

TRUST TERRITORY PHYSICAL PLANNING PROGRAM

FINAL REPORT



YAP,
YAP DISTRICT

HAWAII ARCHITECTS & ENGINEERS, INC.
Planners / Architects / Engineers

SUMMARY PLAN

This is a long-range master plan. Some of its proposals will not be implemented immediately. But because land is a precious commodity in certain areas of Yap, and because capital improvements will be constructed at an ever-increasing pace, it is important that:

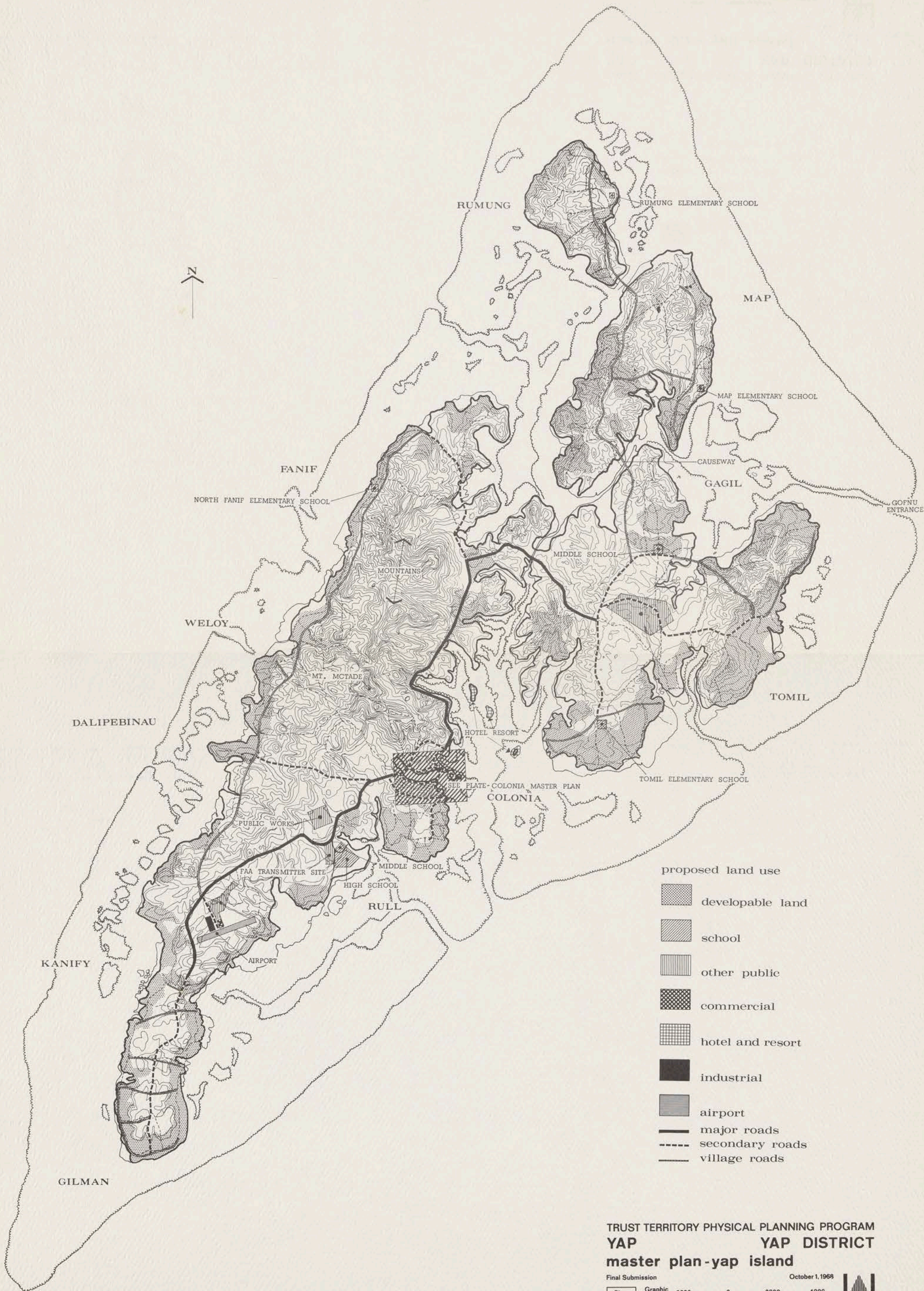
- (a) improvements be built at locations the plan recommends; and
- (b) the master plan be reviewed annually and adjusted to take changing conditions into account.

SUMMARY PLAN FOR YAP

Yap is a group of four islands that has an area of about 37 square miles and a population of about 4,000 that lives in almost 130 scattered villages. It is the government, commerce and transportation center of the Yap District of the Trust Territory of the Pacific Islands. By 1987 its population is expected to increase to more than 6,000, but its people are expected to continue for some time to live in their traditional villages. This plan recommends that:

1. The bulk of the population continue to live in Yap's scattered villages, but that housing in Colonia be concentrated in appropriate areas with road and pedestrian access.
2. Colonia continue to be the major urban center of the district.
3. Such facilities as middle and high schools, the jail and public works yards be decentralized.
4. The main causeway across Colonia Lagoon be replaced with a bridge so tidal action will clear the lagoon of stagnant, polluted water.
5. There be land fill along portions of the Colonia shoreline to provide land for new development that will enhance Colonia's position as the District Center.
6. Industrial land uses be located at a new harbor and wharf facility on land fill on the reef northeast of Keng.
7. Roads be extended to Map and Rumung over causeways destroyed by World War II or storms.
8. Colonia Peninsula be the administration and recreation center of Yap Island, and Denitsch Island be preserved as a public park.





TRUST TERRITORY PHYSICAL PLANNING PROGRAM
YAP **YAP DISTRICT**
master plan-yap island

Final Submission October 1, 1968

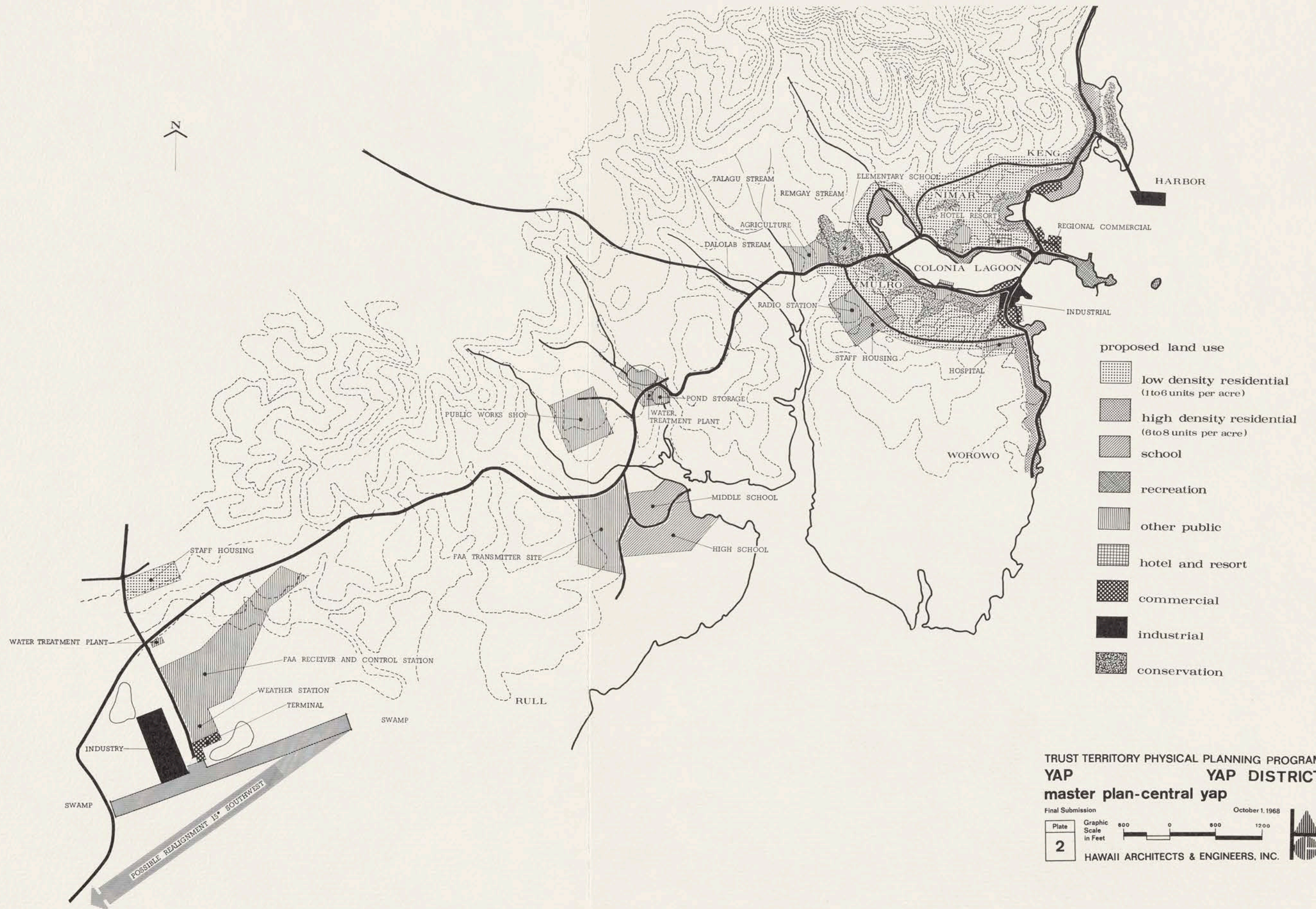
Plate
1

Graphic
 Scale
 in Feet



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TRUST TERRITORY PHYSICAL PLANNING PROGRAM
YAP
YAP DISTRICT
colonia master plan

Final Submission October 1, 1968

Plate
 3
 Graphic Scale in Feet
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Honorable William R. Norwood
High Commissioner
Trust Territory of the Pacific Islands
Saipan, Mariana Islands 96950

November 30, 1968

RE: Final Submission for Yap, Yap District
Trust Territory Physical Planning Program

Dear Mr. Norwood:

It is a pleasure to forward to you the master plan for Yap. This final submission has been developed and refined from the pre-final submission in discussions held with your staff and the people of Yap, including Trust Territory District Officials, the Yap Planning Commission, elected officials, political leaders, and other interested persons.

The planning, as carried forth in this program by our staff, has been aimed at a realistic understanding of the problems and needs of each area and the development of practical solutions which will adequately serve these needs during the next twenty years. The goals and objectives for this program, as approved by you on September 29, 1967, have furnished the basic guidelines for all of our work.

Yap is well known for its distinctive cultural heritage and the Yapese people have repeatedly expressed the desire to maintain their way of life with a minimum of change. In developing the plan for Yap, the expressed values and desires of the people were given strong consideration. Also, many articles and publications concerning Micronesia were researched and special studies including the report "Cultural Considerations for Planning in Micronesia" were performed to develop a plan that will be a viable framework for guiding and accommodating the change which is taking place in a manner that recognizes local traditions and values.

Necessary to the effective implementation of the plan's proposals are the recommendations contained in the report "Planning Legislation". It consists of legislation needed to insure an on-going planning procedure and draft regulations of a building code, a housing code, and a subdivision and zoning ordinance. These will require detailed attention by your staff. Most important to implementing the legislative requirements will be a complete explanation and review by elected officials and citizens of Yap.

Our entire staff has developed a significant interest in the evolution of this plan and look forward to its successful implementation. The assistance, cooperation, and active participation of your staff and the people of Yap are deeply appreciated.

Sincerely,
HAWAII ARCHITECTS & ENGINEERS, INC.

Donald H. Wolbrink
Vice-President-in-Charge

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GOALS AND OBJECTIVES

The statement of goals and objectives, approved by the Trust Territory government, which furnished the basic guidelines for the planning effort are listed below in abbreviated form. They are:

1. Recognize the pressures for social, economic and political change which exist throughout the Trust Territory of the Pacific Islands.
2. Develop a viable physical plan for each urban island which can provide an adequate framework for guiding and accommodating the change which is taking place.
3. Accommodate population growth.
4. Establish an on-going planning procedure which will enhance carrying out the plan for each island as well as adjusting it in the future to changing conditions.
5. Promote understanding and adoption of democratic governmental processes in recognition of local traditions and values.
6. Provide a plan which is capable of adjustment to changes in governmental forms.
7. Prepare a public improvements program for the next five years based upon physical plans for the urban areas and their islands.
8. Provide for cohesion of Micronesia's widely separated areas through territory-wide development of transportation and communication systems.
9. Accommodate a more affluent economy.
10. Set forth a definition of known land tenure problems as they are apparent in the planning program.

11. Recognize the cultural, economic, social and geographic differences that exist among the various components of the Trust Territory.
12. Provide for orderly growth of communities with special attention to conservation of land resources.
13. Encourage economic development by provision of roads, utilities, harbors and other public works.
14. Develop a better living environment for Micronesians and a sense of place for visitors.
15. Prepare material on the principal design elements of the various Micronesian cultures.
16. Make provision in the plan for cultural expression of arts and crafts.
17. Prepare design concepts for civic and public building areas.
18. Prepare material on design concepts for retail and commercial areas.
19. Prepare development sketches for one or more residential areas.
20. Examine in detail housing development opportunities.
21. Provide for major tourist development within the framework of the physical plan in a manner most compatible with enhancement of the local economy.
22. Recognize the implications of possible military activity in Micronesia as defined in the United Nations Trusteeship Agreement.

SETTING FOR DESIGN AND PLANNING

Yap is a compact, elongated, triangular group of four major islands that is divided by narrow channels and bays, and surrounded by a fringing reef.

Yap has a land area of 37 square miles and a small, dispersed population. Four thousand Yapese live in more than 100 villages scattered over some 30,000 acres of coastal land. All inhabited villages are among coconut groves and forested valleys along the seashore.

Narrow channels separate Map and Rumung Islands from Yap Island and Tomil-Gagil Island. A man-made canal divides Yap and Tomil-Gagil.

There are forested valleys, dry grass-lands, and barren plateaus in the mountainous interior.

Colonia, in east central Yap, is the administrative and economic center of the islands. Its resident population is less than 600 people, most of whom are Palauan immigrants and Trust Territory personnel.

Few Yapese consider Colonia their home, though some Yapese villages are near or inside the Colonia area. Instead, they identify strongly with their home municipality and village.

Most Yapese who work in Colonia commute each day from their outlying villages by bus, jeep, boat or motor bike. Those whose homes are too distant for convenient commuting, spend their weekdays with relatives near Colonia, and return to their home villages on the weekend.

Part of the reason, undoubtedly, is the Yapese's traditional high regard for land and land ownership. So closely do Yapese identify with their land that the same Yapese word describes a landholding and the family unit that owns it. There is no significant distinction between the land and its owners. Men take their names from the name of the family estate. They are the land and the land is them.

Moreover, Yapese tradition does not encourage land sales in the western sense. Even the granting of permanent use rights is regarded as revocable for cause and is not widely practiced.

So there is very little land available for individuals who might wish to move from their ancestral residence to Colonia or some other part of Yap.

The result of all this, of course, is that Yapese tend to continue living on their ancestral lands, instead of migrating to the District Center as islanders in other parts of the Trust Territory do. Probably this tendency will continue, for the population of Yap in 1987 is expected still to be but about one-fifth of what Yap once supported. So there is no scarcity of land in the island group . . . except in Colonia.

There is but a narrow strip of developable land in Colonia, which lies at the base of steep hills that cannot easily be developed. Housing along the narrow shoreline roads of Colonia Lagoon and Tomil Harbor already is dense and compact.

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Nevertheless, it should be noted that there has been some urban growth in Colonia. A number of Palauan immigrants have moved there in search of jobs in government or private business, or simply for the sake of travel. They and some Yapese who work in Colonia have built homes on land fill atop the fringing reefs of the harbor area or over the water, on stilts, among the mangroves. This sort of development may indicate a pressure for further urban development in Colonia that is not now being satisfied.

Yap's strong ties to tradition make it the most conservative part of the Trust Territory, the least touched by the innovations of the respective nations that have governed it.

Yet its exposure to the west is older than that of some other districts. German commercial companies opened headquarters on Yap in the last quarter of the 19th century, prompting concern on the part of the Spanish over the security of Spain's Micronesian possessions. As an outgrowth of the commercial challenge and other events, Spain in 1885 installed on Yap a governor, troops

and missionaries. The Spanish built administrative facilities and a fort. But it was not until Germany took control of the Micronesian islands that commerce became important. Germany sought to spur the output of copra and provided some public facilities and programs. Japan followed suit when she took the islands, built new administrative facilities, an airstrip and installed Japanese commercial firms.

Through it all, Yap's population, beset by foreign diseases, continued to decline from the some 40,000 that once lived there to the some 2,500 that remained shortly after World War II. The depopulation left much land vacant, weakened to some extent the traditional tenure systems and left Yap a less development-conscious place than it might otherwise have been.

Today, Yap lacks most of the public facilities that could spur further development. The only sewer facilities are the raw sewerage outfalls that serve the hospital, Trust Territory government housing and the hotel. Islanders use pit privies for the most part.

Many of the villages in which islanders live are not reached by road. Electrical power, like sewage facilities, is available only in Colonia, and only to a limited extent there. There are water and roads in Colonia area, but both need improvement and expansion if they are to serve the needs of the district center area.

Better commercial shipping and air transportation have been introduced to the area recently. There are shallow lagoons in the Colonia area that can be filled to form land for further urban development.

CONCEPT OF THE PLAN

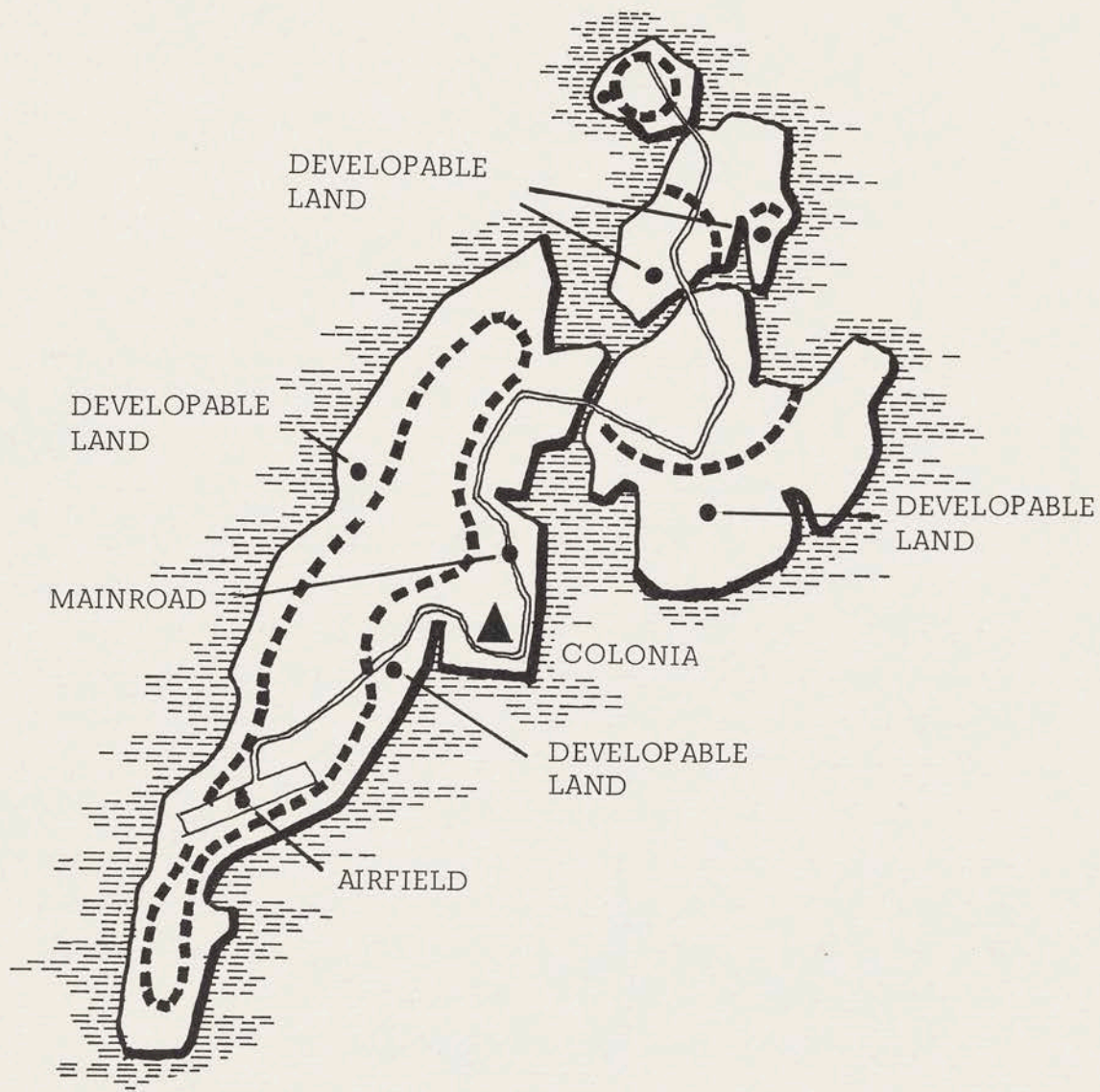
The plan for Yap is based on the following concepts:

1. Colonia will continue to be the administrative, economic, social and political center of Yap.
2. Yap's population will reach a minimum of over 6,000 by 1987.
3. Adequate roads to all the islands of Yap will be developed to provide Yapese the opportunity for employment and access to public services and recreation in Colonia, while maintaining their homes in the villages.
4. Adequate land will be provided for residential, commercial, industrial and public facilities in appropriate locations in Colonia.
5. Public facilities, including streets, harbor, airports, utilities and schools will be developed in consonance with need and demand.

6 The plan encourages economic development on Yap without radically altering the natural environment and way of life of the Yapese. Above all, the plan takes into account the particular interests of Yapese, their heritage and their goals. These and other matters are covered in detail in the Hawaii Architects & Engineers, Inc. report, "Cultural Considerations for Planning in Micronesia."

This plan has been prepared in consultation with the people of Yap — it is their plan to adopt, to modify, to refine and to carry out.

The conceptual structure of the plan for Yap is shown in the diagram below.



The master plans for Yap (see Plate 1) and Central Yap (see Plate 2) and Colonia (see Plate 3) are illustrated.

ELEMENTS OF THE PLAN

Transportation

Airport

Yap now has a coral-base, asphalt surface airstrip 4,890 feet long. It is in excellent condition, but must be lengthened to 6,000 feet to meet Federal Aviation Administration standards and to service the faster, larger 727QC all jet aircraft that are expected to replace the DC-6 airplane that now serves Yap.

Extending the present field 1,000 feet would require 40- to 50-foot fills over swamp land at each end of the existing runway and realignment of the main road at the west end of the field.

Instead, the runway alignment should be moved 15 degrees to the south to take advantage of the relatively flat land to the southwest. A preliminary survey by the Yap District Land Office indicates that constructing a 6,000-foot airstrip in this area would require only small cuts and fills. It would not be necessary to shift the main road.

The airfield also could be located in the center of the Tomil-Gagil area where the Japanese began construction of an airstrip. But this region is heavily populated, and the land there is considered valuable for agriculture. Unless it should be necessary to dredge large amounts of fill from fringing reefs that are used for subsistence fishing, as was the case when the Trust Territory improved the existing airfield, realigning the existing field is the better course to follow.

If large amounts of coral fill are necessary, they should be taken from areas that islanders do not use extensively as fishing grounds.

Harbors

Yap does not now have a harbor adequate for the larger ships that call there. The existing port facility on Colonia Peninsula has only enough water alongside to accommodate such small ships as the Yap Islander and the Palau Islander.

Larger ships of the Pacific Islander class can enter the Tomil Harbor, but cannot approach closer than 500 feet of the Colonia Peninsula. Consequently, they anchor offshore and transfer their cargo to lighters, which offload at the dock on Colonia Peninsula.

The inevitable result is increased cargo breakage and higher costs of Yap consumers.

A new port facility should be built on eight acres of fill land east of Keng and northwest of Denitsch Island (see Plate 3).

The harbor at this point is too narrow to allow large ships to turn without the aid of tugs. But if fill for the port complex is dredged from the shallow reef of Keng and Denitsch Island, the harbor will be widened to 1,700 feet, an adequate turning basin for large ships. Excess dredged material can be stockpiled for road construction and other land fill projects. The eight-acre port site should be an industrial zone in which should be located such facilities as POL storage and warehousing.

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There is an alternative port location, but it is not a desirable one. A 450-foot wharf frontage could be developed by filling the area between the Mobil Oil storage tanks and the Madrich housing complex for outer islanders. This would provide a four-acre site that would be large enough for warehousing and light industrial uses, and would provide some additional commercial land.

It also would cover an unsightly area that now is a mucky, trash-filled graveyard for the rusting hulks of wartime barges. It would end the need for piping petroleum products across the Colonia Lagoon causeway, and would allow moving unsightly POL tanks into the old quarry behind the public works yard.

But it would not provide an adequate turning basin for large ships, nor space for more than one vessel, if a large ship were in port.

It appears that the alternative site would be feasible only if a recently introduced system of containerization, designated LASH for

Lighter-Aboard-Ship, were used. The system requires the use of specially designed ships similar to those ordered by the Maritime Administration and Pacific-Far East Trade. The ships on order carry 61 cargo-loaded lighters, which can be offloaded by shipboard gantry crane. Lighters can be left at their destination until the ship calls again. It may be that foreign-built, smaller versions of this sort of vessel will be usable in Trust Territory waters.

Streets and Walkways

Almost half of the population of Yap is isolated by the lack of good roads. Movement of copra and commercial goods to Colonia is hampered by poor roads or restricted to boats that rely on high tides and calm weather. Many emergency medical cases now are isolated, though only a few land miles from the District Hospital in Colonia. The students walk 2 to 3 hours a day to and from schools. Yap High School must provide dormitories for students whose homes are in isolated coastal villages.

In many cases, the Yapese have taken the initiative and built roads through the jungle to their municipal schools. These roads are then linked with roads leading to Colonia. Land for the road right-of-way is donated, and villagers work weekends with borrowed Trust Territory equipment to construct the roads.

The Yap road system should take advantage of the present system, upgrade derelict Japanese roads and extend new roads through Map and Rumung to the northern tip of Yap Islands. (see Plate 4).

The existing network of roads needs only to be upgraded and extended to become a regional system.

A primary "spine" road should extend from the southern tip of Yap Island to Tomil-Gagil and continue north through Map and Rumung Islands.

Secondary routes from the primary road should lead to parking areas behind the coastal villages. Shoreline roads should pass behind the villages away from the pedestrian paths, and should not require the removal of coconut trees, taro patches or gardens.



RUMUNG

MAP

FANIF

GAGIL

WELOY

DALIPEBINAU

TOMIL




COLONIA

KANIFY

airport

RULL

GILMAN

-  primary roads
-  secondary roads
-  minor roads

TRUST TERRITORY PHYSICAL PLANNING PROGRAM

YAP DISTRICT transportation plan

Final Submission

October 1, 1968

Plate	Graphic Scale	4000	0	4000	8000
4	in Feet				

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In northern Yap, the plan provides for:

1. Extending the present primary road from the Loran Station to the proposed northern Yap Islands middle school at Makiy Village.
2. Constructing a secondary road from Makiy Village to the interior derelict German Causeway between Gagil and Map Island.
3. Rehabilitating the Gagil-Map causeway with a one-lane bridge section that will allow small boat traffic to pass through the channel. The derelict and storm-torn causeway east of this area will not be necessary in this system. It is exposed to open water, subject to storm damage and too low to permit construction of bridge sections through which small boats may pass.
4. Developing a secondary road running due north along the high ridge on the west side of Map Island from the Map-Gagil causeway to Rumung.
5. Constructing an east-west secondary road across Map from the north-south road to the Map School and along the east shore behind the villages on the ridge. The Map roads will provide land access to approximately 450 residents.
6. Rehabilitating the Map-Rumung causeway and constructing a one-lane bridge section in the causeway.
7. Developing a secondary road from the causeway to northern Rumung along the eastern shore of the island and behind the villages there. Service drives should run to the villages and beaches. This road will provide access to approximately 150 residents living on the east coast of Rumung.

About 1,600 people — one-third of Yap's population — live on the eastern and southern coasts of Tomil and Gagil.

The present road system in Tomil-Gagil begins where the primary road from Colonia reaches the Loran Station. From this point there are three secondary roads: one leading due east to the Gagil School at Gatjapar, one leading south to the Tomil School and the other leading north to the proposed middle school at Makiy. The plan proposes:

1. Improving these three roads to secondary standards. These three secondary roads join an existing network of actively used, small Japanese roads on the east and south coast.
2. Improving these coastal roads to a minor standard. All new access roads should be constructed inland and behind the villages.
3. Constructing a minor route from the Tomil School to the proposed Makiy middle school site.

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There now is a main north-south primary road from southern Yap Island to Tomil-Gagil Island. Off this main road are 2 miles of secondary roads that provide access to the east and west coasts.

Because Yap's interior is mountainous, it would be difficult to build roads linking the west coast to the main road. Instead, there should be a coastal road along the west side of Yap Island. It would meet the main road in the north and in the south, forming a large loop. The plan recommends:

1. Constructing a western coast road in the municipalities of Fanif, Weloy and Dalipebinau between the present road at North Fanif and the Dalipebinau municipal building.
2. Constructing only minor drives in southern Yap Island between the main road and the villages. Coastal roads in this area would not be as efficient as access from the main road. The roads to the villages should run behind the villages.

Roads in Colonia are similar to all the roads on Yap – unpaved, dusty or muddy (depending on the weather) and undefined. Rights-of-way are not of consistent width. There is no separation of automobile and pedestrian traffic. The Colonia plan recommends a circulation system which includes standard, government-owned road rights-of-way, curbs and gutters, paved streets and pedestrian ways.

This Colonia circulation system would use all present roads but realign some. New roads would complete the network.

There should be two roads around the lagoon to alleviate development pressure along the shores of the lagoon and to provide access to now undeveloped land within walking distance of central Colonia (see Plate 3).

The first should be at an elevation of 100 to 120 feet, about 1,100 feet south of and parallel to the south lagoon road. The east end of this road will connect with an existing road in Worowo. The west end will connect with the road leading to WSZA radio station.

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This road will provide the necessary access to the proposed Yap District Hospital.

The second new road should pass through Nimar between Keng and the causeway at the west end of Colonia Lagoon. This would give north-south traffic a second route through Colonia, easing the traffic load on the single intersection in central Colonia. It will also provide access to additional residential land. Both of these new roads should be developed to a secondary standard and should have pedestrian walkways, curbs, gutters and paving.

Residential development along these roads should be related to minor roads leading north and south to street ends.

Pedestrian paths should lead from this circumferential road to the lagoon. Improvement to present roads should include:

1. Upgrading and extending the present roads on the north and south side of the lagoon west into Mabuu, Talguw and Mulro. Pedestrian walks should be provided on the lagoon side in all cases.
2. Replacing present main causeway with a bridge to allow tidal flows to flush the lagoon and to allow small boats to enter the lagoon.
3. Improving the road to the Rull municipal building and Balebat "money bank" to a secondary standard with a pedestrian way on the shore side.
4. Developing a minor road from the Rull Municipal building to Balebat.
5. Improving the road from central Colonia to Keng, to a primary standard. Widening should be done on the shore side and should include provisions for pedestrian ways.
6. Improving present road from the administration building to the museum to a secondary standard.
7. Realigning the road from YCA to the legislature building around the north and east side of the existing hospital. The road should end in a parking lot on west side of the existing hospital. The parking area would serve the recreation area proposed for the site the hospital now occupies.

All roads will require off-street parking.

Table 1 summarizes the present road conditions and proposed new and improved road lengths and standards.

Table 1
Proposed Road Standards
Yap

Location	Existing Conditions	Proposed Length (in miles)	Standard	Surfacing Width (in feet)	R.O.W. Width (in feet)
Gilman to Airport	20' Unsurfaced No R.O.W.	4.0	Secondary	20	30
Village Access So. Yap	3 Miles, Unsurfaced No R.O.W.	6.0	Minor	16	30
Airport to Colonia	Coral Base No R.O.W.	4.8	Primary	26	40
West Coast of Yap	None	7.0	Minor	16	30
Colonia To Dalipebinau	20' No R.O.W. Coral Base		Secondary	20	30
South Lagoon Road	20' Unsurfaced No R.O.W.	.6	Secondary	20	30
North Lagoon Road	20' Unsurfaced No R.O.W.	.8	Secondary	20	30
Proposed WZA to Worowo	None	1.5	Secondary	20	30
Proposed Keng Bypass	None	1.5	Secondary	20	30
Colonia to Balebat	20' Unsurfaced No R.O.W.	1.5	Secondary	20	30
Colonia to Loran Station	24' Surfaced No R.O.W.	3.5	Primary	26	40
North Fanif Road	16' Unsurfaced No R.O.W.	2.1	Secondary	20	30
Loran Station to Makiy	16' Unsurfaced No R.O.W.	.8	Secondary	20	30
Makiy to North Rumung	None	3.5	Minor	16	30
East Coast of Map	None	1.4	Minor	16	30
Northeast Coast of Gagil	.5 Mile	1.5	Minor	16	30
Loran Station to Tomil Elementary School	1.9 Miles	2.1	Secondary	20	30
South Tomil Village Roads	2 Miles	1.8	Minor	16	30

Land Use

The land use plan for Yap recognizes the strength of Yapese ties with the land they own, their present preference for living in scattered villages on their own estates and the importance for some time to come of subsistence agricultural land to this housing pattern. The plan also recognizes that the urban center of Colonia will expand, albeit slowly, and recommends a pattern of industrial, commercial and residential development for Colonia and the Colonia area that will make it a more efficient and pleasant urban center and allow it to develop as the demands of an expanding population dictate.

Residential

Most Yapese live in some 129 villages scattered over the four main islands of the Yap group. Village land is flat (0 to 5 percent slope), and near lagoons, has lateritic soil and supports groves of coconuts or a mixed growth of forest and coconut palms.

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There is abundant land for village residential areas on Yap. About 9.5 of the island group's 37 square miles of land is suitable for village development. And the current population of the islands (about 4,000) is but a tenth of what the islands once supported. Large numbers of vacant stone house platforms in existing villages indicate that even they once supported far greater numbers of people. Housing densities now rarely exceed one unit per acre. In many cases, there are miles between houses.

This plan recommends no change in the tradition-sanctioned pattern of village residence. Population in the island group is expected to increase to about 6,200 by 1987. There is abundant residential land available on Yap for this number of people and more.

The plan provides for adequate residential land to accommodate a minimum of 2,000 residents — one-third of the population expected in 1987 — within the Colonia area.

Population growth in Colonia will be dependent to a great extent, upon opportunities in education and employment and the public facilities and utilities that become available in Colonia.

Housing in Colonia now is concentrated along the shore roads of Colonia Lagoon and Tomil Harbor. The extreme rise in elevation on the inland side of these roads limits the number of desirable housing sites. Only a small amount of land is available on the lagoon side of the road. A few homes are built over the water on stilts.

This pattern of residential development is a result of access to roads and in some cases having utilities available. Few roads lead to desirable residential land in Colonia.

The two proposed circumferential roads discussed in the transportation section will provide access to 97 acres of additional residential land within walking distance of central Colonia.

Within the Colonia area there should be two residential densities:

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1. High density (6 - 8 residential units per acre) along the shore roads.
2. Low density (1 - 6 residential units per acre) along the inland circumferential road.

A typical subdivision on the proposed road from Worowo to WSZA is illustrated (see Plate 5). This particular plan is for additional staff housing sites. The density is four dwelling units per net acre (the net acre measure does not include land used for roads or community facilities).

Commercial

Colonia is the commercial center of Yap. The only major commercial establishment is the Yap Cooperative Association, located next to the present port and supply area. YCA operates a snack shop and bar, a market, movie theater, repair shop, gas station and a dry goods store. YCA also is a trading company for copra and local handicrafts and operates a shipping line.

More commercial space can be created by realigning the existing buildings slightly and creating some new land. An additional 16,000 square feet of commercial floor space and 4,800 square feet of space for a gasoline station and automotive services can be obtained (see Plate 6).

The commercial complex would have an area of about 102,000 square feet, of which about 37,000 square feet would be devoted to buildings and about 65,000 square feet would be used for roads, driveways, parking, pedestrian walks and landscaping. There would be additional parking space between the existing hospital and the commercial area on land partly created by a land fill of about 19,000 square feet in area.

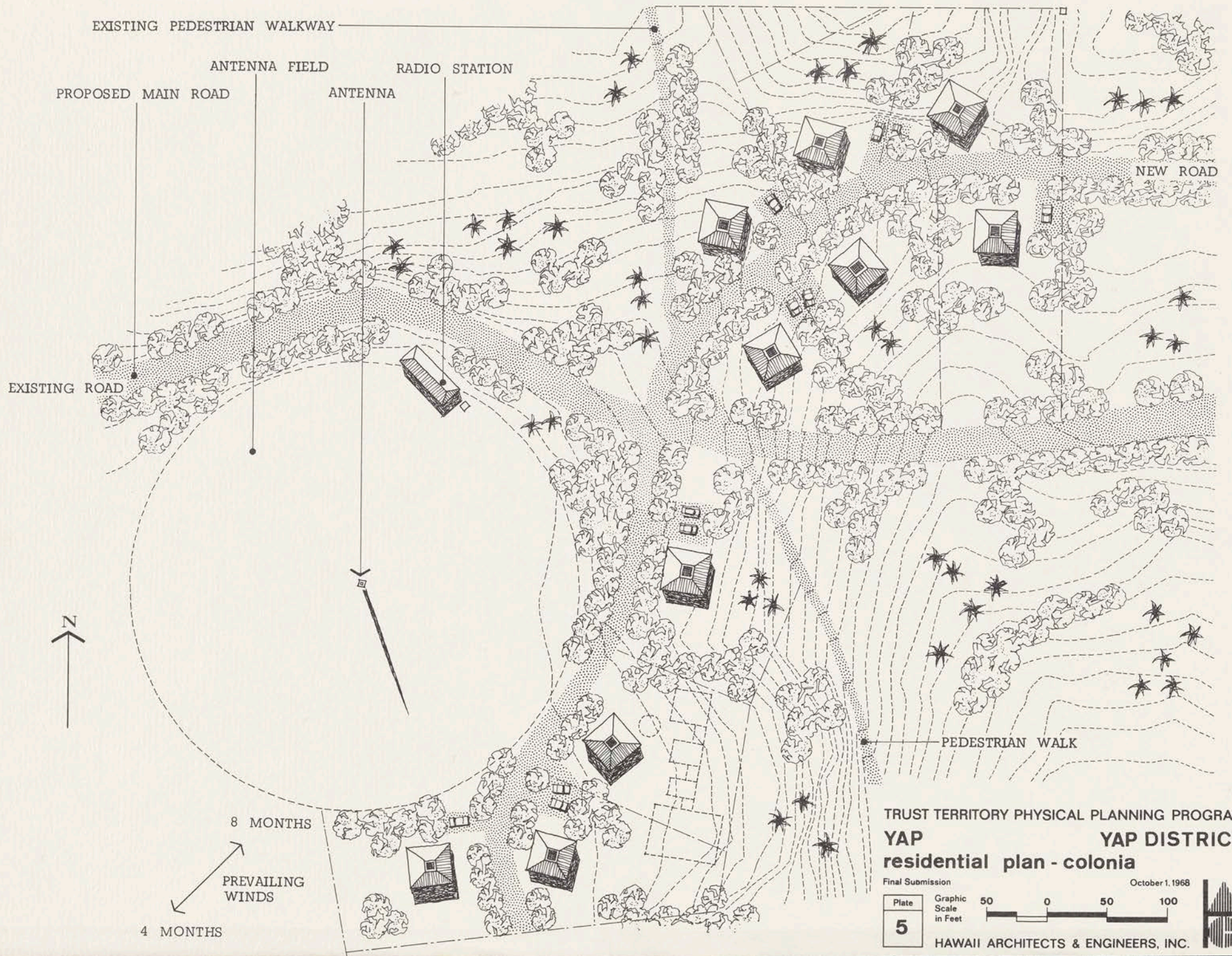
The present supply warehouse operation should be moved to the new port site, and the building in which supply activities now are housed should be used for commercial purposes. Use of this area, immediately south of and across the street from YCA, would make an additional 51,000 square feet of space available for commercial use. Additional shops can be built east of this building. There could be small shops or a restaurant on the roof of the supply building. This will make a total of about 172,000 square feet of land available for commercial use, if the land fill between the commercial area and the present hospital site is counted as part of the area.

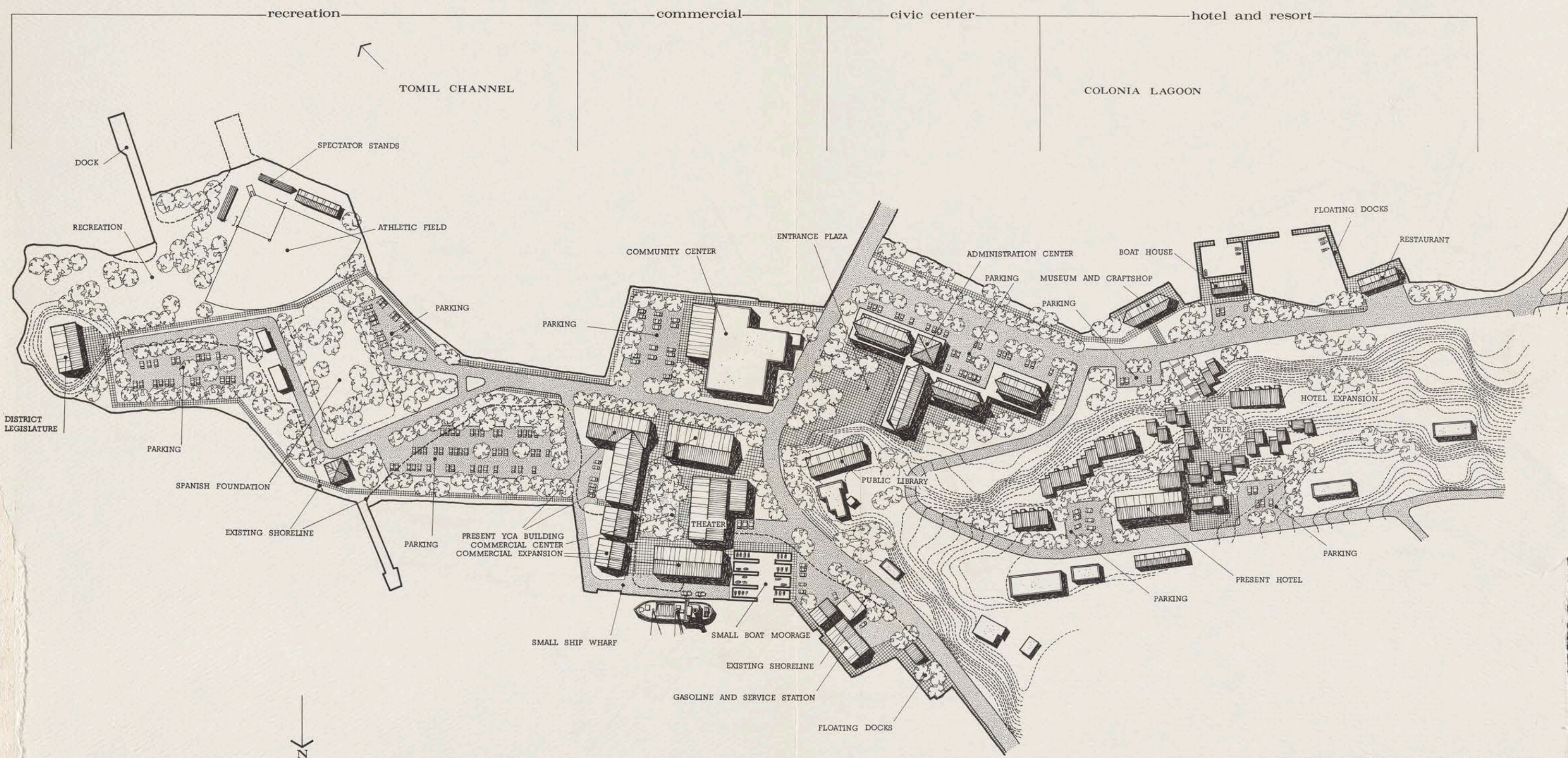
A 10,000-square foot boat basin should be dredged on the north side of the commercial complex. The dredged material should be used for the adjoining land fills. There should be 240 linear feet of wharf space on the north side of the commercial complex for the docking of such small ships as the Yap Islander. Small craft would use the dredged boat basin.

There is a sketch of how the commercial area could look in the future (see Plate 7).

There should be three other commercial areas:

1. In Keng, north of central Colonia.
2. In Worowo, next to the alternative port site.
3. On the southeast shore of Colonia Lagoon.



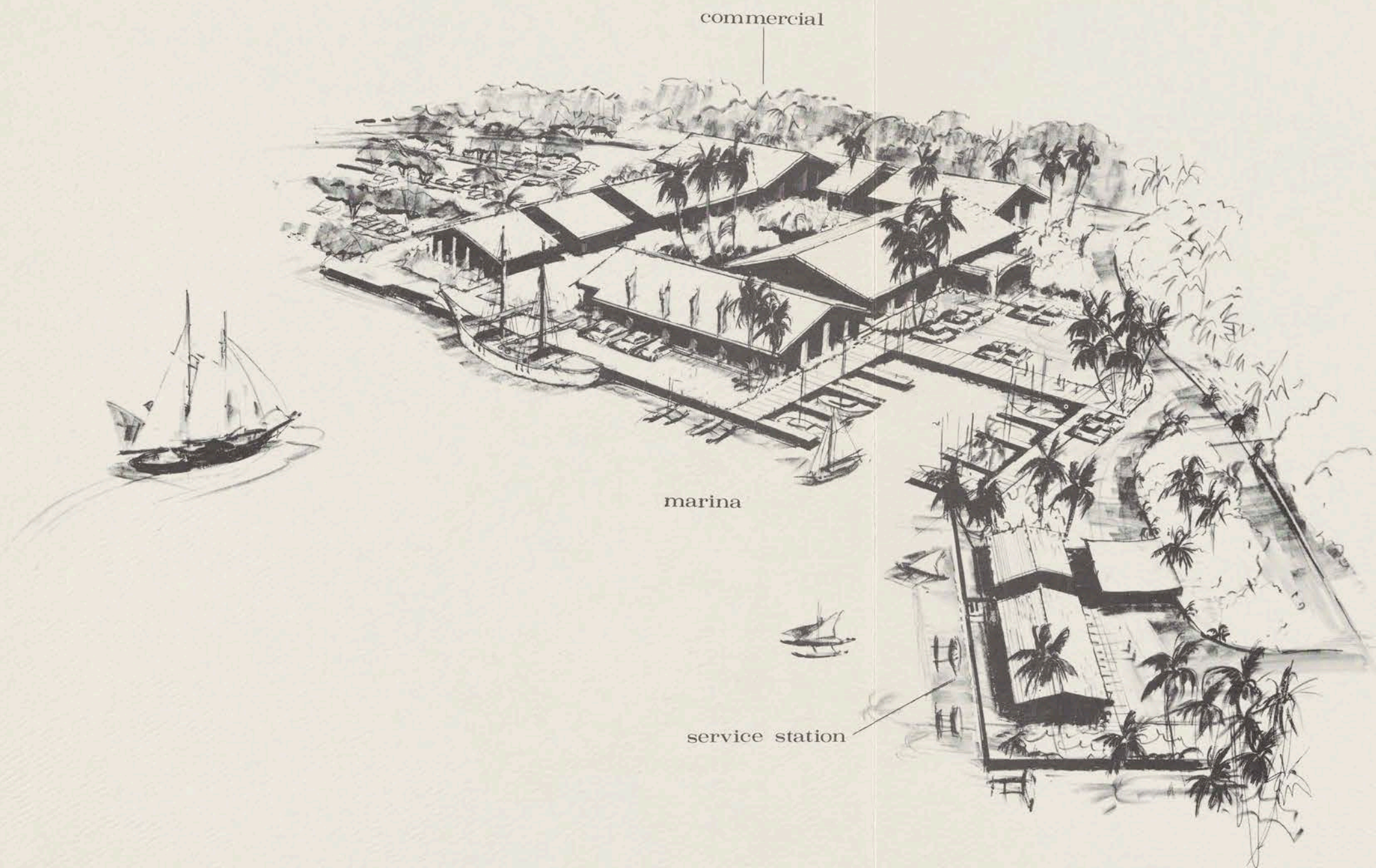


TRUST TERRITORY PHYSICAL PLANNING PROGRAM
YAP **YAP DISTRICT**
 town center plan - colonia

Final Submission October 1, 1968

Plate	Graphic Scale in Feet	55	0	55	110
6					

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The Keng commercial area already is well established, but contains only about three-fourths acre of land. Another 28,000 feet of commercial land should be made on land fill on the neck of swamp land next to the road.

There should be about three acres of commercial land in the Worowo area on the south side of the Colonia Lagoon. About 1.5 acres of this commercial area would be on the south shore of the Colonia Lagoon, between the road and the water, north of the existing POL storage area. There is some commercial land use in this area now. About 30,000 square feet of land fill must be added to bring the area of the site to 1.5 acres.

The rest of the commercial land in this area should be between Madrich and the existing public works yard. About one-fourth acre of this commercial area would be on land fill, if the small bay next to Madrich is filled as it would be for the alternative harbor and port facility.

Neighborhood commercial establishments should be allowed in residential zones in Colonia, but their floor space should be limited to 300 square feet. Except for neighborhood establishments, there should not be commercial land use outside the areas designated for it.

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Hotel and Resort Development

Yap is the sort of place travelers think of when they consider visiting a Pacific island. It has thatched roofs, stone money, grass skirts and traditional dances; lush greenery, quiet villages and the tropical sun. To that extent, it has a potential for tourism, provided that there is adequate air transportation to the islands and provided that there are comfortable resort accommodations.

Presently, the islands are served twice weekly by a DC-6 aircraft. And air service is expected to become more frequent.

But the Yapese themselves are not yet satisfied that they want tourism. Many fear that tourism would jeopardize the privacy and peacefulness of Yapese villages. The decision, of course, is theirs, and they have organized a community association to evaluate tourism and to make recommendations regarding it.

This plan does not presume to urge tourism on the Yapese. But it does identify areas suitable for resort development, should the Yapese decide to seek tourism development. And it describes an initial resort development in central Colonia.

An initial resort site of about 2 acres can be developed on the sloping land west of the proposed administration building in central Colonia. This resort development would include the existing Trust Territory hotel (remodeled) and Trust Territory staff housing (converted to hotel guest units), a small boat marina in the Colonia Lagoon, a museum, craft shop, restaurant, garden area and swimming pool (see Plate 8).

Existing staff housing should be incorporated into the resort, as new staff housing becomes available in Mulro near the radio station. The resort facility should be developed around the large tree that dominates the site. Paved walkways would radiate from the tree to the swimming pool, marina, restaurant and guest rooms. Because the site slopes steeply, guest units should be individual cottages in tight clusters. They should be air conditioned and have fixed glass windows. This also would allow construction with a minimum of excavation. The resort could be expanded uphill as land allows. The site is served by power, water and roads. The Trust Territory government owns the land.

This site also would produce the minimum of disruption of the Yapese culture. Visitors could go by boat or bus to those villages on Yap, Tomil-Gagil, Map and Rumung that wish to receive them.

Villagers could build cottages in the traditional surroundings of the Yapese village as satellite units for the main hotel.

If tourism does develop on Yap, however, this central Colonia resort site probably will not be adequate for the number of visitors traveling to Yap by 1987. A new resort site should be developed when demand warrants it on one of three islands—Tarang, Bi and Oekel—on the reef southwest of Tomil-Gagil. One of these islands, Tarang, was the home of the swashbuckling Dennis Dean O'Keefe, who did a lively trade in Yapese stone money and Hong Kong real estate at the turn of the century. The Yapese Community Association that has



Plate
8 hotel and resort sketch
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been formed to consider tourism for Yap also is studying these three islands as a potential resort site and is to recommend which of the three should be developed, if any. None of the three islands is served by any utilities. All would have to be joined to the nearby main islands by causeway on the reef.

Other possible sites for future resort development are the west coast of Gagil, the southwest coast of Rumung and the high plateau of Rumuu in eastern Yap. None of these areas is served by utilities, but can be reached by auto.

Industrial

Industrial uses in Colonia now include the Mobil Oil petroleum storage plant, public works, the power plant and the supply warehousing facility. All of these activities lack adequate land for efficient operation and expansion.

The plan provides for the immediate relocation of each of these facilities as follows:

1. Public Works: This includes the repair shops, heavy equipment storage, materials stockpile and offices. They should be moved to the site of the present high school. Land and buildings now occupied by the high school could be used when the new school is built.
2. Supply: This includes warehousing, freezer and other storage facilities as well as commercial warehousing and light industrial uses. They should be next to the dock and wharf at the proposed new port.
3. Power Plant: The power plant can remain on its present site next to the existing public works department. However this location in the center of town is somewhat visually undesirable and creates a noise disturbance. When the power plant is enlarged, consideration should be given to its relocation to the new harbor complex if this is economically feasible.
4. Mobil Oil Petroleum Storage Plant: This plant visually dominates the view to the ocean and Colonia Lagoon and should be moved to the new port area if economically feasible. This move would preclude the present needed pipelines for transferring POL products from the existing dock across the causeway to the tank farm. If the tanks

were at the port, oil could be offloaded there. If, however, it is economically not feasible to move the POL storage, the storage tanks should be painted a pleasing shade of green and screened with landscaping.

There also should be a 15-acre industrial site next to the airport for future storage and light industrial activities.

Communications receiver facilities should be at the airport. Transmitters should be on a portion of the old German cable station site.

These proposed industrial locations are illustrated (see Plates 2 & 3).

Agriculture and Conservation

Copra, the dried meat of the coconut, is for all practical purposes, Yap's only commercial agricultural product. Islanders gather fallen nuts and dry them in the sun or smoky fire-heated, hot air driers. The dried copra is brought by truck or small boat to YCA which, as middleman, buys the copra for export.

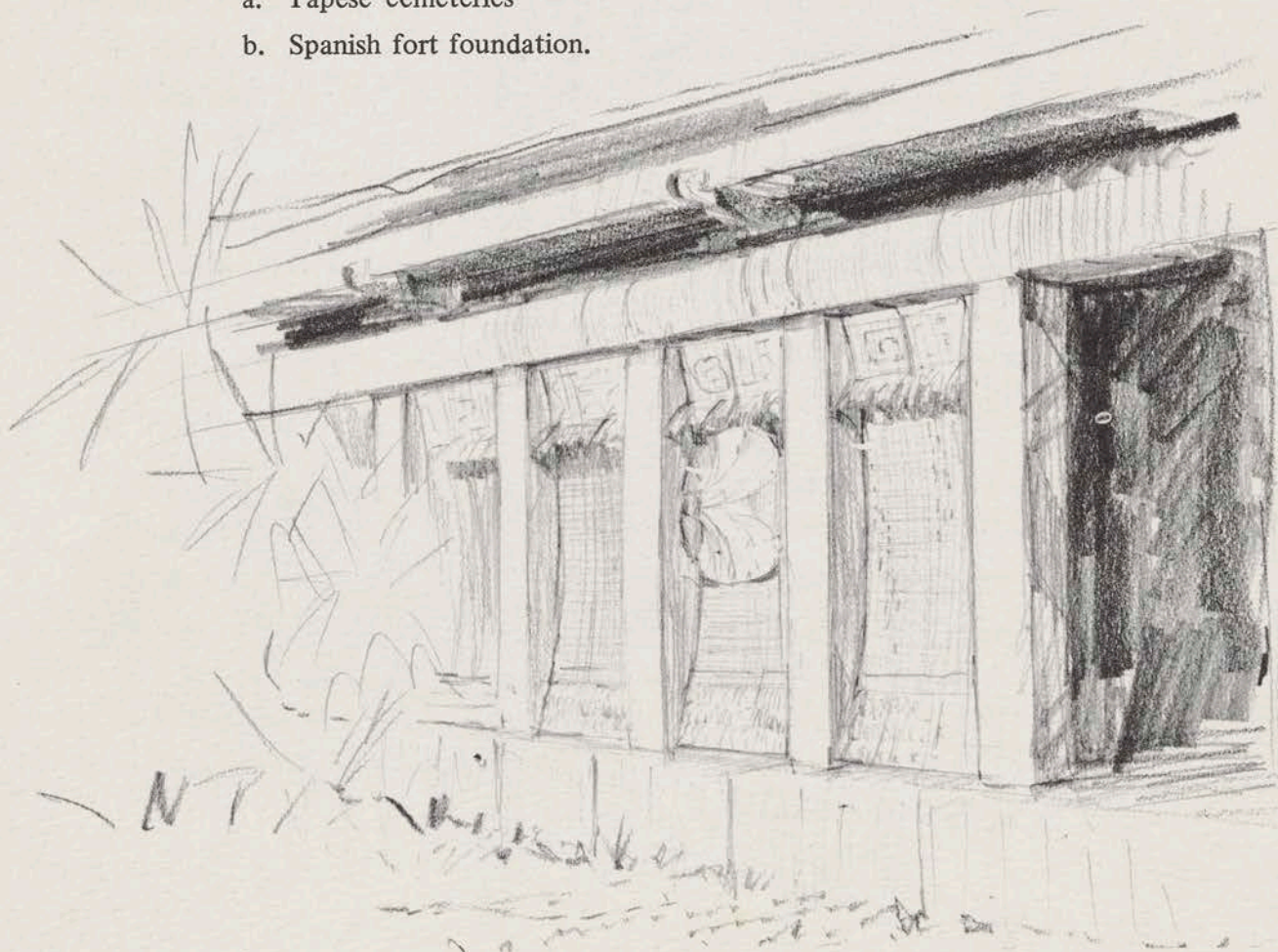
Islanders also raise such subsistence crops as taro and bananas. The closest they come to exporting these crops is to provide them to relatives who work for wages in Colonia and do not have the time to cultivate gardens of their own.

The construction of roads that will serve all inhabited areas should spur the production of copra, for it will be easier to bring the crop to market. As Colonia grows as an urban center, the proposed roads may also make it feasible for rural farmers to market their crops more successfully in Colonia.

There should be conservation areas in Colonia and elsewhere. In the District Center these areas should provide open space that will make Colonia a better and more attractive place. Elsewhere, the conservation areas are designed to protect certain landmarks and resources.

Areas that should be in conservation use include:

1. Colonia Lagoon and the north and south shores of the southern end of the lagoon. Only those areas designated in the plan should be land fill areas.
2. Land exceeding 25% slope that is dependent upon heavy vegetation to control erosion.
3. Foreshore and mangrove forests.
4. Natural stream and drainage valleys.
5. Land unsuitable for development, such as swamp lands that have poor structural characteristics.
6. Areas of special recreational, traditional, historical and scenic value. These include:
 - a. Yapese cemeteries
 - b. Spanish fort foundation.



Community Facilities

The plan indicates areas that should be devoted to such important public uses as schools, recreation facilities, hospital and refuse disposal areas. Sites for these uses should be selected, reserved or acquired sufficiently in advance of their need to insure availability and low cost acquisition.

Schools

Trust Territory education policy stipulates that elementary schools in the future should enroll grades kindergarten through three. "Middle schools" will enroll grades 4-8; secondary schools, grades 9-12. Where possible, students also are to ride buses to school, rather than enrolling in boarding schools.

To conform with these policies and to upgrade its existing school plant, Yap will need to construct a new high school and two middle schools and one new elementary school. The island group will also need a road network that will make bussing students to school practical.

The existing high school, housed in surplus corrugated aluminum warehouse buildings from Eniwetok, should be replaced. The new facility should be southwest of the present high school and on the site of the old German cable station.

If all of those eligible for secondary school enroll, by 1987 some 700 students will be attending high school. Projected secondary school enrollment to 1971 is:

Year	1966	1967	1968	1969	1970	1971
Enrollment	162	219	290	353	418	486

This rapid increase assumes that enrollment of those eligible will reach 100 percent by 1971. Presently, only about 75 percent of those eligible attend secondary school. Those who do not attend are for the most part girls who prefer remaining in the villages to living in a school dormitory. This tendency partly is a cultural characteristic; islanders place somewhat less value on education for young women than for young men. And some island families are reluctant to allow their daughters the relative freedom from family sanctions that dormitory life implies.

There should be two middle schools on Yap: one each for northern and southern Yap. If, as is expected, Yap's population is to be about 6,200 by 1987, each middle school should enroll about 400.

Tables 2 and 3 project elementary and middle school populations.

Table 2
Projected Elementary and Middle School Enrollment for Northern Yap
1987

Municipality	% of Present Population	Population Distribution	Student Population	Lower Elementary Students	Middle School Students
Rumung	4.6	285	76	40	35
Map	10.1	627	167	87	77
Gagil	12.9	801	213	112	98
Fanif	11.6	720	191	101	88
Tomil	15.5	962	255	135	118
Total	54.7	3,395	902	475	416

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Table 3
Projected Elementary and Middle School Enrollment for Southern Yap
1987

Municipality	% of Present Population	Population Distribution	Student Population	Lower Elementary Students	Middle School Students
Gilman	4.9	304	80	47	37
Welay	9.0	565	150	79	69
Dalipebinau	7.8	484	128	68	59
Rull	18.0	1,140	303	160	140
Kanify	5.6	348	92	48	42
Total	45.3	2,841	753	402	347

The northern middle school should serve Fanif, Tomil-Gagil, Map and Rumung; the southern school, Welay, Dalipebinau, Rull and Kanify.

If both middle schools are constructed within the near future the present elementary schools (grades 1 - 8) will not have to be expanded. But ten of the eleven elementary schools will need sanitary improvements and Rumung will need a permanent standard school building.

Table 4 indicates the student enrollment in the municipal schools now and the enrollment expected in 1987.

The northern Yap middle school site should be at Makiy in northern Gagil. The southern Yap middle school should be near the new Yap High School and within the old German cable station site.

Table 4
Enrollment in Municipal Schools
1967-1987

School	1967 Grades 1 - 8	1987 Grades 1 - 3
Alaw-Ganalay	285	173
Bael (North Fanif)	35	30
Dalipebinau	71	82
Fanif	49	35
Gagil	111	81
Gilman	59	52
Kanify	74	59
Map	79	63
North Fanif	46	38
Tomil	131	98
Rumung	44	29
Total	984	740

Adequate land is available in both areas. The Makiy site is in private ownership. The old German site is partially in public ownership.

Both middle school sites are centrally located to the population being served. The proposed regional road plan will accommodate bussing to serve the four islands. The proposed location of schools is illustrated (see Plate 1).

Civic Center

There should be a two-acre civic center in central Colonia that would include office space for the district administration, judiciary, sheriff and court rooms. About 60,000 square feet of the site, which would be on the site of the existing jail and on adjoining land fill, should be devoted to parking areas, pedestrian walks, open space and landscaping.

The post office and bank should be located in commercial buildings across the street from the civic center. The prison should be moved to an area near the agricultural station.

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The civic center buildings should be one story high and have up to 4,000 square feet of floor space. They should be connected by covered exterior corridors and overhanging roofs. Each building should have a maximum width of about 46 feet and wide roof projections. This will provide adequate cross ventilation and sun screening (see Plate 9).

The parking area should be confined to the southwest side of the site and screened from the road by a planted buffer zone. Sidewalks on the street and lagoon side of the civic center should lead west along the lagoon to the marina restaurant and hotel-related commercial activities.

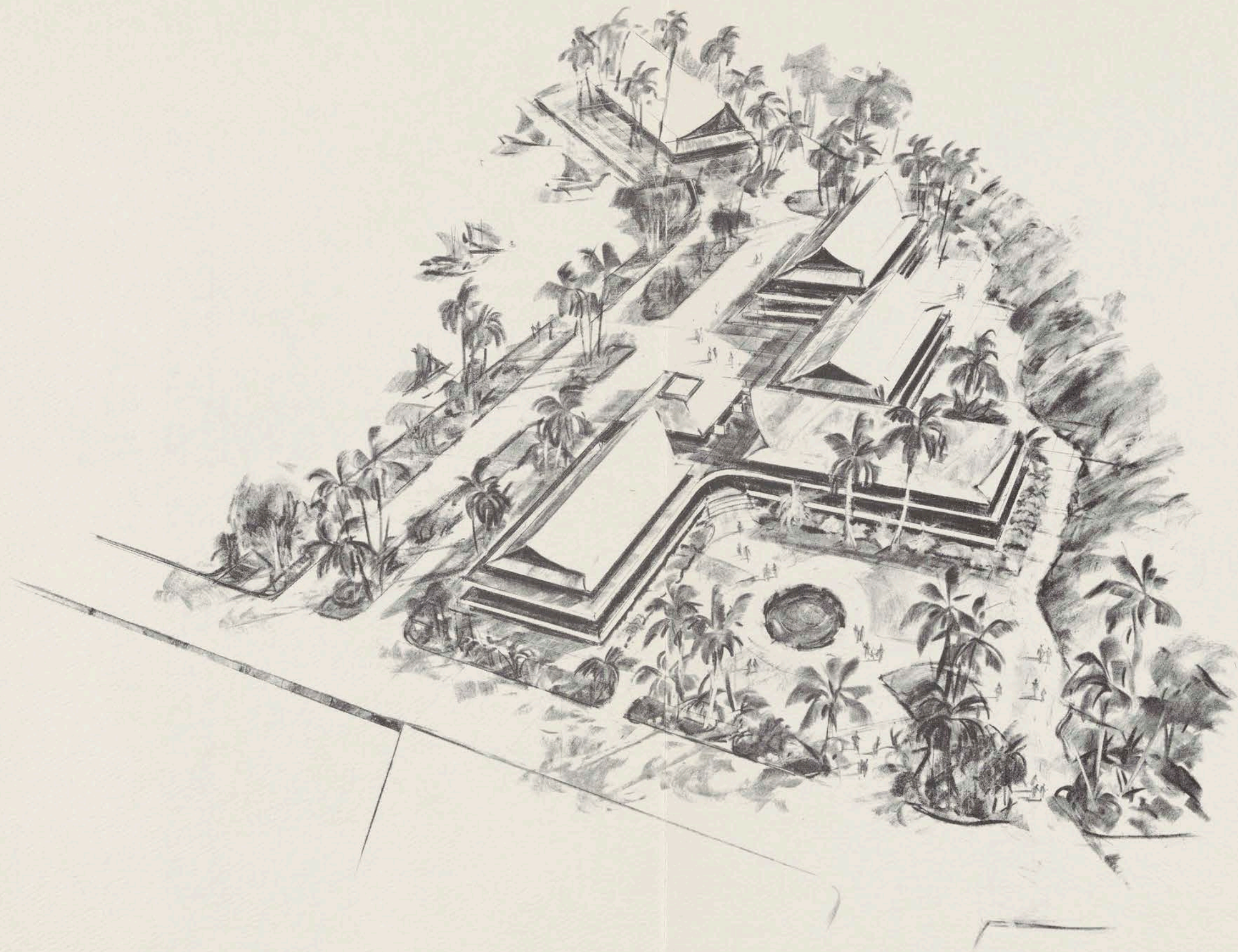
The present administration building next to this complex should be a District Library.

Recreation

The Colonia Peninsula should be the District Recreation Center and the home of the District Legislature (see Plate 6).

The recreation area should include:

1. A regulation softball field with 200 feet between home plate and the outfield boundary.
2. Two spectator stands 28 feet from foul lines.
3. A 4,000- square foot field house and indoor recreation center.
4. A boat dock (existing).
5. Open shelter with sports equipment storage.
6. A pole vault track.
7. A broad jump track.
8. A 100-yard dash track.
9. A combination tennis and basketball court (outdoor).
10. The District Legislature building (existing).
11. A community center (buildings now used for supply warehousing).
12. Parking, pedestrian walks and landscaping.
13. A service drive to the entrance gate of the legislature building. The road should pass around the Spanish foundation to the north and east, and end in a small parking area.



There should be about 5,000 square feet of fill behind the ballfield and field house. Reef areas there are nearly exposed at low tide. The area immediately behind the baseball diamond, indicated on the map by dotted lines, is unnecessary fill which can be used in the proposed fill areas. All walls should be rip-rapped to prevent erosion.

There should be two other park areas in Colonia:

1. Denitsch Island due east of the recreation center. Access should be by a pedestrian causeway.
2. A three-fourths-acre site on the shores of Colonia Lagoon below the Catholic Mission.

Other organized recreation areas should be at:

1. Each of the elementary schools, middle schools and the high school.
2. The proposed high school – southern middle school near the old German cable station. This site should have a regulation baseball field.

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Public Works

The public works yard should be moved to a new site north of the new high school site and west of the reservoir.

Public Safety

Constabulary offices should be in the civic center. The prison should be moved to a new site near the agricultural station.

Public Health

The hospital should be moved from its present, confined site in Colonia to a new, three-acre site in Mulro (see Plate 3). Because the hospital is on a raised

foundation originally constructed by Spain as a fort, it cannot be conveniently expanded. The proposed site, 300 feet west of the shore road on gently sloping and flat land, can be expanded to six areas. The land is vacant, can be reached by road, has access to utilities and is close to the proposed Worowo-WSZA circumferential road. It is less than 1,000 feet from the transient housing area used by relatives of patients from the outer islands. Preliminary soil tests performed by the Trust Territory engineering office suggest that the soil structure is suitable.

Agricultural Station

The agricultural station is well located and has room for expansion.

Churches

Churches may be located in many places, but should be accessible to the public, have an adequately large site, and be compatible with surrounding land uses.

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Post Office

The post office and bank should be located in the commercial building across the street from the district administration office buildings.

Radio Station

WSZA should remain in its present location.

Refuse Disposal

The dumping of refuse along the shores of Colonia Lagoon and Tomil Harbor — practiced by government and public alike — is wholly unsatisfactory. This practice is prompting an obnoxious and dangerous increase of insects and rodents in the District Center. Refuse should be dumped in a sanitary land fill at the northeast corner of the communications transmitter site. Refuse can be used for land fill projects, but it must be burned before dumping and covered with soil and compacted after each dumping.

Utilities¹

There is no sewer system now in the District Center. The village areas outside Colonia, because of their dispersion, low population and large land areas, present no sanitary problems at this time. However, sanitary practices and personal hygiene certainly could be improved.

In Colonia there is gross pollution of Colonia Lagoon because its shores are densely populated. Before Typhoon Emma, the causeway at the head of the lagoon restricted normal tidal flows and turned the lagoon into a well-contained cesspool. Raw sewage flows directly into the lagoon from the Trust Territory housing and hotel facility outfall on the north side of the lagoon and from seepage from open-pit benjos on the south side.

Garbage dumped along the shores attracts rats and insects and adds to the pollution of lagoon and shore. Infectious hepatitis is a constant threat to children who swim in the Colonia waters.

The recently prepared Master Plan for sewer and water utilities by Austin, Smith and Associates, Inc., reaches the following general conclusions:

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1. Gross pollution of the onshore waters from Keng to Balebat exist, including the waters of Chamorro Bay (Colonia Lagoon) and the raw water supply at Gitam.
2. Because of the sanitary practices of the natives, nearly all stream waters of Yap may be considered polluted to some degree.
3. Raw sewerage outfalls cannot be economically placed so that floating sanitary waste solids would not reach the Yap shoreline.
4. Sewerage must be treated and chlorinated prior to deposition in the deep waters of Tomil Harbor.

1. The recommendations for utilities improvements are taken from: (1) *Engineering Report Covering a Master Planned Water Supply and Distribution System as well as a Sewerage System for the Central Islands of the Yap District*. Austin, Smith and Associates, Inc. Honolulu. 1967; (2) *Modernization Plan for the Communication System - Trust Territory of the Pacific Islands*. Federal Aviation Agency. Washington, D.C. 1967; (3) *Electric Utility Report for the Trust Territory of the Pacific Islands*. E. P. Eardley. Washington, D.C. 1967.

5. School sanitary facilities must be improved.

Land use envisioned and population projections developed in the Austin-Smith plan parallel those in this report.

There should be additional sewerage extensions where new roads are proposed.

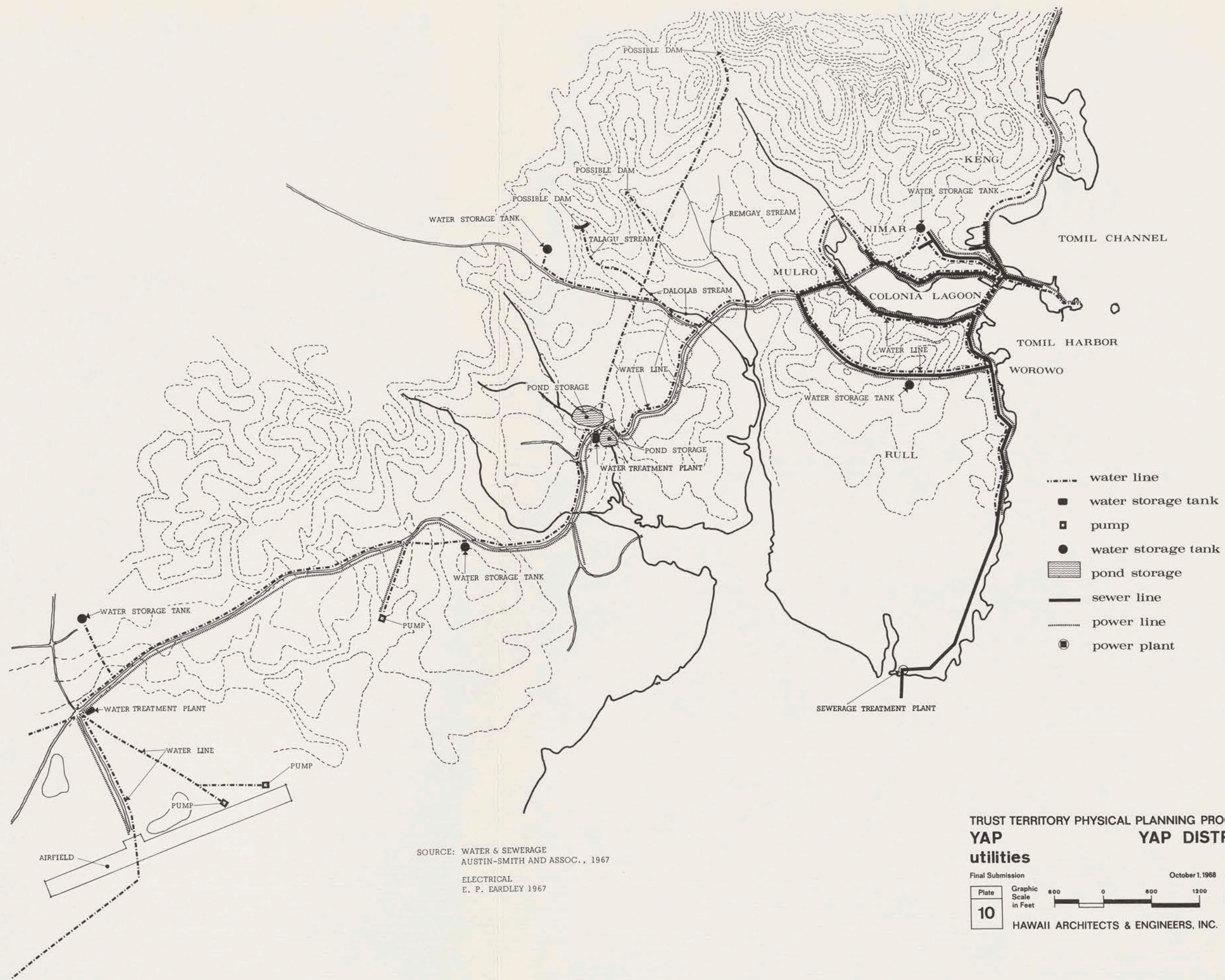
The Austin-Smith plan also proposed a treatment plant at Denitsch Island. This conflicts with the Colonia land use plan. Denitsch Island is a natural landmark and a part of the proposed civic center and recreation parks. The treatment plant should be at the southern end of Balebat village south of Colonia, with an outfall line into the channel (see Plate 10).

The water supply and distribution system plan prepared by Austin, Smith and Associates, Inc., describes the present system as having:

1. Inadequate raw water storage capacity;
2. Inadequate treated water storage; and
3. Ineffective and inefficient pipelines.

The study reached the following general conclusions:

1. If properly maintained, the present treatment plant at Gitam should meet all water requirements through 1979.
2. Treatment of the raw water is mandatory as the raw source was found to be grossly polluted.
3. Increase storage for raw water and clear water distribution storage is necessary.
4. New and enlarged pipelines will be required to conduct the estimated daily flows of 500,000 gallons per day in the mid-1990's.



SOURCE: WATER & SEWERAGE
AUSTIN-SMITH AND ASSOC., 1967
ELECTRICAL
E. P. EARDLEY 1967

TRUST TERRITORY PHYSICAL PLANNING PROGRAM
YAP
utilities

Final Submission October 1, 1968
Plate 10
Graphic Scale in Feet 0 600 1200
HAWAII ARCHITECTS & ENGINEERS, INC.

5. No one source can provide the future water supply needed for the Colonia area.
6. Soil conditions on Yap do not lend themselves to high production wells.
7. U.S. Geological Survey stream flow data should be obtained for the central plateau area of Yap Islands.
8. An adequate water supply system for central Yap can be obtained in the four-phase construction outlined in the Austin-Smith Report.

The water system plan is compatible with the Master Plan. Additional lines and storage facilities should be provided where new roads are built.

An electric utility report by E. P. Eardley presents electrification plans for Yap. His recommendations concerning power provisions and equipment upgrading are consistent with the Master Plan.

However, if it is economically feasible to move the power plant in the future, it would be much more appropriately located in the new harbor industrial complex.

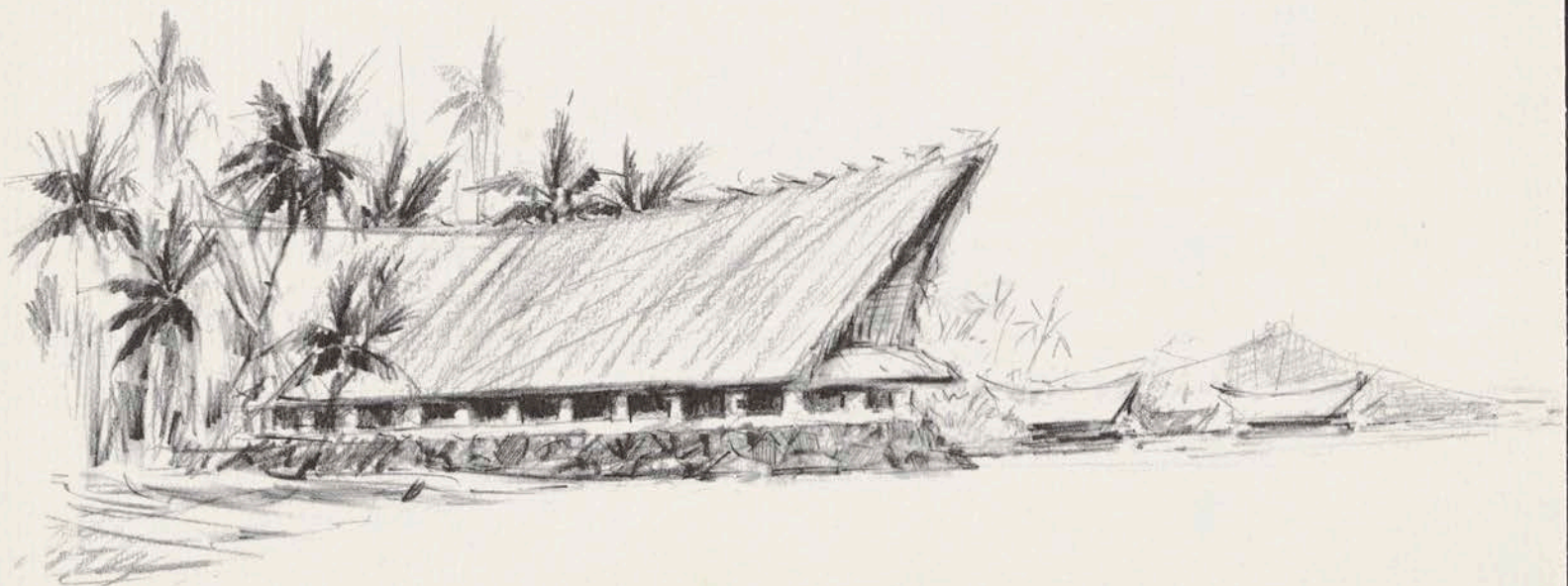
The modernization plan for the Trust Territory communications system, prepared by the Federal Aviation Administration in August of 1967, proposes a new location for Yap's communication facility. That report recommends that:

1. The existing combined facility building and antenna site located in the center of Colonia be abandoned.
2. A new transmitter facility be located on a portion of the old German cable station site in Tera (see Plate 2). Note the location of the new high school and middle school immediately to the east.
3. The receiver-control facility be located adjacent to the Weather Bureau facilities at the airport (see Plate 2).

Community Appearance

This plan endeavors to give direction to the growth of Yap and Colonia. With this growth, there needs to be individual enthusiasm to improve and maintain the general appearance of the islands. Local civic groups and the people of Yap need the Yap Regional Planning Commission's support to improve Yap's appearance. Ways to improve Yap's appearance include:

1. Doing extensive landscaping in Colonia around the civic center, central business area, Colonia Lagoon and the ballfield;
2. Removing debris and garbage from the Tomil Harbor shoreline;
3. Emphasizing good design in new structures, especially in the commercial areas and the civic center;
4. Controlling the size of commercial signs and lighting;
5. Discouraging the dumping of beer cans and other litter;
6. Discouraging the building of temporary shacks and benjos along the shorelines; and
7. Encouraging the development and maintenance of parks and playgrounds.



Implementation

The following steps are necessary to implement this plan:

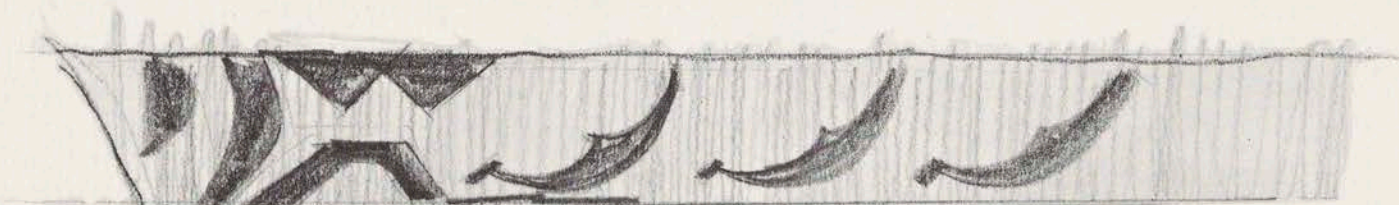
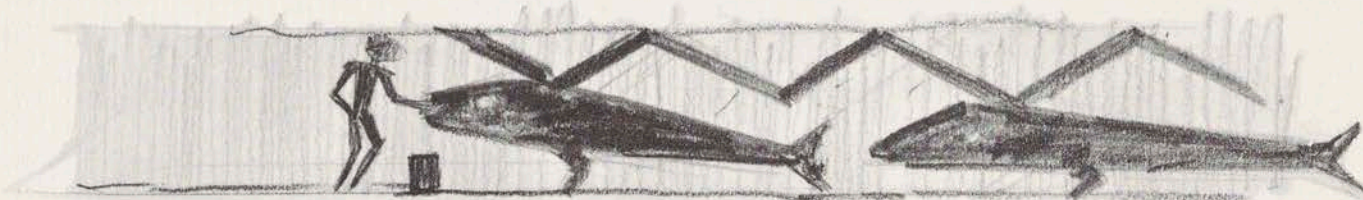
1. Yap Regional Planning Commission and Yap Legislature encouragement of public attendance at hearings on the plan and proposed ordinances in order to promote public understanding of the value of the proposals and to hear the public's reaction to the plan;
2. Review and evaluation of the plan by the Yap Regional Planning Commission and the Yap Legislature;
3. Adjustment of the plan, if appropriate, taking both evaluations into account;
4. Adoption of the plan by the Yap Legislature;
5. Adoption of land use controls (zoning ordinance) by the Yap Legislature;
6. Adoption of a building code and other ordinances by the Yap Legislature;
7. Determination by the Yap Legislature to utilize local tax revenues to finance some of the public improvements;
8. Encouragement by the Yap Legislature and Regional Planning Commission of individuals and groups to undertake specific landscape planting and related projects;
9. Close liaison among locally elected individuals, legislative bodies and the Trust Territory Government in order to maintain and modify the plan in recognition of changing conditions;

10. Establishment of continuing planning staffs to function at the District and Headquarters level to fully implement step No. 9; and
11. Programming by the Trust Territory government of projects not being undertaken by the Yap Legislature, the Yap Regional Planning Commission, or local groups.

Implementing these recommendations clearly will require new legislation in some cases, refinement of existing legislation in others and new attention to enforcement of existing statutes in still others.

Additional new legislation may also be required for such matters as parking and cemetery regularion and shoreline pollution control.

These and other matters that should reserve the attention of municipal, district and Trust Territory-wide legislative bodies, as well as their respective administrations, are contained in the report "Planning Legislation".



EXISTING CONDITIONS

Physical Development

The only roads in the Yap group used by vehicles are on Yap and Tomil-Gagil Islands (see Plate 11). Their total length is about 17 miles.

At the turn of the century, Germany constructed two causeways of coral heads on Yap to connect Map and Rumung. The causeways washed out during the typhoons of 1947 and 1948. They have not been repaired. The villagers of Map and Rumung now must travel by boat to adjacent islands and Colonia.

The only vehicular causeways remaining are the three in the Colonia area, which Americans rebuilt. Two pedestrian causeways have been rebuilt by the natives — between Ma and Thol on Tomil-Gagil, and from Malen to Ueloi on Map.

On Yap Island, the primary road extends from the southern tip of the island past the airport, through Colonia and along the eastern shore to Tomil-Gagil.

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The only all-weather asphalt road runs from Colonia to the Coast Guard Loran Station in Tomil-Gagil. The Coast Guard built this road with imported materials, as part of its Loran facility. The Coast Guard leased their rights-of-way from the municipalities. The Coast Guard also built a precast concrete bridge section spanning the Tageren Canal.

Secondary roads branching off the major north-south route and extending into Tomil-Gagil are rough, often steep and one-lane-wide. During the rainy season they are practically impassable.

Three types of surfacing materials have been used on the roads: crushed rock (slabby greenschist); coral dredged from the reef; and iron oxide gravel. Coral reef dredgings, used on most roads, make good surfaces but require continuous maintenance and frequent repair.

Channels were formed between the islands in the shallow lagoons by piling coral heads to each side. These channels vary in width from six to ten feet.

Only shallow draft boats can use them at low tide. Before 1901, the islands of Yap and Tomil-Gagil were joined by a narrow isthmus. During 1901, the German administration cut the Tageren Canal through the isthmus and dredged the approaches at the north and south ends deep enough to allow small power boats to pass. The Tageren Canal is about 18 feet wide at its narrowest point and about 300 yards long. Its depth varies from five feet at high tide to twelve inches at low tide. The walls of the canal are 10 to 25 feet high.

All of the boat traffic from the northern areas must pass through this canal. Rapid tidal flows and sunken debris prevent travel at low tide. During World War II, the Japanese constructed an airfield at Lamer in the southern part of Yap Island. The airfield was not completed but was operational. Construction of a second airfield at Thol in the central part of Tomil-Gagil began but was never completed.

The airfield at Lamer consists of a single landing strip, 4,890 feet long and 200 feet wide. It was improved recently by the Trust Territory government and now has one of the best surfaces in the Trust Territory. Large amounts of fill will be required to extend the field to 6,000 feet.

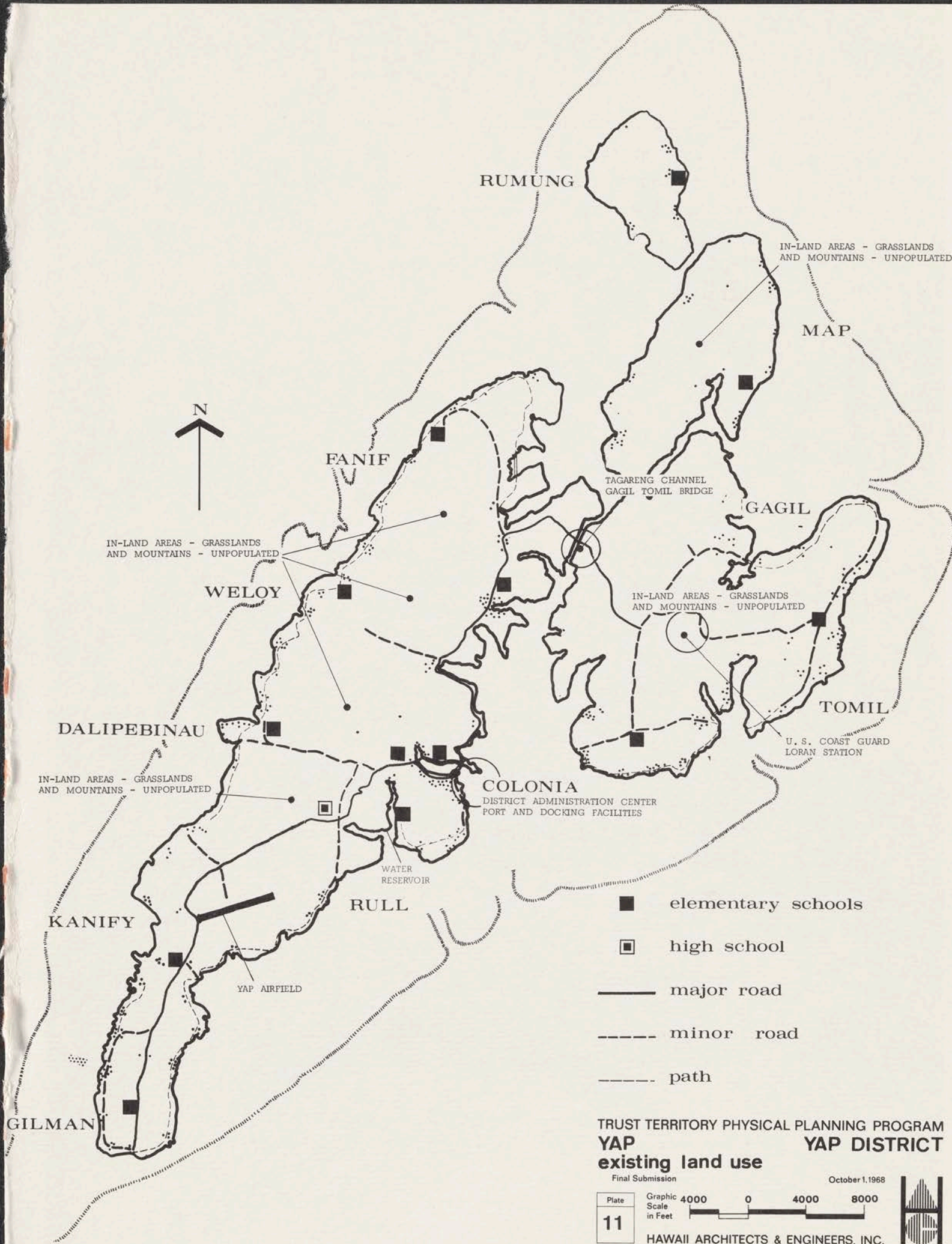
Colonia lies at the base of a circle of hills on the western side of central Yap (see Plate 12). The town surrounds a large lagoon.

Colonia is the headquarters of the civil administration of Yap and the Yap District. It also was the administrative center for the Germans and the Japanese. Both administrations built permanent structures for offices and housing. Before World War II, Colonia had a mixture of German and Japanese architecture.

During the war, the town was heavily bombed. Only the shells of reinforced concrete buildings remained when the American forces assumed responsibility.

Today there are remnants of ruined Japanese concrete structures scattered among new Trust Territory concrete facilities.

Colonia has become the governmental, commercial, industrial and recreational center of Yap. The town contains all major public facilities: the port, public



TRUST TERRITORY PHYSICAL PLANNING PROGRAM
YAP
 existing land use

Final Submission

Plate	Graphic Scale in Feet
11	4000 0 4000 8000

October 1, 1968

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TRUST TERRITORY PHYSICAL PLANNING PROGRAM
COLONIA
 existing land use **YAP DISTRICT**

works, the District Administration, radio station, constabulary, Yap Congress building, a new hotel, district hospital, communications, Weather Bureau, government housing and the Yap Cooperative Association. It is also the commercial center. Copra, the only substantial export, is sold through the Yap Cooperative Association.

Colonia has attracted many service businesses and related commercial activities. There are small stores, a farmers' market, bars, a movie theater and food and dry good stores. Colonia also is the home of the Catholic and Protestant missions.

Few Yapese consider the town their home. Town residents generally are Trust Territory employees and immigrant Palauans.

Housing in Colonia is a sharp contrast to that in the villages. Poorly built and unsightly shacks crowd around the lagoon and eastern shores.

Immigrants, generally Palauans, have come to Colonia to work in the stores and bars. Most Yapese women refuse to do, or are traditionally forbidden to do, this sort of work.

Since land cannot be purchased, the Palauans have built squatter houses along the lagoons on borrowed land, creating slums in some areas. In the nearby mangrove swamps, landless immigrants have built homes on stilts.

The employed Yapese prefer to live in their villages and commute. But roads and transportation are so poor that many Yapese build small temporary quarters near Colonia, on borrowed land, where they live during the working week. On weekends they journey back to the villages.

A few Yapese government employees have cars which act as busses for their friends and relatives. They make the slow and bumpy round trip to Colonia each day.

There is limited bus service available to commuters who live in areas accessible by road.

The Yap District Hospital, located in Colonia, cannot be expanded easily. The building is confined to a high, walled foundation built by the Spanish originally for a fort.

The hospital has no isolation wards, its offices are crowded and its operating rooms are small. It also is next to a major recreation area.

The eastern end of the Colonia Peninsula now is the center for all large Yapese celebrations, recreation activities and civic gatherings.

Twelve elementary schools are dispersed through the four major islands. Eight of these are located on Yap Island, two on Tomil-Gagil, one on Map and one on Rumung.

All of these three to four room schools, with the exception of one or two, have been built recently. They were constructed of concrete block with wide overhanging roofs. Toilet facilities were not included in the initial construction.

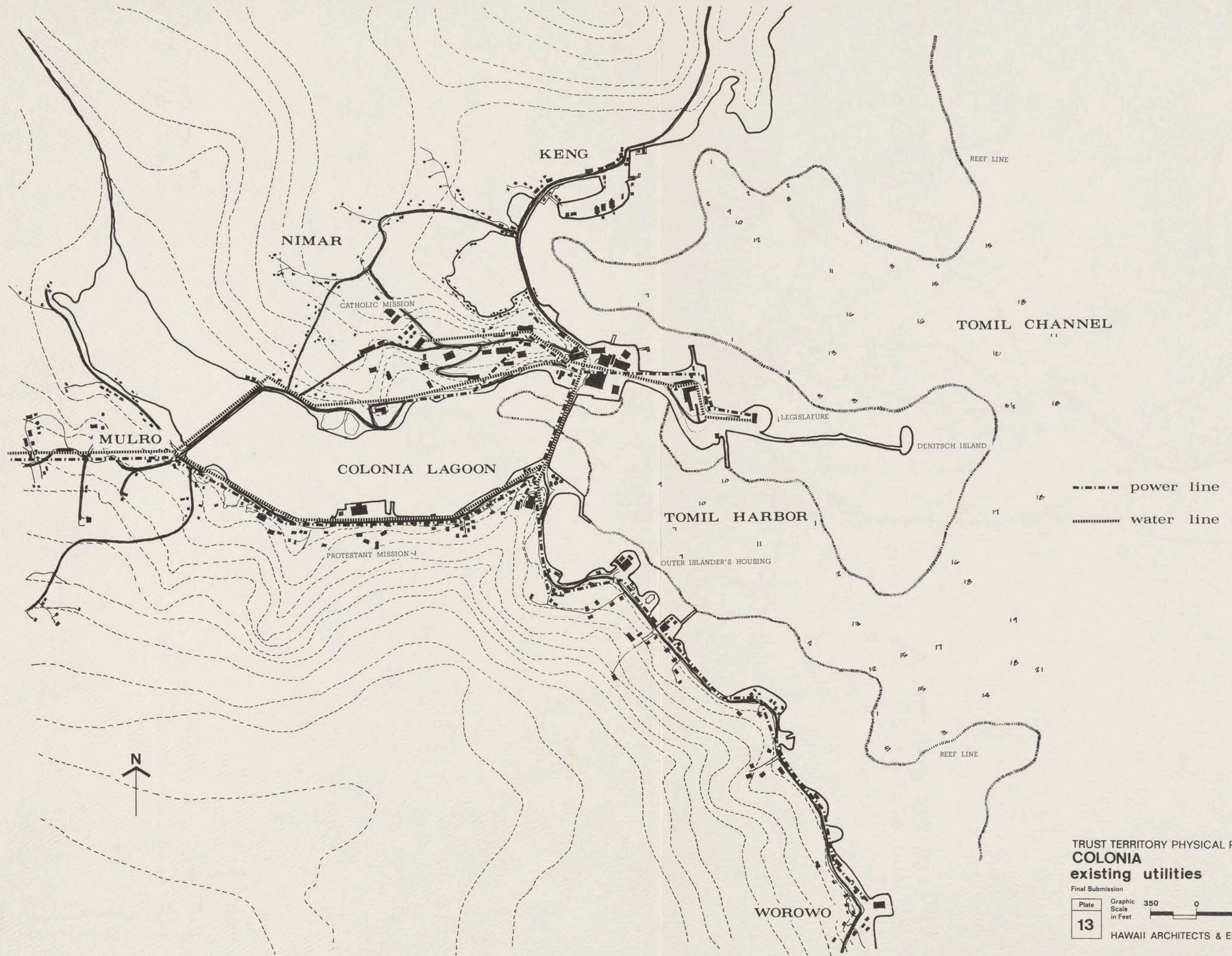
Most of the village schools have a permanent house in the immediate vicinity used by the resident teaching staff.

The Yap High School is located in central Yap Island. The buildings being used are surplus Eniwetok aluminum warehouses. These buildings provide an extremely undersirable environment for learning. The site is inland, dry and lacks vegetation for shading.

Streams and rain catchments are the chief sources of water supply on Yap. The supply cannot be appreciably augmented by well development. Existing installations at Colonia supply only a few of the central facilities with fresh water.

The main source of water for Colonia is a reservoir at Gitam, one and a quarter miles southwest of Colonia. The reservoir is formed by an earth-fill dam across a small stream. A filtration system has been installed next to the reservoir.

Treated and piped water is limited to public facilities and some businesses (see Plate 13). Most Colonia residences use individual catchments.



TRUST TERRITORY PHYSICAL PLANNING PROGRAM
COLONIA
existing utilities
YAP DISTRICT

Final Submission October 1, 1968

Plate 13 Graphic Scale in Feet 350 0 350 700

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During the dry season, water shortages are common.

Colonia Lagoon is a beautiful enclosed bay, but has become a public nuisance. It is polluted and stagnant.

Raw sewage outfalls from the government facilities on the northern hill and the benjos along the southern shore pollute the bay. The main causeway prevents tidal flows from flushing it.

Power is confined to the Colonia area and the airport, which is served by a recently installed power line from Colonia (see Plate 13). All of the public facilities, Trust Territory buildings and private business within a half mile of the generator have power. But less than one-third of the homes in Colonia have electricity.



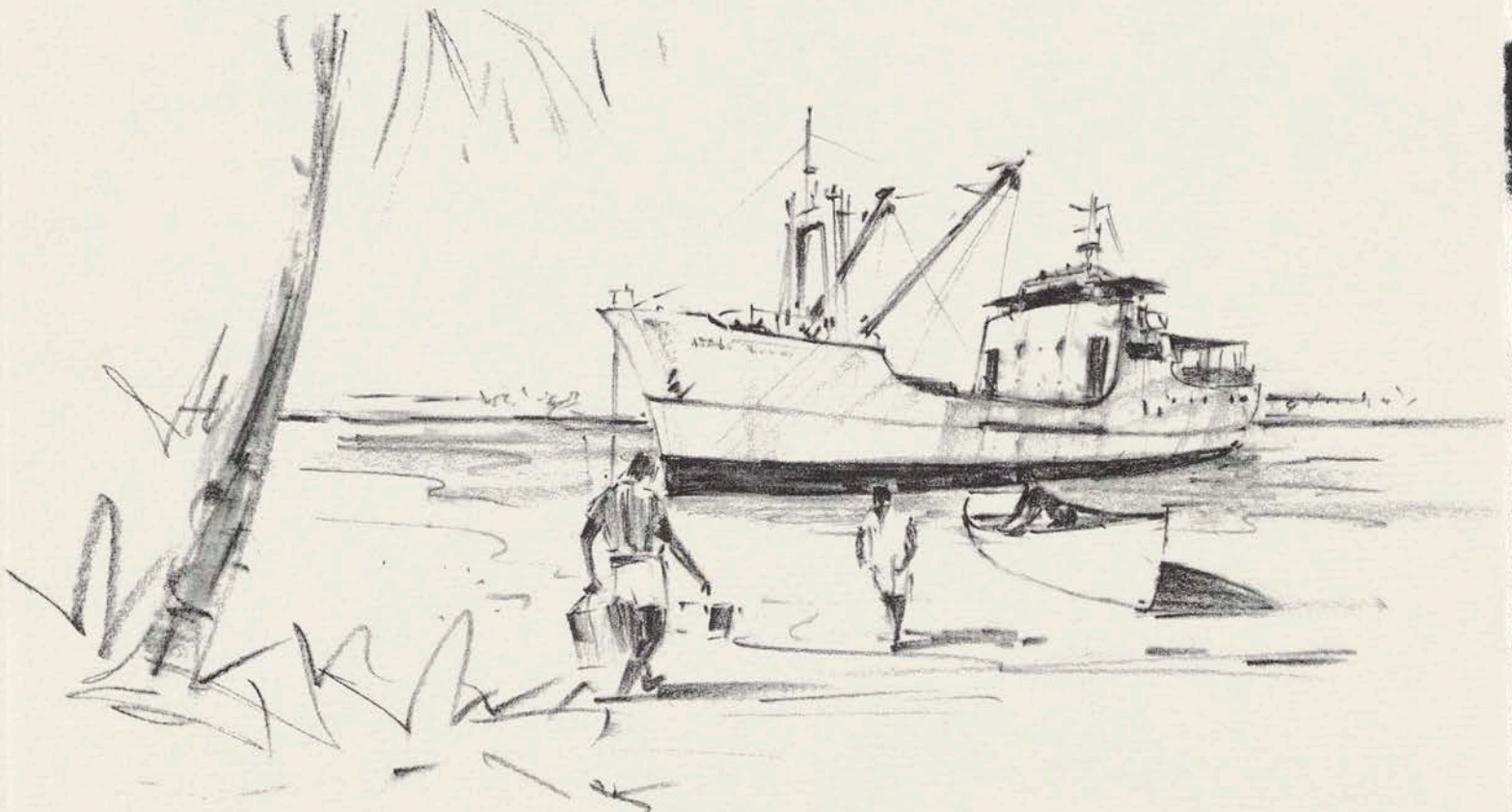
Government Structure

The Yap District Administration is headed by a District Administrator who is the direct representative of the High Commissioner. The District Legislature meets twice a year.

The legislature has not included representation from the Yap outer island, but there have been several meetings between outer island representatives and members of the legislature, and the outer islanders are expected to become members.

Local government in Yap proper consists of 10 municipalities that elect magistrates to head the municipal government (see Plate 14). The magistrates form a 10-member council that advises the District Administrator on local affairs.

Traditional political forms continue in Yap also and are of considerable importance. The Council of Magistrates, for instance, originally was a council of chiefs under the German administration. Today, magistrates are elected, but many still are chiefs. The hereditary chiefs of a municipality have purview over the chiefs of the individual villages. Hereditary chiefs continue to wield considerable influence.



KEY TO VILLAGE NUMBERS

RUMUNG MUNICIPALITY

- 1 Buluul
- 2 Mechiol
- 3 Gaanaun
- 4 Eng
- 5 Rly
- 6 Fal
- 7 Wenfara'

MAP MUNICIPALITY

- 8 Amin - Maap
- 9 Amin
- 10 Bechiel
- 11 Toruw
- 12 Nlul
- 13 Waref
- 14 Waned
- (15) Dingin
- 16 Wocholab
- 17 Chool
- 18 Weloy
- 19 Numdul
- 20 Malway
- 21 Malon
- 22 Tolingiz
- 23 Wirilee
- 24 Plaw
- 25 Michew

GAGIL MUNICIPALITY

- 26 Makly
- 27 Lay
- 28 Ruu'
- 29 Amun
- 30 Muyub
- (31) Mulolow
- 32 Mey
- 33 Riken
- 34 Gochol
- 35 Wanyan
- 36 Gachpar
- 37 Binaw
- 38 T'enifar
- 39 Leng
- 40 Lebinaw
- (41) Darcha'
- (42) Ul

RULL MUNICIPALITY

- 84 Worowa'
- 85 Balebat
- 86 Benik
- 87 Ngolag
- 88 Tolguw
- 89 Dachangar
- (90) Dinay
- 91 Gitam
- (92) Baaninout
- (93) Toraa'
- (94) Mer
- (95) Fanaliliy
- 96 Yinuf
- 97 Luwech
- 98 Firigaaw
- 99 Lamer
- 100 Dirikan
- 101 Ngof
- (102) Madargil
- 103 Tabinnitiy
- 104 Dulkan
- 105 Ngariy
- 106 Ley
- (107) Wgem

TAMIL MUNICIPALITY

- 43 Madlay
- 44 Zol
- 45 Maa'
- 46 Dilag
- 47 Dechumur
- 48 Bugol
- 49 At
- 50 Teb
- 51 Meerur
- 52 Doomchuy
- 53 Deboch
- 54 Gargey

FANIF MUNICIPALITY

- 55 Runu'w
- 56 Ayrech
- 57 Yiin
- 58 Gifiz
- (59) Bunuknuk
- 60 Wulu'
- 61 Malway
- 62 Rang
- 63 Tabelang
- 64 Gurung
- (65) Bulochang
- (66) Rumuu
- 67 Me'reniw
- 68 Areliw
- 69 Tatgil

WELOY MUNICIPALITY

- 70 Makal
- 71 Dugar
- 72 Okdu
- 73 Numnung
- 74 Adubuwe'
- 75 Minaf
- (76) Maa'
- 77 Alog
- (78) Gatmoon
- 79 Kaday
- 80 Mabuu
- 81 Mulro
- 82 Nimar
- 83 Keng

DALIPEBINAU MUNICIPALITY

- (108) Gaanipan
- 109 Magaf
- 110 Binau
- 111 Kanif
- 112 Aringel
- 113 Tagedin
- 114 Fedeor
- 115 Yaboch

KANIFAY MUNICIPALITY

- 116 Tafniz
- 117 Fara'
- 118 Nel
- 119 Ne'f
- 120 Gal
- 121 Mala'y

GILMAN MUNICIPALITY

- (122) Gachalaw
- (123) Matibuw
- 124 Zabez
- (125) Muru'ru
- 126 Tawoway
- 127 Anoz
- 128 Magchagil
- 129 Guror



TRUST TERRITORY PHYSICAL PLANNING PROGRAM
 YAP political sub-divisions
 YAP DISTRICT

Land Tenure Patterns

Most Yapese land is in private hands, held under traditional forms of tenure. Government owns but 565 acres, about 1.9 per cent of the total area of the island. Government leases another 615 acres, about 2.1 per cent of the land area. Table 5 and Plate 15 indicate the distribution of public and private land in Yap.

Table 5
Land Holdings in the Yap District
1967

Ownership	Acreage
Micronesian Lands:	
Privately owned land	28,148
Leased to the Trust Territory Government	615
Total	28,763
Non-Micronesian Lands:	
Foreign Nationals' land	2
Religious Mission lands	40
Leased to Micronesian citizens	1
Leased to Non-Micronesian citizens	3
Used by the Trust Territory Government	241
Vacant public land	320
Total	565
Total land area	29,370

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Traditional Yapese tenure is complex to westerners, for it recognizes not merely ownership, but a number of use rights in land. Its most important aspects can be described briefly, however.

Yapese ties to the land are extraordinarily close. Islanders use the same word to describe a family unit and the land it owns; there is no distinction between the two. The family unit's name is the same as that of the most important house

site on the land it owns; members of the family take their names from individual plots of land in the family holding.

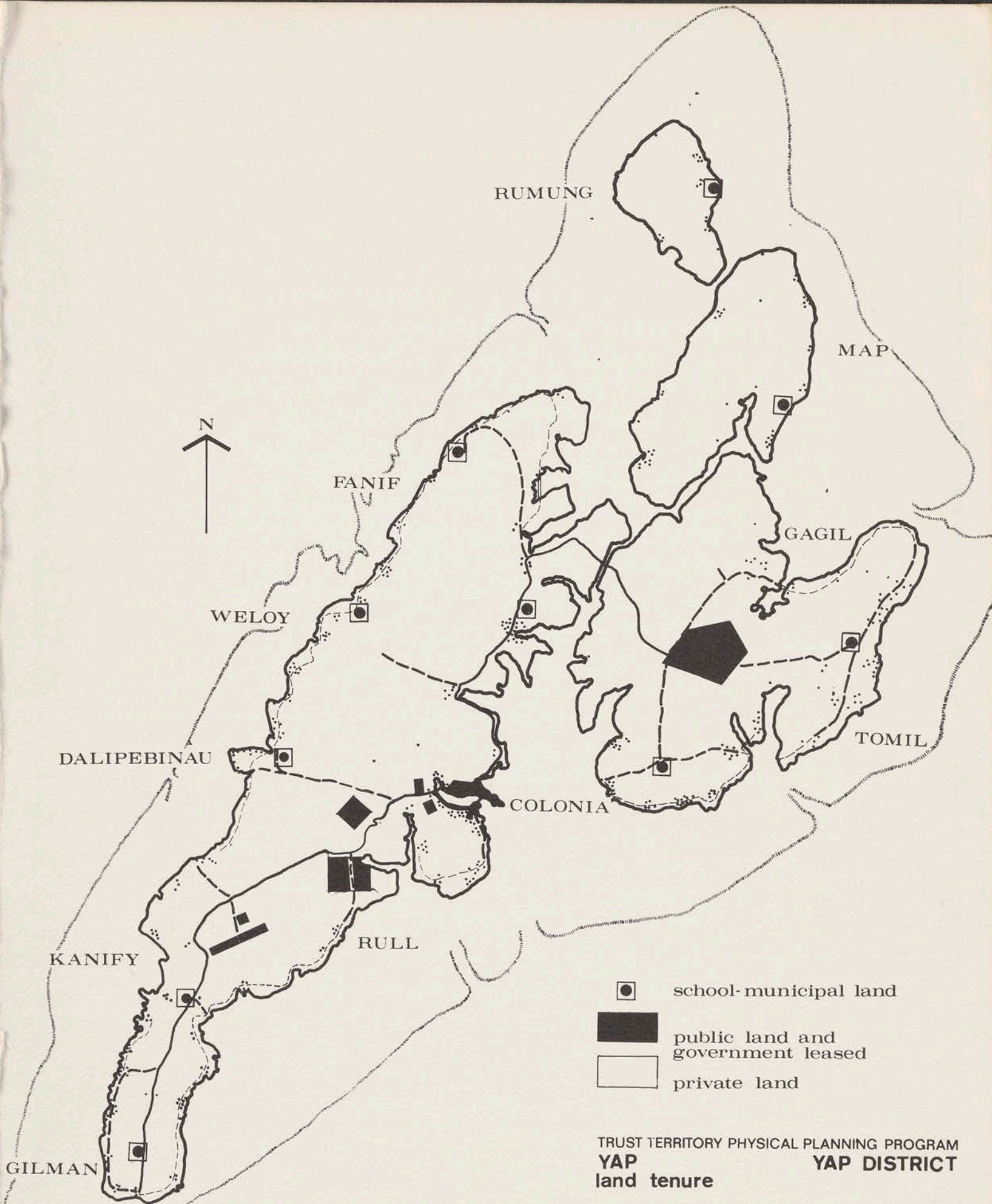
Technically, title to the family landholding vests in all males and unmarried females in the family unit. But in practice, the family head, usually the oldest male in the lineage, exercises most privileges of ownership. He is expected to consult with other members of the family on land dispositions and to heed their opinions, but his preferences usually dominate. He cannot, however, alienate the land without the consent of the entire family unit, nor can he completely disinherit a member of the family. Inheritance generally is from father to son or head of the lineage to oldest brother.

Because land is so cherished and because traditional tenure does not allow for its total alienation, outright sale in fee scarcely ever occurs. Instead, Yapese may consent to grant indefinite use rights to a plot of land. This is a recognized means of alienation of land, but it is not widely practiced and is not tantamount to sale. Title remains with the original owner, and under certain circumstances he can recover the land without returning the payment for it.

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This practice would appear to be somewhat expedient in cases where the proposed use is truly indefinite—for instance, the acquisition of road and utility rights-of-way, or in cases where the contemplated facility will, in effect, destroy the value of the land for any other use as, for instance, in the construction of an airfield. It would seem in these cases, that traditional “title” should be acquired even though the negotiation is complicated.





TRUST TERRITORY PHYSICAL PLANNING PROGRAM
YAP
 land tenure **YAP DISTRICT**

Final Submission

October 1, 1968

Plate
15

Graphic
 Scale
 in Feet

4000 0 4000 8000

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Population Trends

Traditionally the Yapese settlement patterns are widely dispersed. There are 129 villages along the 100 miles of shoreline making up ten municipalities. Table 6 and Plate 16 indicate the population distribution in these municipalities.

Table 6
Population Distribution of Yap Island
1957-67

Municipality	Percentage Population Distribution		
	1957	1962	1967
Dalipebinau	7.3	6.6	7.8
Fanif	12.6	11.2	11.6
Gagil	13.7	12.5	12.9
Gilman	4.9	4.5	4.4
Kanifau	5.6	5.5	5.6
Map	11.0	9.0	10.1
Rull	16.5	16.4	18.4
Rumung	4.2	3.7	4.6
Tomil	15.2	15.8	15.5
Weloy	9.0	14.8	9.1
Total	100.0	100.0	100.0

This extremely stable population distribution indicates their strong tie to their village. During census recordings people interviewed in Colonia still identified themselves with their home municipality.

Demographic sources for Yap District include estimates and head counts by navigators, missionaries, and other early visitors and residents, population censuses by the German, Japanese and American governments, birth and death statistics compiled by the Japanese and Americans, and postcensal estimates based on reports by local officials.

Statistics for the 19th century and earlier seem at best only approximate, and those for the early part of the 20th century are rather rudimentary. Rough estimates are available for several dates from 1780 to 1896. Census totals were published for several dates in the German period, concluding with the outbreak of World War I.

Systematic enumerations covering the entire district have been made from 1920 to the present. Japanese authorities conducted censuses at five-year intervals from 1920 to 1940. The Trust Territory administered a census early in 1958. Another census was taken with the help of Peace Corps volunteers as of Easter (March 26) 1967. The latter count was thought to be reasonably accurate, although difficulties were encountered in applying the census definition of residence and in establishing the exact age of older inhabitants.

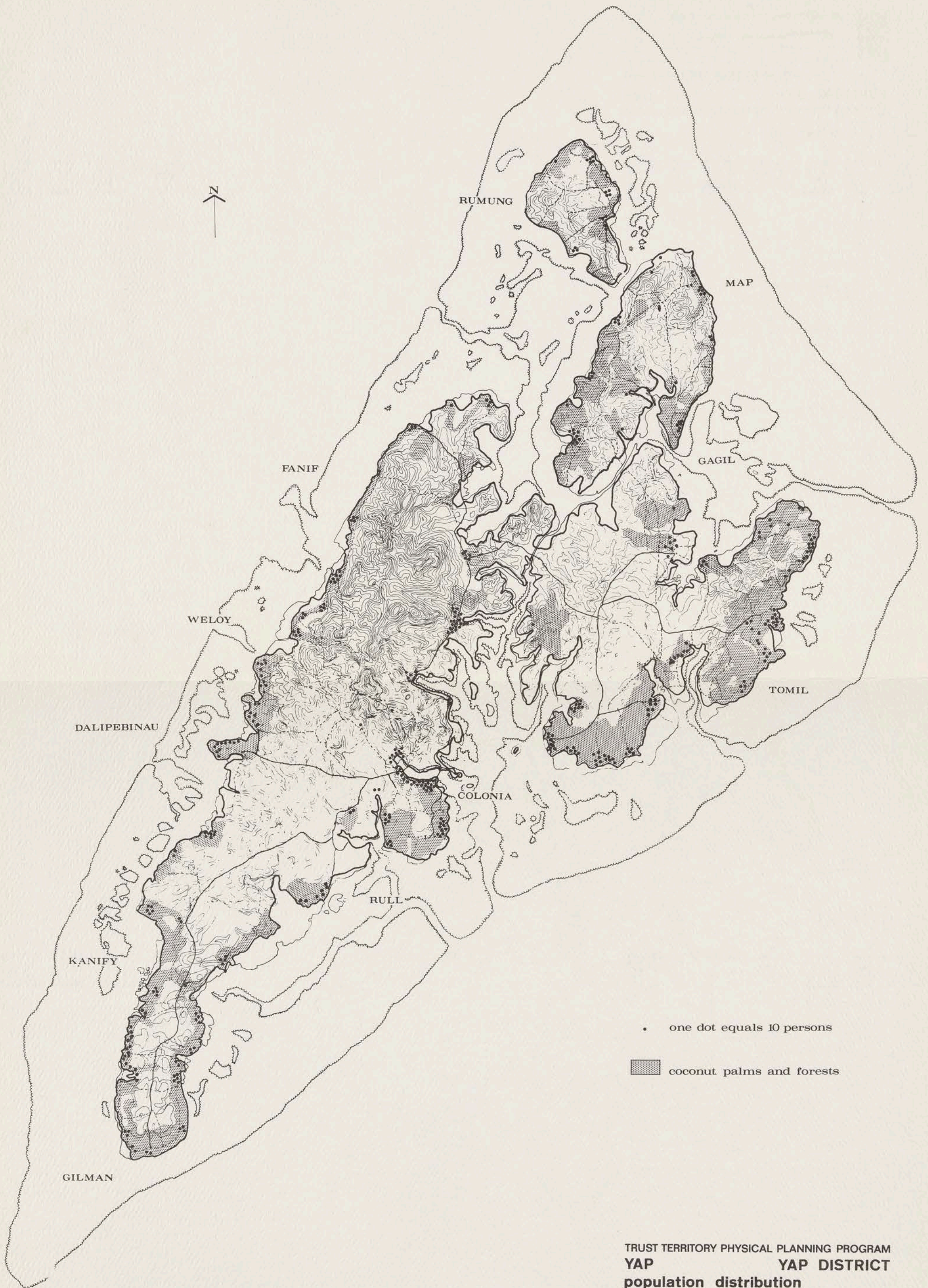
Annual estimates, usually based on population registers maintained by local officials, have been published by Japanese and American governments.

Birth and death registration statistics have likewise been issued by the Japanese and American administrations. The present system was initiated by a regulation promulgated on November 5, 1945. Public health officials regard registration of both births and deaths to be "fairly complete" in Yap District, a judgment corroborated by evidence of the 1967 census.

Migration statistics are limited to annual totals, possibly incomplete, published in annual reports to the United Nations. It is known that many Palauans have moved to Yap, and that movement from the outer islands of Yap District to the District Center has been significant.

Yap underwent serious depopulation from the first white contact until the end of World War II. An estimate for the Yap Islands, possibly exaggerated, indicated as many as 40,000 inhabitants in 1783. The total dropped to 7,800 in 1899, 6,300 in 1910, 3,700 in 1935 (plus 400 Japanese), and the all-time low of 2,478, found in a special census of the Yapese residents of Yap in 1946.

For the District as a whole, the total population declined from 8,439 in 1920 to 4,227 in 1939. The latter total included 2,548 Micronesians, 1,670 Japanese and 31 others. The continuing decline on Yap, evident long after other Micronesian islands had stabilized or turned upward, was attributed by Japanese officials to "conservative ideas regarding sickness and healing", tuberculosis, chronic catarrh, acute infantile intestinal inflammation, and reduced fertility resulting from gonorrhea. Abortion was apparently a common practice.



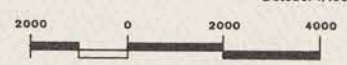
TRUST TERRITORY PHYSICAL PLANNING PROGRAM
YAP DISTRICT
population distribution

Final Submission

October 1, 1968

Plate
16

Graphic
 Scale
 in Feet



HAWAII ARCHITECTS & ENGINEERS, INC.



This downward trend was reflected in both vital measures and population composition. The crude birth rate ranged between 12 and 16 per 1,000 inhabitants during the 1920's and 1930's, approximately half the average for other districts. The crude death rate during the same period lay between 28 and 44, resulting in a high rate of natural decrease. Only 23.6 percent of the native population was under 15 years of age in 1935. The Yapese sex ratio in 1930 was 94.2 males per 100 females, lowest of all the districts.

The precipitous decline was finally reversed after World War II. The District total rose from 4,652 in 1948 to 5,540 in 1958 and 6,761 in 1967; that for the Yap Islands, from 2,744 to 3,243 to 4,024. Only 143 Americans and other non-Micronesians lived in the District in 1967.

Fertility soared and mortality plummeted after the war. The crude birth rate was 28.7 in 1958 and 42.3 in 1966-1967, three times the prewar level. The fertility ratio (that is, children under 5 per 1,000 women 15-44) was 833 in 1958 and 912 in 1967. The crude death rate in 1966-1967 was 15.0, less than half that of the 1920's and '30's. A high rate of natural increase supplanted the former natural decrease.

The age composition shifted drastically. In 1946, the median age of Yap Islands' natives was 32.3 years. The District median in 1958 was 26.2 years; in 1967 it was 18.5.

Males greatly outnumbered females in the postwar period. The overall sex ratio, only 94.2 males per 100 females in Yap District in 1930, reached 107.0 in 1958 and 109.6 in 1967. Among children under 5, it was 117.0 in 1967; for those under 1, it was 118.6. Birth registration statistics showed sex ratios of 109.2 in 1958 and 112.6 in 1966. It is not clear whether these exceptionally high sex ratios reflect a congenital predisposition to male births, differential infant mortality, or serious underenumeration of girl infants.

Trends are traced in Tables 7 and 8.

Table 7
Population of Yap
1780-1967

Year	Yap District		Yap Island ¹	
	Native	Total	Native	Total
1783	—	—	40,000	—
1896	—	—	12,000	—
1899	—	—	7,808	—
1903	—	—	7,156	—
1910	—	—	6,328	—
1920	8,338	8,439	—	—
1925	7,570	7,752	—	—
1930	6,486	6,735	—	—
1935	5,801	6,347	3,713	4,116
1939	2,548	4,227	—	—
1948	4,645	4,652	2,744	—
1958	—	5,540	—	3,243
1967	6,618	6,761	—	4,024

¹Presumably includes Map, Rumung and Tomil, as well as Yap proper.

The rapid growth evident since the late 1940's appears likely to continue at least until 1987.

Projections were prepared by a variation of the cohort-survival method. Because of the questionable accuracy of some birth and death registration data, use was made of census survival rates and fertility ratios from the 1958 and 1967 enumerations.

Quinquennial survival rates for the entire Trust Territory were separately projected for males and females in each five-year age group. It was assumed that the 1967-1987 rates for the Territory and each of its six districts would lie midway between the 1958-1967 rates for the Territory and the 1950-1960

Table 8
Birth, Death and Infant Mortality Rates
For Yap District
1924-1967

Period	Births per 1,000 population ¹	Deaths per 1,000 population ¹	Deaths under 1 per 1,000 live births ¹
1924-1930 ²	14.0	39.1	—
1925-1929	14.4	44.1	—
1931-1937 ³	15.9	34.2	—
1935	12.0	28.0	—
1958	28.7	6.1	50.3
1966	38.2	13.6	63.2
1967	34.1	9.4	51.7
1966-1967, registered ⁴	42.3	15.0	14.3
1966-1967, census ⁴	32.6	10.9	18.5

49

1. Based on registered events for the native population, unless otherwise specified.

2. The Japanese had a birth rate of 44.4 and death rate of 5.0.

3. The Japanese had a birth rate of 35.6 and death rate of 13.5.

4. Year ended March 31, 1967.

rates for the United States nonwhite population, as converted to a quinquennial basis. This assumption suggests considerable improvement in the life expectancy of the Micronesians.

The population under 5 at each quinquennial date was computed from projected fertility ratios. It was assumed that the 1967 Territorial ratio, 998 children under 5 per 1,000 women 15-44, would decline by 25 percent (to a still high 748) by 1987, and that the Yap District ratio (912 in 1967) would gradually converge with this figure.

No allowance was made for migration. The non-indigenous total was maintained at its 1967 level.

The resulting projections indicate a growth from 6,761 in 1967 to 8,335 in 1977 and 10,352 in 1987, a two-decade increase of 53 percent. The native population is expected to rise by 54 percent, from 6,618 to 10,209.

This trend will probably be accompanied by a stabilization in the median age and a decline in the sex ratio. Median age, 18.5 years in 1967, is estimated at 18.4 for 1987. The sex ratio may drop from 109.6 to 106.0.

A projection of total population for the Yap Islands in 1987 was computed by the "ratio method", District Center-to-District population ratios were calculated for 1948, 1958 and 1967 and extrapolated to 1987. The extrapolated ratio was then applied to the District total prepared previously. This forecast indicates a sizable gain for the Yap Islands, from 4,034 in 1967 to 6,210 twenty years later.

Detailed projections appear in Tables 9, 10 and 11.

Table 9
Population For Yap District and the Yap Islands
1967-1987

The District:

1967	6,761	6,618
1972	7,489	7,346
1977	8,335	8,192
1982	9,281	9,138
1987	10,352	10,209

Yap Islands:

1967	4,024
1987	6,210

Table 10
Median Age, Sex Ratio, and Fertility Ratios For Yap District
1958-1987

Year	Median Age (in years)	Males per 100 females	Children under 5 per 1,000 women 15 to 44	
			Male	Female
1958	26.2	107.0	438	395
1967 ¹	18.5	109.6	491	420
1977 ¹	18.2	107.9	441	388
1987 ¹	18.4	106.0	391	357

1. Native population only.

Table 11
Age and Sex of the Indigenous Population of Yap District
1967-1987

Age in years	1967		1977		1987	
	Male	Female	Male	Female	Male	Female
All Ages	3,461	3,157	4,251	3,941	5,254	4,955
Under 5	545	466	695	611	830	758
5 to 9	528	466	632	549	766	686
10 to 14	461	405	537	468	685	615
15 to 19	325	282	472	448	565	529
20 to 24	211	175	397	382	463	441
25 to 29	153	179	289	262	420	417
30 to 34	167	177	195	161	366	353
35 to 39	173	172	140	164	265	240
40 to 44	124	124	148	158	173	143
45 to 49	182	171	150	150	122	143
50 to 54	130	128	104	106	124	135
55 to 59	101	94	147	143	121	125
60 to 64	85	76	105	103	84	86
65 to 69	86	77	75	72	109	109
70 to 74	69	62	49	49	61	66
75 and over	108	82	106	98	92	95
Not reported	13	21	10	17	8	14

Economic Conditions

Yap's economy revolves around copra, the Yap Cooperative Association and the Trust Territory government. There is not enough bait for commercial fishing, and the soil is ill-suited for commercial crops because the water table is high.

In 1965-1966 the islands produced 1,152 tons of copra – a 40% increase over the previous year. The coconut palms in the Yap Islands are the best in the Trust Territory. Coconut seeds from Yap are used in planting programs in other districts.

The largest private enterprise on the island is the Yap Cooperative Association, which employs 120 Micronesians and had \$80,000 worth of stock, more than \$361,000 in assets and some \$898,000 worth of sales in 1966.

Total employment for the District in 1966 was 800. Of these, the Trust Territory government employed 400. Some 300 had other wage employment, and 100 were self employed.

About 1,100 – 300 men and 800 women – engaged in subsistence agriculture and fishing to feed themselves and their families.

Total exports in 1966 amounted to \$216,236. Imports were worth \$747,924.

A wage breakdown between indigenous and non-indigenous residents showed:

Indigenous	Non-Indigenous
\$905,553	\$47,600

Two credit unions on Yap have combined assets of \$38,661 and a membership of 313 whose average savings are \$106 a year per person.

The total amount of money in circulation on Yap on 1966 was \$200,000.

HISTORICAL AND ENVIRONMENTAL INFLUENCES

Regional Relationships

Yap District consists of 15 atolls and island groups in the Western Caroline Islands. There are 144 separate islets in the district. Total land area is 45.89 square miles. Only one of the island clusters exceeds 2 square miles: Yap Islands proper, a group of four large and seven small islands with a total land area of 38.67 square miles, including 21.68 on Yap Island. Other major islands in the Yap group are Rumung, Map and Tomil-Gagil. Some of the atolls in the District have vast lagoons. The largest, Ulithi's, (1.80 square miles land area) encompasses 209.56 square miles of water.

Yap is about 450 miles southwest of Guam at 90 degrees 30 minutes north latitude and 138 degrees 07.5 minutes east longitude.

Yap is 600 miles southwest of Saipan, 1,600 miles south of Tokyo, 1,150 miles east of Manila and 4,400 miles west of Honolulu.

Yap District covers an area 700 miles wide and 160 miles long.



Natural Environment

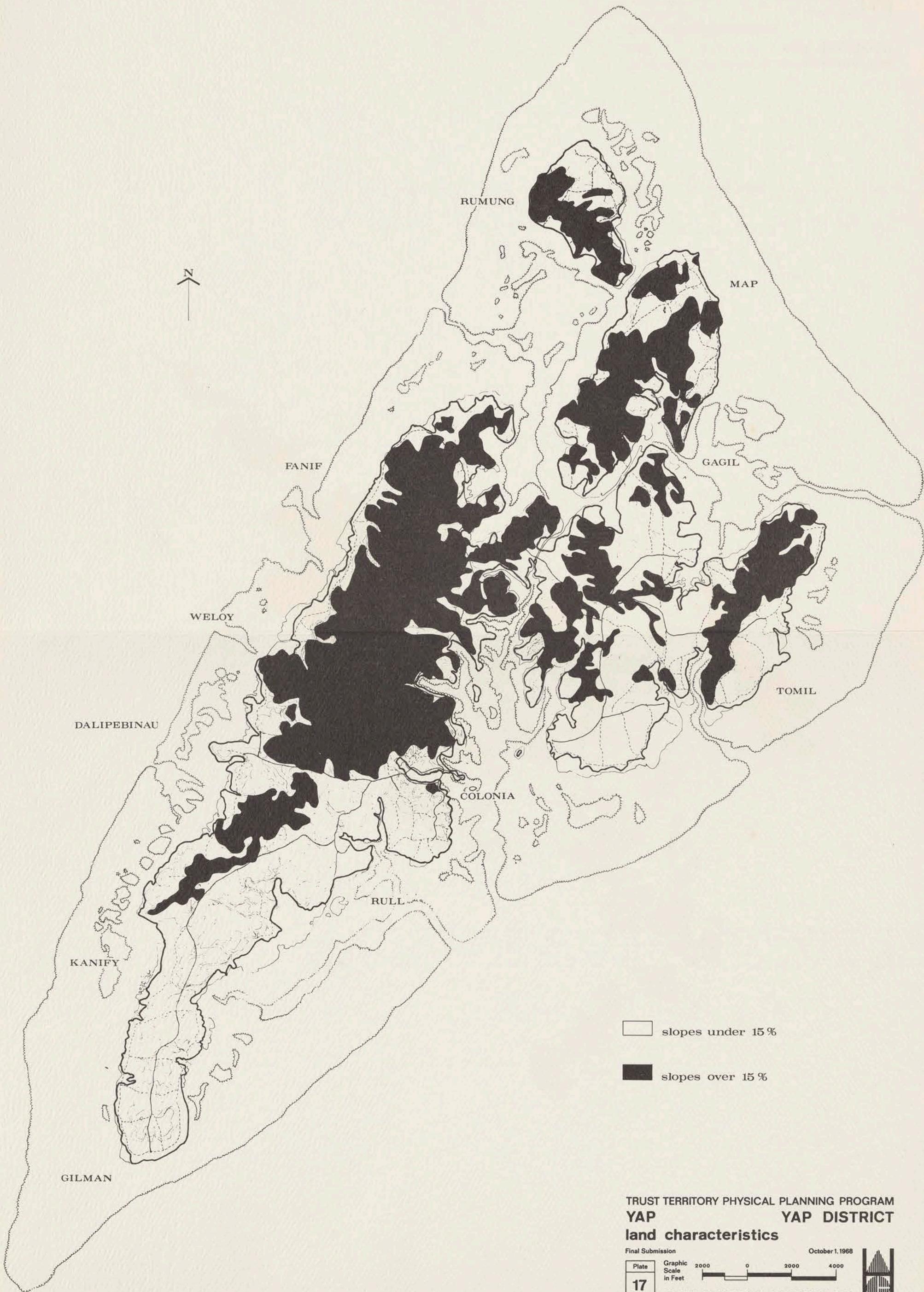
Yap's climate is hot and moist. Skies are cloudy and there is considerable rain. Temperatures average 82 degrees in summer and 80 degrees in the "cool" season. The relative humidity varies from 65% to 100% and averages 83%.

There are two major seasons in Yap. The tradewind season of drought and wind extends from December through April. Winds are mainly east to northeast. Velocities often exceed 16 knots. Rainfall averages six inches per month. The rainy season extends from July through October. Rainfall averages about 58 inches — almost half the annual amount.

Northern Yap Island is hilly; peaks and ridges are as high as 550 feet. The hills dominate a low, partly dissected plateau to the east which is 1 to 3 miles wide and has an average elevation of 90 to 120 feet (see Plate 17). The plateau occupies the central part of Yap and includes the east coast of northern Yap Island and the western two-thirds of Tomil-Gagil. Map and Rumung, north of the plateau, are uniformly dissected into rounded, moderately steep hills. Almost without exception, the hills of Yap terminate at the coastal flats, beaches, or shoreline in steep slopes, often in 60-to 90-foot high cliffs. The shorelines of the islands of Yap, Tomil-Gagil and Map are irregular and deeply indented. Yap and Tomil-Gagil are separated by Tomil Harbor and the Tageren Canal. There are no lowlands on Yap. Most streams are small, perennial, short, steep and rocky. The steep slopes and high elevations of inland areas and the slope conditions around Colonia are illustrated (see Plate 18).

Mangrove swamps border much of the coast. Back of the mangrove swamps and along exposed beaches, coconut groves occupy the coastal flats and adjacent hillsides.




Scattered pandanus and fern grow in the central part of Tomil-Gagil. Most grass is short and soft; only a few species in restricted areas have stiff leaves with sharp edges.



slopes under 15 %
 slopes over 15 %

TRUST TERRITORY PHYSICAL PLANNING PROGRAM
YAP **YAP DISTRICT**
 land characteristics



-  slopes
-  mangrove swamp
-  water

TRUST TERRITORY PHYSICAL PLANNING PROGRAM
COLONIA **YAP DISTRICT**
 physical features

The four major soil types on Yap are, in order of areal extent: lithosols, latosols, soils of coastal flats, valley bottoms, and inland depressions, and panosols. Fertility levels of the latosols are extremely low because of rapid decomposition of organic matter and rapid leaching of plant nutrients. The planosols have low fertility levels in comparison with soils of temperate climates, but are not nearly as infertile as the latosols of Yap.



Historical Influences

Yap's early history is vague. A Portuguese, Diego DaRocha, is thought to have been the first westerner to discover the islands, in 1526. The islands did not earn any commercial prominence until in the nineteenth century with the development of the copra trade.

Spain formally proclaimed her sovereignty over the islands in 1874 in the face of political encroachment by Britain and Germany. Both the Germans and British protested, and in 1876 Germany dispatched a frigate to Yap in the interest of British and German traders. There was an exchange of notes between the three countries and Spain agreed to free trade, but had her sovereignty established, provided she occupied the islands.

In 1885 she did so, sending a governor, troops and a missionary. The Spanish established their headquarters for the Western Carolines on Yap. They built administration buildings, a hospital, soldiers' houses and business buildings, and a fort that today is the foundation for Yap's hospital. The administration was staffed by a governor, his secretary, a physician, 50 Filipino solidiers with Spanish officers, and they were accompanied by six Capuchin priests and lay brothers. The western incursions of the last quarter of the 19th century introduced venereal, pulmonary, and other diseases. The effect was a devastating reduction of Yap's population. It is estimated that there were some 40,000 people on Yap in those days. Today there are 4,000. The decline continued during the Japanese administration, but has now been reversed.

It was about 1879 that the legend of "His Majesty" O'Keefe began on Yap. O'Keefe was an enterprising American trader who survived a shipwreck and landed at Gilman Municipality. O'Keefe launched a commercial operation in which he quarried and carried stone money from Palau to Yap, exchanging it there for copra and trepang (dried sea cucumber). This he sold in Hong Kong, where he invested in real estate. Today, the island of Tarang is named after him, because he was the first foreigner to settle it. O'Keefe vanished in a storm at sea not long after the turn of the century.

In 1899 Germany purchased the Micronesian islands from Spain, established civil control and instituted an aggressive program of coconut planting and copra production.

The German administrator held the position of "high high chief" with the power to maintain peace among the chiefs. It was the German administration that divided Yap into ten municipalities. The municipalities remain today but since 1946 have had elected executive heads (magistrates) instead of hereditary chiefs.

One of the most significant events of the German period was the installation of the Pacific cable in 1905. A German firm completed the Yap-Guam section on April 8, the Yap-Celebes section on April 28, and the Yap-Shanghai section on October 30, 1905. Yap attracted international attention from 1919-21 when the Pacific cable system was the subject of an American-Japanese dispute.

Germany's control of Yap ended abruptly in 1914 when the Japanese entered World War I and occupied Micronesia.

Japan improved the German-built roads on Yap, built a hotel, administration offices, and numerous causeways. Japanese money poured into Micronesia.

In 1941 the Japanese ordered the people of Yap to build an airstrip. Men from 11 to 50 years of age were forced to work with their bare hands. The American planes repeatedly bombed the strip and the Yapese were forced to repair it.

The air raids of the war destroyed many of the facilities Japan constructed in Yap and left the area around the airstrip pitted with bomb craters and the carcasses of blasted Japanese aircraft.

The United States bypassed Yap in its World War II drive on Japan, returning later to take control of the islands. Japanese nationals there were repatriated, and the United States installed a military government. This was replaced with a civilian administration in the early 1950's. The United States has continued to govern the islands under a 1947 strategic trusteeship agreement with the United Nations.

Cultural Considerations

There are 129 villages on the four major islands of Yap. The villages are small, the houses scattered. A large village may have 15 to 20 houses, while the small villages number five homes or less. Many house sites are abandoned because population is so small. Most Yapese live in coconut groves along the low-lying coastline of Yap. A few villages are located in the forested hills.

Shoreline villages are considerably cooler than the highland areas. Temperature difference between the high grasslands and the tree covered shoreline can be ten to fifteen degrees. The sea level location is cooled by prevailing lagoon breezes. More important, seashore villages are close to the fish-filled lagoons.

Coconut, taro, mangrove, crab and fish provide the bulk of the Yapese diet. Palm leaves, mangrove poles, grass and bamboo and coral heads provide material for housing construction, clothing and tools.

58 With few exceptions, houses are built of local materials. Most are built on three rows of heavy wooden posts set vertically in a stone platform. Stringers and cross members are lashed to the posts and a framework of bamboo for the roof is added. Leaves of the nipa palm, pandanus or coconut palm are lashed onto the bamboo frames. No nails or pegs are used in construction. All materials are lashed with cord made of coconut fiber. The stone house platform may be as much as four feet high and is made of blocks or slabs of schist or coral heads. Each house is in the middle of an area clean of litter and trash. Many of these areas are paved with slabs of schist. The yard is usually a broad elevated rock platform. At each edge of the yard, rock slabs are set vertically or slanted for back rests. The sides of the house and yard platforms are used to display large stone discs of "Yap money". Small cooking shelters, separate from the house, are close by.

Nearly all the villages, especially those along the shore, have one large building—the faluu—which is used only by the men and older boys as a community house. It is usually built on a stone platform situated at the water's edge or out over the water and joined to the beach by a narrow stone causeway. It is similar in style to the individual houses, though generally larger, and displays the village stone money.

Stone money is shaped like a doughnut — circular with a hole in the center. It ranges in size from nine inches to more than nine feet in diameter. Some of the larger pieces are as much as sixteen inches thick at the center. The money is usually displayed against village walls or along stone walks. It still represents the wealth of families and individuals.

Cemeteries are near the villages, generally on a prominent ridge. Graves are rectangular pyramids built up into two or more steps. The sides of each step are made of stones collected locally and the inside is filled with soil. Many are decorated with bottles, whose necks are stuck into the soil. The size of the graves vary from a few feet to ten or twenty feet for high chiefs.

Along the reef, and projecting from the beach onto the reef, are numerous arrow-shaped fish traps or weirs. Rocks piled two to three feet high are built in lines, 100 to 150 yards in length, to form the "shafts" or leads of these traps. During tidal changes, the traps collect fish which supply the villages.

Temporary fish traps, made of split bamboo and poles, are located in deeper water than those made of stone. These are of similar design except that their tops remain above the water.

Skillfully laid stone paths provide access to most parts of the Yap Islands. They generally follow the shoreline and are eight to twelve feet wide. These paths also form a pedestrian network within each village. The paths that cross the hills are considerably narrower and limit walking to single file.

Stone platforms with upright rock slabs that act as back rests are common along the paths. The slabs are generally located at the intersection of two paths, at the top of a hill, under a large tree, or at other suitable resting places.

The distinctive life style and associated physical developement on Yap, as described above, are cherished by the Yapese. This master plan is prepared on the premise that the Yapese should be allowed to maintain their way of life and, at the same time, be able to participate in the benefits of economic, social and political developement if they wish to do so. Through the means of sensitive environmental planning, the Yapese can be provided the opportunity to make a choice of the way they wish to live.



TRUST TERRITORY PLANNING PROGRAM REPORTS

Copies of reports produced in the Trust Territory Physical Planning Program are available from the Trust Territory government. The reports published in this final series are:

Koror, Palau District

Yap, Yap District

Saipan, Mariana Islands District

Ebeye and Carlson Islands, Marshall Islands District

Majuro, Marshall Islands District

Ponape Island, Ponape District

Moen Island, Truk District

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Other reports published during the course of the Trust Territory Planning Program are:

Initial Submission Report:

Goals and Objectives—Physical Planning Program

Special Submission Reports:

Vocational High School Site

Koror Island, Palau District

Second Submission Reports:

Koror Palau District

Yap Island, Yap District

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Ponape Island, Ponape District

Moen Island, Truk District

Notes on Anthropological Considerations for Planning in Micronesia

Pre-Final Submission Reports:

Koror, Palau District

Yap Island, Yap District

Saipan, Mariana Islands District

Ebeye and Carlson Islands, Marshall Islands District

Majuro Atoll, Marshall Islands District

Ponape Island, Ponape District

Moen Island, Truk District

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