAN FOURTH PHASE