

**COMMONWEALTH OF THE NORTHERN MARIANA ISLANDS (CNMI)
STATEWIDE ASSESSMENT AND RESOURCE STRATEGY
2010-2015+**



June 2010

<u>Table of Contents</u>	<u>Page</u>
What is SWARS?.....	4
• Farm Bill Sec.8002.....	4
National Themes and Objectives.....	4
Statewide Resource Assessment.....	5
Mission Statement.....	5
Introduction.....	5
• CNMI and its Government Structure.....	5
• CNMI Constitution.....	5
• CNMI Islands Geographic Location.....	5
• History of the CNMI's Forest Conditions.....	6
CNMI Forest Resource.....	7
• Soil (Conditions and Trends)	7
o Maps of Soil.....	8
o Units of Soil.....	8
• Watershed (Sustainability, Conditions and Trends.....	9
• Issues/Trends.....	9
o Erosion / Maps of Highly Erodible Soil.....	9
o Soil and Nutrient Depletion.....	9
o Water Shortage.....	9
o Flood.....	10
Priority Watershed (Map).....	10
THEME I (Conservation).....	10
Conserving and managing working forest landscapes for multiple values and uses.....	10
• Saipan.....	10
o Bird Island Wildlife Preserve.....	10
o Kagman Wildlife Conservation /Forbidden Island Sanctuary.....	10
o Marpi Forest.....	11
o Commonwealth Forest.....	11
▪ Maps of Commonwealth Forest	11
o Land Proposed for Acquisition.....	11
• Rota.....	12
o Bird Sanctuary	12
o Sabana.....	12
o Wedding Cake.....	12
• Tinian.....	13
o Tinian Conservation.....	13
• Northern Islands.....	13
o Constitutionally protected.....	13
• Private Forest Landscapes.....	13
o Map Non-industrial Private Land.....	14
PRIORITY AREA MAP.....	14
Conserving and managing working forest landscapes.....	14
STRATEGY MATRIX FOR THEME I.....	14
THEME II (Protection).....	15
Protecting forests from threats, including catastrophic wildfires, typhoon, flooding, drought, invasive species, insect or disease outbreak, or development, and restoring appropriate forest types in response to such threats.	15
INVASIVE SPECIES.....	15
• Target species (National Lists from PIER and HEAR).....	16
o Strategies for dealing with Invasive species.....	16
o Recommendation for dealing with Invasive species.....	16
o Enforcements.....	16
Forest Health Goals and Objectives.....	17
o Physical / Biological.....	17
o Social	18
o Institutional / Educational.....	18
o Invasive Pest Lists.....	19
Maps of Forest Land Cover.....	19

Table of Contents

Page

WILDFIRE..... 20

- o Loss of Natural Resources..... 20
 - Fires Objective..... 21
 - Basic Assumption..... 21
 - Initiative Identification..... 21
 - Initiative 1 (Wildland –Urban Interface)..... 21
 - Initiative 2 (Training)..... 22
 - Initiative 3 (Vegetation Management)..... 22
 - Initiative 4 (Fire Equipment and Acquisition)..... 22
 - Initiative 5 (Information and Education)..... 22
 - Initiative 6 (Cost Effective Protection Through Analysis and Planning)..... 22
 - Evaluation and Prioritization..... 22
 - Federal Excess Personal Property..... 22
 - Routing for Cooperative Fire Funds..... 22
- o Grassland (Fire Prone areas)..... 23
- o Bad Land 23
- o Map of Badland Areas..... 24

THREATEN AND ENDANGERED SPECIES..... 24

- Lower Limestone Terrace..... 25
- Mid Elevation Terrace..... 25
- Upper Limestone Terrace..... 25

STRATEGY MATRIX FOR THEME II..... 25

PRIORITY AREA MAP FOR THEME TWO – FOREST HEALTH..... 25

THEME III (Enhancement)..... 26

Enhancing public benefits from forests, including air and water quality, soil conservation, biological diversity, carbon storage, forest products, forestry-related jobs, wildlife, wildlife corridors and wildlife habitat, and recreation.

- o Community Forestry Aspect..... 26
 - Healthy and Sustainable Forest Ecosystem..... 26
 - Homestead Village..... 26
 - Saipan Zoning Map..... 27
 - Tourism and Economic Prospective..... 27
- o Urban Landscape..... 27
 - o Parks and Beaches..... 27
 - o Urban Maps..... 28
- o Social and Cultural Values..... 28
- o Cultural Resources..... 29
- o Wildlife..... 29
- o Enhanced Water Quality..... 30
 - Maps of Public Wells and Aquifer..... 30
- o Adaptation to Global Climate..... 31
 - Forest Impact..... 31
 - Activities and Sustainability’s of Managed Forests..... 31
 - Native tree lists..... 31
 - Restoration Strategies..... 31

STRATEGY MATRIX FOR THEME III..... 31

PRIORITY AREA MAP FOR THEME THREE – Watershed..... 32

Summary..... 32

Stakeholders Consultation..... 33

Forestry Advisory Council..... 34

Key Personnel and Roles in the SWARS Development..... 34

Acronym for Departments and Agencies..... 35

Appendix A Assessment methodology..... 35

Appendix B Stakeholders with Statewide Assessment and Strategy..... 35

Appendix C Plans consulted and / or attached..... 35

MAPS (1-13)..... 37

WHAT ARE STATEWIDE ASSESSMENTS AND RESOURCE STRATEGIES?

The Statewide Assessment is an analysis of forest resource conditions and trends; threats and opportunities for delineating spatially defined priority forest landscapes for developing program strategies and actions. The Resource Strategy is a five-year integrated S&PF strategic plan on how best to leverage state, federal and non-governmental resources in priority landscapes as a means to contribute to national S&PF themes. The national themes are: 1) Conserve Working Forest Lands 2) Protect Forests from Harm 3) Enhance Public Benefits from Trees and Forests

Farm Bill SEC. 8002. LONG-TERM STATEWIDE ASSESSMENTS AND STRATEGIES FOR FOREST RESOURCES.

The Cooperative Forestry Assistance Act of 1978 is amended by inserting after section 2 (16 U.S.C. 2101) the following new section: “SEC. 2A. STATE-WIDE ASSESSMENT AND STRATEGIES FOR FOREST RESOURCES. “(a) ASSESSMENT AND STRATEGIES FOR FOREST RESOURCES.— For a State to be eligible to receive funds under the authorities of this Act, the State forester of that State or equivalent State official shall develop and submit to the Secretary, not later than two years after the date of enactment of the Food, Conservation, and Energy Act of 2008, the following: (1) A State-wide assessment of forest resource conditions, including, “(A) The conditions and trends of forest resources in that State; (B) The threats to forest lands and resources in that State consistent with the national priorities specified in section 2(c); “(C) Any areas or regions of that State that are a priority; and “(D) any multi-State areas that are a regional priority. (2) A long-term State-wide forest resource strategy, including—“(A) strategies for addressing threats to forest resources in the State outlined in the assessment required by paragraph (1); and“(B) a description of the resources necessary for the State forester or equivalent State official from all sources to address the State-wide strategy. “(b) UPDATING.—At such times as the Secretary determines to be necessary, the State forester or equivalent State official shall update and resubmit to the Secretary the Statewide assessment and Statewide strategy required by subsection (a).“(c) COORDINATION.— In developing or updating the State-wide assessment and Statewide strategy required by subsection (a), the State Forester or equivalent State official shall coordinate with— (1) The State Forest Stewardship Coordinating Committee established for the State under section 19(b) (2) The State wildlife agency, with respect to strategies contained in the State wildlife action plans (3) The State Technical Committee (4) Applicable Federal land management agencies (5) For purposes of the Forest Legacy Program under section 7, the State lead agency designated by the Governor “(d) INCORPORATION OF OTHER PLANS.—In developing or updating the State-wide assessment and State-wide strategy required by subsection (a), the State forester or equivalent State official shall incorporate any forest management plan of the State, including community wildfire protection plans and State wildlife action plans. “(e) SUFFICIENCY.—Once approved by the Secretary, a Statewide assessment and State-wide strategy developed under subsection (a) shall be deemed to be sufficient to satisfy all relevant State planning and assessment requirements under this Act. “(f) FUNDING.— (1) AUTHORIZATION OF APPROPRIATIONS.—There are authorized to be appropriated to carry out this section up to \$10,000,000 for each of fiscal years 2008 through 2012. (2) ADDITIONAL FUNDING SOURCES.—In addition to the funds appropriated for a fiscal year pursuant to the authorization of appropriations in paragraph (1) to carry out this section, the Secretary may use any other funds made available for planning under this Act to carry out this section, except that the total amount of combined funding used to carry out this section may not exceed \$10,000,000 in any fiscal year. “(g) ANNUAL REPORT ON USE OF FUNDS. — The State forester or equivalent State official shall submit to the Secretary an annual report detailing how funds made available to the State under this Act are being used.”

The CNMI has organized its Assessment & Strategy by the three national themes, shown below. For each theme, the CNMI has mapped at least one “priority area,” although some level of work will take place outside the priority areas depending upon on-the-ground conditions and actual opportunities. Under each theme, primary “strategies” are discussed in the text and listed in matrices, including existing programs and potential new initiatives. Most strategies address multiple themes and objectives, as all parts of the forest ecosystem and its management are interrelated.

NATIONAL THEMES AND OBJECTIVES

4.1	<p>1. Conserve Working Forest Landscapes</p> <p>1.1. Identify and conserve high priority forest ecosystems and landscapes</p> <p>1.2. Actively and sustainably manage forests</p>
4.2	<p>2. Protect Forests from Harm</p> <p>2.1. Restore fire-adapted lands and reduce risk of wildfire impacts</p> <p>2.2. Identify, manage, and reduce threats to forest and ecosystem health</p>
4.3	<p>3. Enhance Public Benefits from Trees and Forests</p> <p>3.1. Protect and enhance water quality and quantity</p> <p>3.2. Improve air quality and conserve energy</p> <p>3.3. Assist communities in planning for and reducing wildfire risks</p> <p>3.4. Maintain and enhance the economic benefits and values of trees and forests</p> <p>3.5. Protect, conserve, and enhance wildlife and fish habitat</p> <p>3.6. Connect people to trees and forests, and engage them in environmental stewardship activities</p> <p>3.7. Manage and restore trees and forests to mitigate and adapt to global climate change</p>

STATEWIDE RESOURCE ASSESSMENT

The CNMI Statewide Assessment was conducted in accordance to the documents and data provided by the councils and agencies that manages or have interest in protecting the islands Natural Resources. Most of its priorities are set for conservation, protection and enhancement of our limited and unique landscape. The trailing statistics encompasses the entire 14 islands as a whole, but will focuses on the three major islands (Saipan, Rota and Tinian). These three islands deal with unique challenges due to the competing land uses for developments of homesteads and other economical benefits. Available land now becomes targets for these demands annually.

CNMI- FORESTRY MISSION STATEMENT

The mission of the Commonwealth of the Northern Mariana Islands (CNMI) Forestry is to promote best management practice while sustaining a healthy, diversity and productivity on our limited and fragile forest and grassland resources for present and future generation. Such objectives will be dealt with through conservation, protection and the enhancement practices while keeping the islands present landscape provisions.

INTRODUCTION

The Commonwealth of the Northern Mariana Islands and its government structure

The Commonwealth of the Northern Mariana Islands (CNMI) is comprised of a chain of high volcanic islands located 1,000 miles south of the islands of Japan and 5,000 miles east of the islands of Hawaii or 12°N 145°45'E 15.01722°N 145.06806°E [see table 1 for additional island coordinates]. The CNMI is noted for its excellent climate (according to Guinness Book of Records the CNMI has the most constant climate in the world with the temperature ranging from 78 to 88 degrees Fahrenheit), excellent beaches, friendly citizens, and close proximity to the major cities and markets of Asia.

The population of the CNMI according to the 2000 Census is 69,221. Only three of the fourteen islands, Saipan, Tinian and Rota, have a significant population. The islands of Agrihan, Pagan and Alamagan have fewer than ten residents, and the remaining eight islands are unpopulated. The preponderance of the population, 62,392 reside on the island of Saipan, which is the capitol and economic center of the CNMI. Being the capital of the CNMI, the island of Saipan has been impacted tremendously with the ailing economy due to its dramatic drop in tourism and the continual pullout of garment and other manufacturers. The two pillars of the economy - tourism and the garment industry are continuing to decline at a rapid speed. As a result, government revenues are declining yet demand for more services is escalating. The short-term elucidation is to develop collaborative efforts, forge partnerships, and aggressively seek means to generate funds to maintain operation through each fiscal year. These financial impasses left the CNMI government limited to no alternative but to find supplementary funding through federal programs and through aggressively collecting revenues from ongoing services provided by the government and private businesses.

CNMI Constitution

The CNMI constitution provides for a governor, a lieutenant governor, a bicameral legislature (20 members in the House of Representatives and 9 members in the Senate), and a local court system including Superior and Supreme Courts.

The U.S. District Court for the District of the Northern Mariana Islands operates in the CNMI with the Honorable Alex Munson presiding. His position is currently vacant, whereas his position is now being announced for the US to fill.

Non-voting delegate:

On May 8, 2008, President Bush signed into law, Senate Bill 2739 (H.R. 3079) which included the provision for having a member of congress from the Commonwealth of the Northern Marianas. This bill, which became Public Law 110-229, created a Delegate seat in Congress for the CNMI. The CNMI now joins the District of Columbia, American Samoa, Guam, the U.S. Virgin Islands and Puerto Rico in the House of Representatives. For the first time in history, the CNMI elected a Representative to the United States Congress. On January 6, 2009, the first CNMI Delegate was sworn in to the U.S. House of Representatives. This person will serve a two years term.

Commonwealth of the Northern Mariana Islands Archipelago consists of 14 islands:

No.	Island	Area		Population	Height		Highest peak	Geographic Location
		sq mi	km ²		feet	m		
Northern Islands (Northern Islands Municipality)								
1	<u>Farallon de Pajaros (Uracas)</u>	0.985	2.55	—	1,047	319		<u>20°33'N 144°54'E / 20.55°N 144.9°E / 20.55; 144.9 (Farallon de Pajaros)</u>

2	Maug Islands	0.822	2.13	—	745	227	(North Island)	<u>20°02'N 145°19'E / 20.033°N 145.317°E / 20.033; 145.317</u> (Maug Islands)
3	<u>Asuncion</u>	2.822	7.31	—	2,923	891		<u>19°43'N 145°41'E / 19.717°N 145.683°E / 19.717; 145.683</u> (Asuncion)
4	Agrihan (Agrigan)	16.8	43.51	—	3,166	965	Mount Agrihan	<u>18°46'N 145°40'E / 18.767°N 145.667°E / 18.767; 145.667</u> (Agrihan)
5	Pagan	18.24	47.24	—	1,900	579	Mount Pagan	<u>18°08'36"N 145°47'39"E / 18.14333°N 145.79417°E / 18.14333; 145.79417</u> (Pagan)
6	<u>Alamagan</u>	4.29	11.11	6	2,441	744	Alamagan	<u>17°35'N 145°50'E / 17.583°N 145.833°E / 17.583; 145.833</u> (Alamagan)
7	<u>Guguan</u>	1.494	3.87	—	988	301		<u>17°20'N 145°51'E / 17.333°N 145.85°E / 17.333; 145.85</u> (Guguan)
8	Sarigan	1.92	4.97	—	1,801	549	—	<u>16°43'N 145°47'E / 16.717°N 145.783°E / 16.717; 145.783</u> (Sarigan)
9	Anatahan	12.05	31.21	—	2,582	787		<u>16°22'N 145°40'E / 16.367°N 145.667°E / 16.367; 145.667</u> (Anatahan)
10	<u>Farallon de Medinilla</u>	0.328	0.85	—	266	81		<u>16°01'N 146°04'E / 16.017°N 146.067°E / 16.017; 146.067</u> (Farallon de Medinilla)
Southern Islands (3 municipalities)								
11	<u>Saipan</u>	44.55	115.38	62,392	1,555	474	Mount Tapochau	<u>15°11'06"N 145°44'28"E / 15.185°N 145.74111°E / 15.185; 145.74111</u> (Saipan)
12	<u>Tinian</u>	39	101.01	3,540	558	170	Kastiyu (Lasso Hill)	<u>14°57'12"N 145°38'54"E / 14.95333°N 145.64833°E / 14.95333; 145.64833</u> (Tinian)
13	Aguijan (Agiguan)	2.74	7.1	—	515	157	Alutom	<u>14°42'N 145°18'E / 14.7°N 145.3°E / 14.7; 145.3</u> (Aguijan)
14	<u>Rota</u>	32.97	85.39	3 283	1,611	491	Mt. Manira	<u>14°08'37"N 145°11'08"E / 14.14361°N 145.18556°E / 14.14361; 145.18556</u> (Rota)
Northern Mariana Islands		179.01	463.63	69,221	3,166	965	Mount Agrihan	14°08' to 20°33'N / 144°54' to 146°04'E

History of the CNMI's Forest Conditions: (as derived from CNMI Forestry Resource Plan of 1987)

To understand the current condition of the Commonwealth's natural resources, it is necessary to be aware of the historic forces, which have shaped them. The islands have experienced over 350 years of domination by foreign governments. Natural resources under the Spanish and German administrations experienced a gradual change, as farming and copra production were encouraged, exotic animals and plants were introduced, and attempts were made to exploit more land. The German government encouraged coconut plantations in an attempt to develop a copra industry. The subsequent clearing of native forest began a succession of events that would lead to the loss of almost all-native forest on Saipan and Tinian.

The brief German administration of the early 20th century was replaced by a production oriented Japanese government, which proceeded to accomplish remarkable development in a short period. On Rota, Saipan and Tinian, most accessible areas were cleared of forest and put into agricultural production, primarily sugarcane. New forests of sosugi (*Acacia confusa*) were established to provide fuel

wood. With the exception of inaccessible and unsuitable lands, the native forests were replaced with farms and plantations. World War II, with its heavy fighting in the Marianas, caused many farms to be abandoned and further damaged existing forests. 2! A notable exception was Rota, which was not invaded as was Saipan and Tinian. Both to combat soil erosion and replace the vegetative cover on the land, *Leucaena leucocephala*, known locally as tangantangan, was selected for aerial seeding on Saipan and Tinian. As a fast growing leguminous tree, it ...quickly established itself and became widely distributed! This tree now dominates much of Saipan and Tinian, forming pure stands that shade out and compete with most other vegetation found on non-rocky soils. Recently, the tangantangan has been showing signs of decline. An insect known as a psyllids, first observed in the CNMI in April, 1985, has caused much of this visible decline in the tangantangan. It may even kill the trees if the infestation persists at epidemic levels. Clearly, a vigorous forestry and natural resources effort is called for. Today, for the first time in over 350 years, the people of the Marianas are self-governing. In an attempt to become more self-sufficient, development and business are being encouraged in various ways. As a result, impacts on present resources are being felt. Tourism is now the number one industry. Farming and cattle ranching activities, although limited, occur on all three islands. A growing population needs land for home sites. All of these activities are stressing water supplies, raising land values, and increasing energy demands. Recreational opportunities, where once adequate, are becoming limited from overcrowding and overuse. In short, the overall pursuit of development is causing the degradation of the natural resources of the Commonwealth. This can be controlled only if conservation and development efforts proceed in harmony.

CNMI Forest Resources:

On tropical islands, forests serve as critical cover for fragile soils, cultural and traditional resource corridors. Where healthy forests are present, island life is enhanced by clean, fresh water, productive soil that stays in place, abundant wildlife, and healthy reefs and lagoons that provide seafood and countless resources for native islander's traditional needs. When island forests are destroyed, the soil is washed down slope by tropical rains. Fresh water becomes scarce, wildlife disappears and corals sicken and die from sediment and chemical changes caused by too much soil. Forests are thus of critical importance in maintaining all of the most necessary things that sustain human life: water; soil; food. In addition, forests provide cool, beautiful places for people to enjoy nature. When carefully managed, forests also can provide a sustained yield of medicine, food, fuel, fiber, lumber, and poles to meet the needs of island people. The achievement of all of these things is made possible by the practice of forestry.

The Commonwealth of the Northern Mariana Islands' (CNMI) Department of Natural Resources (DNR) now Department of Lands and Natural Resources (DLNR) was established by Public Law 1-8 on August 10, 1978. The DLNR was empowered by that law "To be responsible for the protection and enhancement of the natural resources of the islands ... "as well as "To maintain and provide for the conservation of forests". To meet those responsibilities, in October 1982 a Forestry Section was established under the Division of Plant Industry and Extension Services; now Division of Agriculture (DOA). At the same time, a Commonwealth Forester was loaned to the CNMI from the USDA Forest Service. The Forestry Section has the responsibility of providing for the protection, management, wise use, and improvement of the forest resources of the Commonwealth. These resources are found on both public and private lands.

The history of the Commonwealth demonstrates that these resources have been subjected to damage and abuse, primarily due to intensive agriculture, war, and lack of comprehensive management. Today, the people of the Commonwealth are self-governing. One important CNMI development objective is to achieve a level of income and quality of life that will meet minimum U.S. standards! This objective will be difficult to achieve without adequate planning to insure that the remaining natural resources of these beautiful islands are conserved, protected and enhanced.

Presently, the CNMI Forestry receives about 20 percent of its funding thru in-kind under the Division's appropriation, as appropriated from the legislative thru the Departments. Eighty percent from federal financial assistance grant monies available under the Cooperative Forestry Assistance Act of 1978.

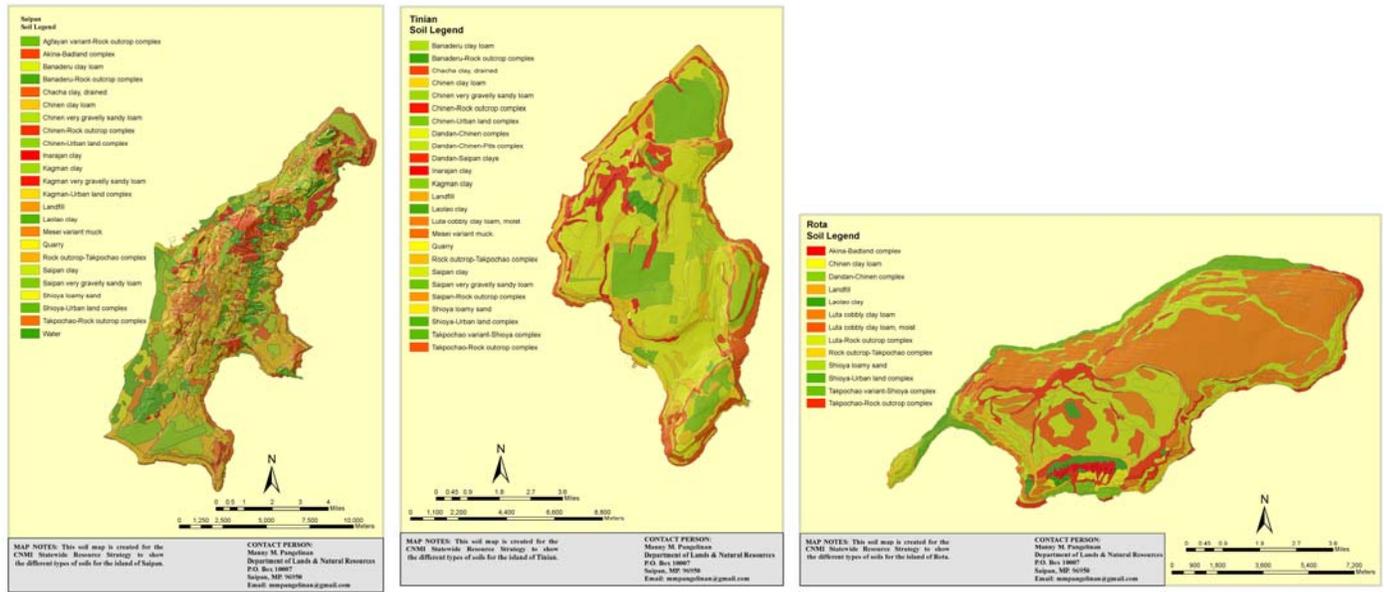
For the future of CNMI Forestry's stability, it is necessary that the CNMI government expand its support for this program. In turn the CNMI Forestry has to meet all federal guidelines and to comply with the approved farm bill as mandated by US Congress. If the CNMI in-kind financial contribution to the program can be increased, it will further promote its goals and objective while increasing the economic and self-sufficiency of the program.

Soil: Conditions and Trends

As indicated by islands in the trailing maps, shows acres of critically erodible land. The amount of land shown, estimated in 1984, is 1.7% of the total land area in the Commonwealth

Current land clearing methods often consist of piling up vegetation with a bulldozer so that it may be burned later. Valuable topsoil is included in the piles and may be lost if it is windy or raining. Removal of topsoil results in lost soil productivity. Wildfire is another serious concern for soil conservation. Repeated fires in grasslands perpetuate the grassland condition, preventing trees from reestablishing on the land. Long-term soil cover by grasslands may result in gradual soil loss and a decline in productivity. On steep slopes, soil erosion under grassland cover may be even more severe.

Most soils on the three main islands of the CNMI are of limestone origin with only a small percentage being volcanic in origin. Soils are shallow in many places, and as a result, productive areas for farming are limited. Erosion is a potential problem on most volcanic soils, and can be a problem in limestone areas, especially near roads or on recently cleared lands.



Units of Soil	Rota		Saipan		Tinian		Total	
	Ac	(Ha.)	Ac.	(Ha.)	Ac.	(Ha.)	Ac	(Ha.)
LOWLANDS	1105	(448)	2053	(831)	419	(170)	3577	(1449)
Mesei Variant	0	0	642	(260)	34	(14)	676	(274)
Shioya	55	(23)	1411	(571)	385	(156)	1851	(750)
Tapochau Variant-Shioya	1050	(425)	0		0		1050	(425)
LIMESTONE PLATEAUS	10,860	(4398)	17,779	(7201)	20,316	(8228)	48,955	(19,827)
Banaderu-Rock Outcrop	0	0	598	(243)	502	(203)	1100	(446)
Chinen-Tapochau	163	(66)	11,098	(4494)	5446	(2206)	16,707	(6766)
Chinen-Urban Land	0	0	1369	(555)	2656	(1076)	4025	(1631)
Dandan-Chinen	138	(56)	0	0	9760	(3953)	9898	(4009)
Kagman-Saipan	0	0	4714	(1909)	1092	(442)	5806	(2351)
Luta	10,559	(4276)	0	0	0	0	10,559	(4276)
Saipan-Dandan	0	0	0	0	860	(348)	860	(348)
UPLANDS	9090	(3682)	9944	(4027)	4411	(1786)	23,445	(9495)
Rock Outcrop-Tapochau-Luta	6023	(2439)	0	0	0	0	6023	(2439)

Tapochau -Chinen-Rock Outcrop	2565	(1039)	6326	(2562)	4097	(1659)	12,988	(5260)
Laolao-Akina	502	(204)	3618	(1465)	314	(127)	4434	(1796)
TOTALS	21,055	(8528)	29,776	(12,059)	25,146	(10,184)	75,976	(30,771)

WATERSHED: Suitability, Condition and Trends

A watershed is usually thought of in terms of the relationship between a water body and the water that drains into it. It is defined as the entire surface land area that drains into one body of water. Rainfall is the predominant source of water for a watershed. Rainfall enters the soil and eventually enters aquifers (Underground water bearing layers of rock or sand) from which we get much of the water we use at home.

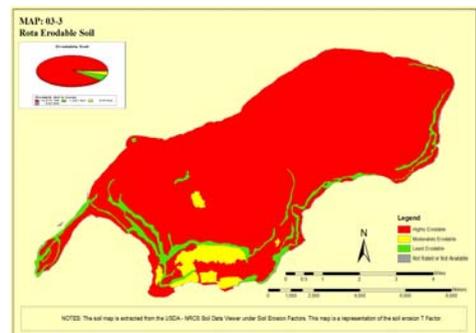
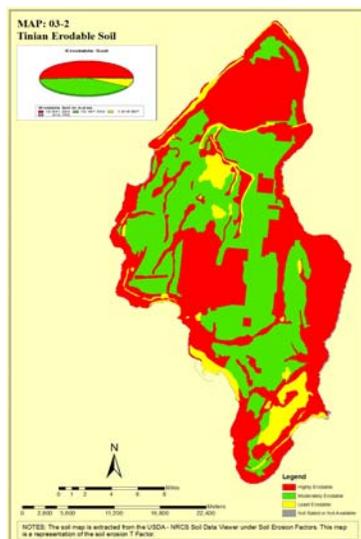
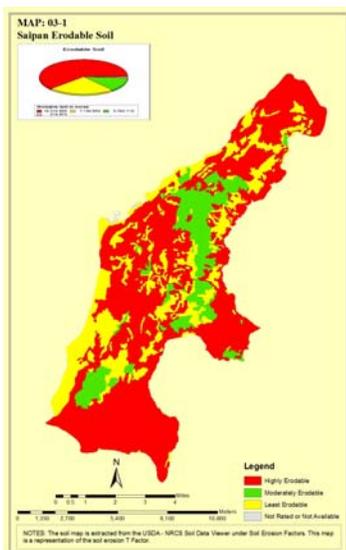
Average rainfall in the Commonwealth is 89 inches (2261 mm) per year. Because the Marianas are within the Asia proximately 75% of all rainfall occurs during these months. an Monsoon belt, there is a distinct wet season from June to November. When rainfall is heavy, the soil quickly becomes saturated with water, and any additional rainfall then runs off the land. Dense forest cover allows more water retention in the soil because root channels and humus retain more water than is possible under a cover of grass. During the dry season, rainfall is scarce. The aquifers are not replenished, and it gets harder to obtain water for our everyday use. Some wells even dry up. The quality of water in many areas is poor because of excessive salt content. As water is pumped out of the aquifers, salt water from the ocean enters to replace it when there is not enough rainfall. Salt also enters the water supply by the addition of dissolved calcium from the soil, and through fertilization. The CNMI Division of Environmental Quality continues to demonstrate that Saipan's public water system contains chloride concentrations that generally are higher than the secondary maximum contaminant level. During the rainy season these levels tend to drop somewhat because of the abundant rainfall recharging the islands water aquifer. Rota and Tinian have fewer problems because the demand for water is generally confined to one area. Their public water supplies are currently adequate, except for the new development of Sinapalo on Rota. Inadequate and leaky water distribution systems are a problem on all islands. Most water is obtained from underground aquifers found in the limestone bedrocks that predominate in the Marianas. There are also some old volcanic soils in the Marianas. Old volcanic tend to resist the penetration of rainfall, so more water runs off of the land. In these areas on Saipan and Rota there are a few intermittent streams. In addition, in these volcanic areas there is more of a soil erosion problem due to this increased potential for runoff. The land ownership pattern of our watersheds is a mixture of private and public land. As land is cleared for agriculture or for development, drainage patterns and the water absorption characteristics of the land are changed.

Much of our undeveloped land is grassland, which also affects the way a watershed will supply water to the aquifers. Grasslands are burned regularly, and this exposes the soil to erosion. Reforestation is used to improve the watershed condition of eroded areas.

ISSUES AND TRENDS:

EROSION AFFECTING THE SOIL

Soil erosion is affecting many local food sources. Not only is the loss of valuable topsoil decreasing agricultural productivity, but ocean resources are affected as reef and lagoon areas are silted in. Erosion of topsoil not only affects productivity through loss of nutrients and organic matter, but the rooting zone in an eroded soil is usually denser, has less water holding capacity, and generally can be a more difficult environment for plant growth.



SOIL AND NUTRIENT DEPLETION

Expensive fertilizer and a lack of land management skills also contribute to a reduction in soil productivity. The loss of soil nutrients in some soils is not always replaced with fertilizers or other sources of important nutrients. The use of leguminous trees for fixing nitrogen, or green manure as a fertilizer, can increase quantities of soil nutrients. Farmers are not aware of the impacts on the soil from the practices they are using. Meanwhile, nutrients lost from the land are harmful to life in the lagoon and on the reef.

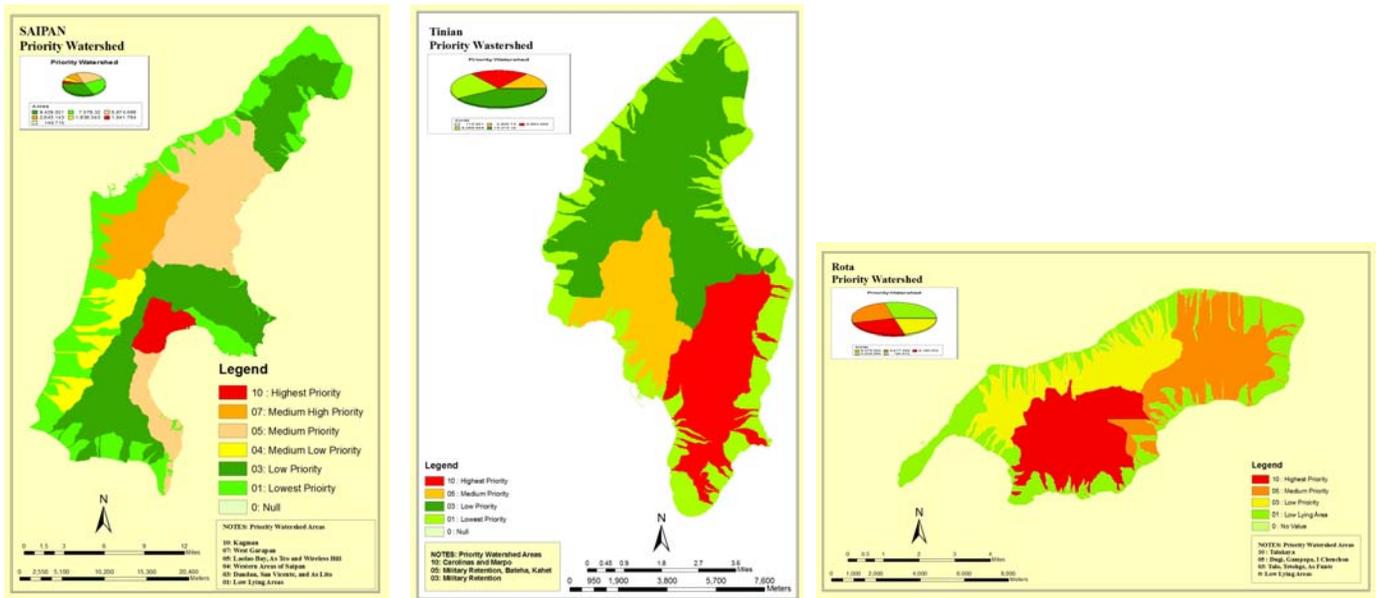
WATER SHORTAGE

On Saipan, many areas do not have water 24 hours a day. Part of this is *the* result of an antiquated distribution system, which leaks water at a rate estimated as high as 50%. Over pumping of existing wells and urban development in watersheds also contribute to the problem. Although an abundance of water is available underground, over pumping in an aquifer reduces the localized water supply beyond what can be naturally replaced by rainfall. It also causes salt water to enter the water supply. Urban development in watersheds reduces the surface area that can absorb rainfall to re-supply *the* underground aquifers.

FLOOD

Six populated areas of Saipan are subjected to flooding during heavy rainstorms and typhoons. A number of factors working together causes this, including: developing structures in natural floodplain areas; removal of vegetative cover from the land; improper design of structures that affect water runoff. This problem can be averted by reestablishing forest cover on abandoned lands now covered by grass. Forests absorb more rainfall than does grassland.

PRIORITY WATERSHED MAPS:



THEME I:

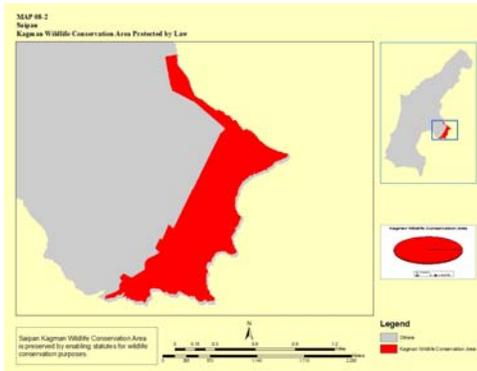
CONSERVING AND MANAGING WORKING FOREST LANDSCAPE FOR MULTIPLE VALUES AND USES:

A large proportion of the CNMI’s forestland and wildlife habitat is already legally protected as public land. Protected areas cover X% of the CNMI, meeting the Micronesian Challenge target of 20% of terrestrial areas to be placed into conservation. This large amount of protected land is a substantial management responsibility for the government. Proposed acquisitions of public land are focused on specific areas identified as critical wildlife habitat.

Public Lands: Wildlife Conservation and Protected Forest Landscape

- Saipan:
 - **Bird Island Wildlife Preserve.** Lot No. 044 A 01, as originally shown on DLS Check No. 044 A 00, recorded as File No. 89-1651 on May 26, 1989, as amended, containing an area approximately 1,182,600 square meters, more or less, subject to survey, and moreover, subject to that certain public land lease entered into between the Commonwealth of the Northern Mariana Islands and Bird Island Development, Inc. on March 1, 1997, approved by the Commonwealth Legislature on June 27, 1997 by Joint Session Resolution No. 10-7, and amended on September 25, 1997, which amendment is recorded as file no. 97-2339.

- **Kagman Wildlife Conservation Area and Forbidden Island Sanctuary.** Lot No. 019 G 01, as originally shown on DLS Check No. 019 G 00, dated November 13, 1991, recorded as File No. 91-5488 on November 21, 1991, containing an area of approximately 419.30 acres.



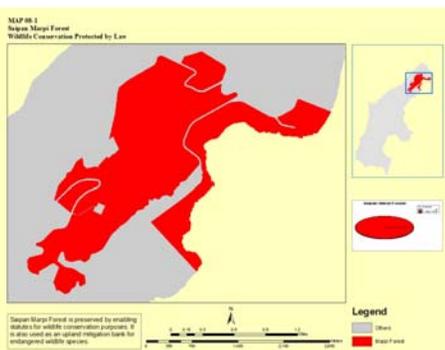
- **Marpi Forest.** The metes and bounds of the area known as the Marpi Commonwealth Forest are set forth in Attachment A to this Act, which is hereby incorporated by reference as if fully set forth. Commencing at Saipan Coordinates N60, 847.004, E61.144.23. the point of beginning; thence 65°21'34"W 563.86 meters; thence N37°40'21"W 518.05 meters; thence S45°01'09"E 399.70 meters to N59,919.33,E60,597.84; thence S37°32'52"W 538.97 meters; thence 74°06'47"W 285.56 meters; thence 47°38'04"W 819.63 meters; thence S30°35'20"W 239.24 meters; thence S63°47'50"W 226.14 meters; thence S40°14'50"W 106.29 meters; thence S88°36'12"W 166.23 meters; thence N18°54'27"W 218.71 meters; thence S47°38'04" 565.00 meters; thence N12°13'13"W 665.00 meters; thence N46°12'35"E 945 meters, more or less; thence N12°13'13"W 90 meters more or less; thence N68°50'46"E 427.22 meters; thence N46°12'35"E 466.09 meters; thence N23°12'23"W 259.54 meters; thence N12°17'34"E 320.23 meters; thence N04°38'14"E 345.00 meters; thence N46°15'83"E 201.62 meters; thence 9°48'41"E 437.42 meters; thence N35°13'40"E 193.42 meters; thence S63°56'25"E 479.53 meters; thence S47°38'14"W 239.07 meters; thence 61°54'41"E 414.52 meters: thence N62°46'25"E 237,00 meters; thence 41°11'48"E 197.62 meters to the point of beginning: consisting of 330 hectares or 1,341.47 acres more or less, but excluding here from the areas within to be determined by survey of a Department of Public Safety facility and a homestead and necessary access roads.

COMMONWEALTH FORESTS:

Commonwealth Forests are areas of land designated for management to ensure the perpetuity of forest resources in the Commonwealth. They are regarded as conservation reserves to be managed using sustained yield principles. In keeping with the multiple-use concept, Commonwealth Forests are managed to provide forest products, recreation, water, and wildlife. At the same time protection from fires and forest pest outbreaks are other important objectives. In addition, they can serve as demonstration areas for land management techniques, such as the reestablishment of natural forest cover in disturbed areas. They also provide the opportunity for people to reestablish their union with nature by allowing them close contact with it. The process of proposing a suitable area involves the selection of a large, contiguous piece of land that is representative of forested lands, and which may have other outstanding values of a historic, cultural, scenic, or recreational nature. Selected areas are chosen so as to minimize conflict with existing or proposed land uses.

Forest establishment currently requires approval of the government entity having jurisdiction over the area. The Department of Public Land has jurisdiction over all public lands within the Commonwealth. The Forestry Section under the Department of Lands and Natural Resources has assumed overall responsibility for management of the Commonwealth Forests along with the Division of Fish and Wildlife. The Forestry Section also takes the leadership role in accomplishing specific forestry projects to meet its established goals and objectives. Specific projects are coordinated with other concerned Department and Agencies, such as Division of Environmental Quality, Coastal Resource Management Office, the Historical Preservation Office, the Marianas Visitor's Bureau, and the Division of Fish and Wildlife. The Forestry Section is also responsible for maintaining reforestation projects on the Commonwealth Forests.

Marpi Commonwealth Forest Map on Saipan



LANDS PROPOSED FOR ACQUISITION FOR CONSERVATION

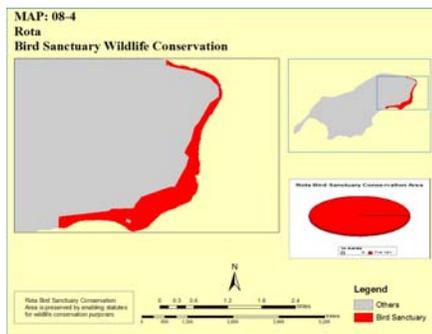
On Saipan the establishment of the conservation area in the Naftan peninsular, the southern tip of the island, and establishment of conservation area surrounding Lake Susupe and its marshland and a conservation area in the Mt. Tapochau area have been successful these past years. These conservation areas would provide much greater connectivity to the existing conservation areas in Kagman on the southeast side of the island and the Bird Island Conservation Area and the Saipan Upland Mitigation Bank to the northern side of Saipan. This would, in effect, create a conservation corridor throughout the island and its fragile ecosystem.

The accomplishment took much legislation to re-establish the Naftan Conservation Area. Inclusive is the deed of perpetuity clause as created in the legislation. For the wetland property adjacent to Lake Susupe (250 hectares) as well as for the Mt. Tapochau property (150 hectares), funds were sought after to allow acquisition of lands from private landowners.

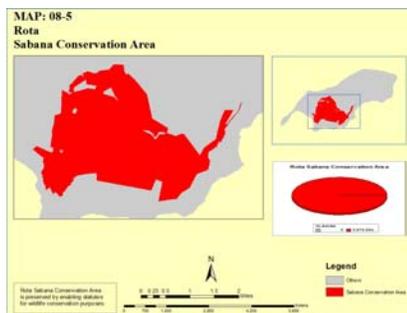
The island of Sarigan has been proposed as a sanctuary for bird, plant and wildlife species as part of the mitigation plan for the use of Farallon de Medinilla as a bombing range by the military. Sarigan is viewed as being strategically located in the middle of the Marianas Island chain and, as such, could serve to seed depleted populations on the other islands.

Rota Conservation Area

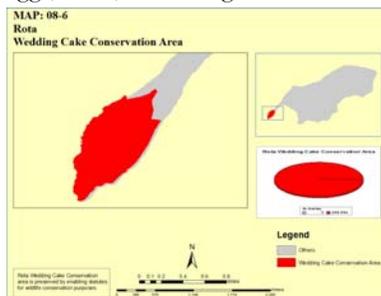
- l'Chenchon Park Bird Sanctuary is designated as a wildlife conservation area to protect the plant and animal resources of Rota for the people's continued use and enjoyment in the future. This is a not take area, so any harvesting of plants, animals, eggs, nests, etc. is illegal.



- Sabanna Heights is designated as a wildlife conservation area to protect the plant and animal resources of Rota for the people's continued use and enjoyment in the future. This is a not take area, so any harvesting of plants, animals, eggs, nests, etc. is illegal.

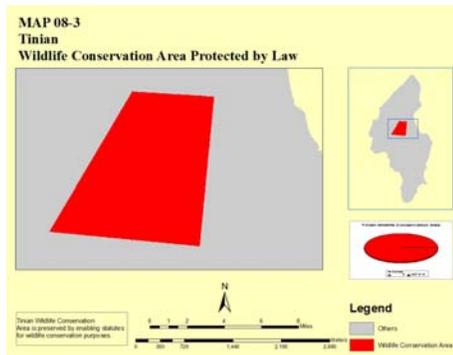


- Wedding Cake is designated as a wildlife conservation area to protect the plant and animal resources of Rota for the people's continued use and enjoyment in the future. This is a not take area, so any harvesting of plants, animals, eggs, nests, etc. is illegal.



Tinian Conservation Area

- Although there are currently no specific plans by the CNMI government to set aside any of the land now leased by the Navy as conservation areas, we have begun discussions with the government of Tinian and the Navy to set aside conservation areas as mitigation for project development on other areas of Tinian. The Federal Aviation Administration (FAA), in its Pre-Final Environmental Assessment for Airport Improvements at Tinian International Airport, proposes to set aside, in perpetuity, 379 ha of monarch habitat as mitigation with the CNMI government and the Navy.
- We anticipate conversion of portions of the remaining forests of Tinian for agriculture, military activities, resort and casino development, and housing for a growing human population in the future. A four hundred-room casino was recently completed on Tinian and two more are in the planning stages; only a total of five are permitted for the island (Mike Fitzgerald, Telesource CNMI, pers. comm. 1998). Even if additional development is permitted, it is unlikely that development or habitat destruction will approach the level that occurred during WWII within the foreseeable future. WWII was a major event, which, in conjunction with previous clearing for agriculture, culminated in the clearing of approximately 95 percent of Tinian's native forest. In addition, most of the best monarch habitat, native limestone forest, is likely to remain protected simply because the majority of it occurs along steep cliff faces, which cannot be developed.
- If all forested lands on Tinian were developed, except for the native limestone forest along steep cliff faces and the Navy-leased lands, we estimate that enough habitats would remain to support a population of 41,791 monarchs (*Monarcha takatsukasae*) (75 percent of the current population--70 percent on protected Navy lands and 5 percent in undevelopable native limestone forest outside Navy lands). <http://www.epa.gov/fedrgstr/EPA-SPECIES/1999/February/Day-22/e4206.htm>



Northern Island Conservation Area

- The conservation islands of *Maug*, *Uracas*, *Asuncion* and *Guguan*, are to be maintained as sanctuaries used only for the preservation protection and enhancement of natural resources, including but not limited to bird, wildlife and plant species. These four islands are to remain uninhabited and have a no take policy and a prohibition on entry unless the purpose is scientific research and a permit for this has been issued.
- The conservation island of Managaha has a no take policy but it may be used for cultural and recreational activities.
- The conservation areas of Forbidden Island and Bird Island are sanctuaries for the preservation and propagation of plant and wildlife species. Entry is allowed into these two sanctuaries for educational and scientific purposes.
- The conservation areas of Kagman, Marpi and the areas on Tinian (Tinian Monarch Mitigation Area) and on Rota (I Chenchon, Sabana, Tapingot) have no take policies but are not as restrictive as the constitutionally mandated conservation areas.

PRIVATE FOREST LANDSCAPES:

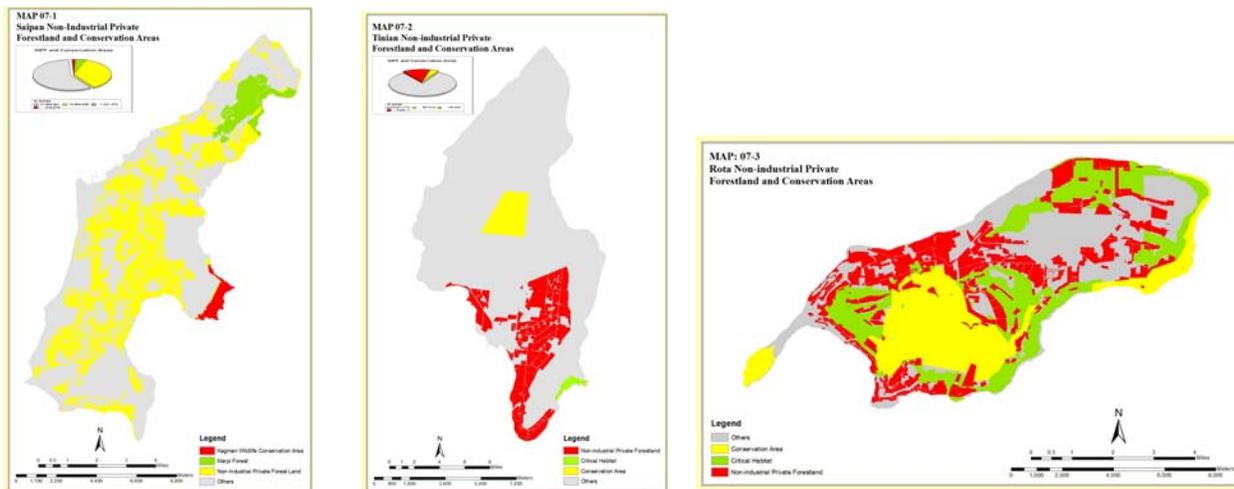
Like any U.S. Territory the land tenure system were monitored and expedited through government function similar to the United States. The CNMI maintains a U.S. democracy system under the basis of which land transaction must be transferred through legal process. In addition to forestland that is already privately owned, there is an ongoing process of distribution of public land to private landowners or leaseholders of Chamorro or Carolinian descent. A Board of Directors for Division of Public Land obtains the authority for distributing public land and forest claimed under its jurisdiction. The use of an assigned area of land for homestead lot, farming and dwelling marks the establishment of an almost permanent right to land ownership. These Divisions are working together with other departments/agencies in protecting the limited natural resources for the benefit of the CNMI.

This allows families and individuals to apply for a piece of property on available public lands based on qualifications set by the Department of Public Land. The three major populated islands are experiencing heavy pressure on its remaining available lands. Heavy pressure over land issues continuous to grow over the last few years. The recorded population has led to the expansion of the urban and rural areas. Some discussions have been initiated to look at other islands in the Archipelago to absorb the needs of the growing population.

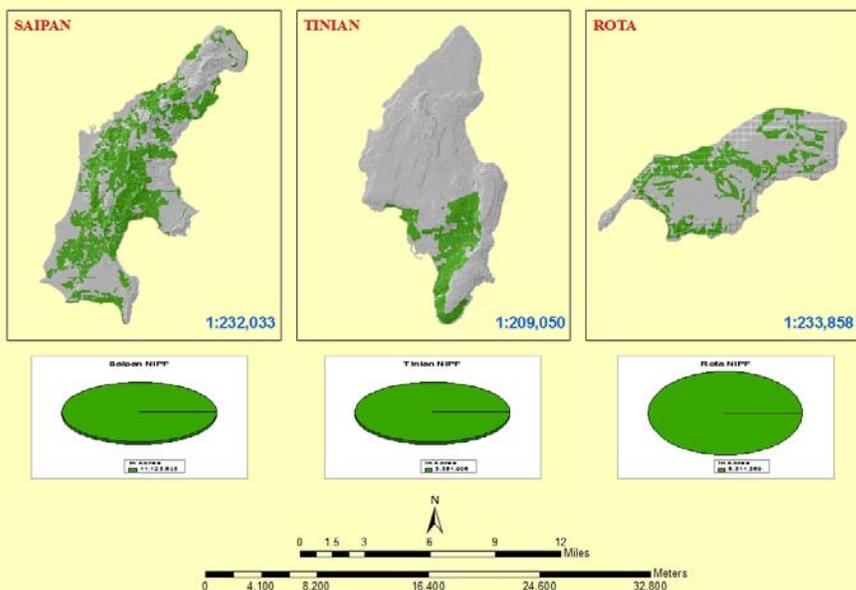
In managing these private forestlands in the CNMI, owners have been invited to partake in many federal programs that deal with good land management practices. One of these programs is called the “EQIP (Environmental Quality Incentives Program)” under the NRCS. These program avail opportunities for private forestland owners in the CNMI to implement conservation and management practices that will improve health and productivity of their forests prevent soil erosion and improve habitat for at-risk wildlife species.

The EQIP is a voluntary program that provides financial and technical assistance to eligible private forestland owners who are willing to address priority environmental issues by implementing approve conservation practices. Owners of non-industrial private forestland or land capable of growing trees may apply for the program.

For Forest Management practices, the landowner must have a Forest Stewardship Plan developed or approved by CNMI Forestry and the Forestry Advisory Council through the NRCS district conservationist. Eligible land includes cropland, pasture, private non-industrial forestland and other farmland as determined by the sponsoring agencies.



**MAP 09: 01
Non-industrial Private Forestland**



“PRIORITY AREA” MAP FOR THEME ONE – Conservation and Managing working Forest Landscape

STRATEGY MATRIX FOR THEME I

Strategy for Theme I	Program that contribute or may contribute	Resources Required	National Theme/ Objective	Performance Measure	Priority Area	Partners / Stakeholders
Management of existing public lands for conservation and biodiversity	Forestry Resource Management Competitive Grants Fish and Wildlife WUI PICCC (Pacific Islands Climate Change Cooperative) UCF and FSP	Funding Education materials and outreach Staffing Legislation	1.2 2.1 and 2.2 3.5 and 3.6	# of volunteers # of plant species used # of acres covered	Land shown as “Critical Habitat,” “Conservation Area”, “Marpi Forest” on maps 07-1,2,3 and text on pp. 10-13.	DLNR DFW Other Gov. Agencies Non-Gov. Agencies MINA Federal granters and programs (US Forest Service and US Fish and Wildlife) PICCC
Conservation of Private land	Forestry Resource Management Competitive Grants Fish and Wildlife WUI PICCC (Pacific Islands Climate Change Cooperative) UCF and FSP EQIP	Funding Education materials and outreach Staffing Legislation	1.2 2.1 and 2.2 3.5 and 3.6	# of volunteers # of plant species used # of acres covered	Land shown as “Non-Industrial Private Forestland” on maps 07-1,2,3 and map 9, text on pp. 13-14.	DLNR DFW NRCS Other Gov. Agencies Non-Gov. Agencies MINA Federal granters and programs (US Forest Service and US Fish and Wildlife) PICCC
Acquisition of Conservation Land	US Fish and Wildlife Forest Legacy (may be applicable for CNMI)	Funding Legislation Forest Assessment of need (AON)	1.1	# of Acres acquired Type of species preserved	Naftan Point Sarigan Wetlands	DLNR (Follow up on Land Acquisition done by FISH and WILDLIFE) Landowner(s)

THEME II.

PROTECTING FORESTS FROM THREATS, INCLUDING WILDFIRES, INVASIVE SPECIES, INSECT OR DISEASE OUTBREAK, AND RESTORING OR MITIGATING THE EFFECTS ON TYPHOON, FLOODING AND DROUGHT.

Invasive Species (using PIER and HEAR <http://www.hear.org/Pier/> as some of the guidelines to address invasive species)

Invasive species and encroachment on forest conservation areas are real issues that affect adversely on the health and well-being of our forests. Currently the *Coccinia grandis*, commonly referred to as scarlet gourd, is the most invasive and serious threat to the health of our forests and urban vegetative mosaic. The scarlet gourd is a recent introduction (early 1990s) that was first observed in the I Denne area near Capitol Hill and has spread covering about 80% of the island of Saipan’s.

The proposed solution is to contain the spread of this specie. This will require establishment of buffer zones and using mechanical (cut, bare root, bag and burn) and herbicidal (Garlon 3a) resources to make certain that the target specie does not spread further. The long-term solution to suppress the spread of the scarlet gourd is the release of biological control agents such as the *Acythopus cocciniae*, a stem-boring weevil and *Militia oedipus*.

CNMI Forestry also targets other invasive species thru the collaborative effort with Northern Marianas College – Cooperative Research Extension and Education Services (NMC-CREES). These targeted plant species are listed in the National Lists from <http://www.hear.org/Pier/>

In the Northern Islands, (Anatahan, Sarigan, Guguan, Alamagan, Pagan, Agrihan, Asuncion and Maug) feral animals such as goats, pigs, and cows have had a very negative impact on the environment denuding large expanses of the forest. Extermination or mass slaughter of the feral animals is a very expensive approach and at times considered to have an unethical course of action. Nonetheless, such extermination proves to be effective on Sarigan, and portion of Anatahan. A section on the island of Anatahan has been fenced to protect the village side of the island vegetation from the ravages of grazing feral animals.

These invasive and detrimental species continues to threaten the bio-diversity and security of the CNMI. The high cost of addressing these concerns highlights the need to invest more of our forestry resources on prevention of introduction of new species into the CNMI. More training and education needs to be provided or extended to the staff and management of our Natural Resource Departments.

TARGET SPECIES (National Lists from <http://www.hear.org/Pier/>)

- Strategies and Recommendation from approved sites i.e. HEAR and PIER will be taken into accounts as guide of what plant species should be looked at carefully.

STRATEGIES FOR DEALING WITH INVASIVE SPECIES: (<http://www.hear.org/Pier/>)

The first line of defense against invasive species is prevention. Ports of entry is essential, and land management officials should work closely with their plant protection and quarantine officials to make them aware of known and potential invasive species. Plant quarantine officers are familiar with many agricultural pests, but they may not be aware of pests that threaten forest or wildland ecosystems. In cooperation with the plant quarantine section, a list of noxious species to be excluded should be developed, and the force of laws and regulations should back exclusion of these species.

Education of the public about the danger of introductions is pertinent in the preventive measures. This outreach will encourage the use of native species within the CNMI. It is imperative to work with local nurseries and botanical gardens, as these are often the source of new introductions. A positive approach is to develop a "plant list" of both native and non-native species that private and public interest can be encouraged or discourage to plant.

Land managers should be alert to new species that exhibit invasive behavior. Often, these species first show up in urban or farm areas because they are usually introduced by people and tend to become established in disturbed areas. Suspicious plant species should be promptly reported. A formal evaluation should be requested for any new species that appears to be invasive or is known to be invasive elsewhere. An expert who is familiar with various species and methodology of eradication or control and can recommend further action should evaluate this. Prompt action is essential, since once a species becomes widespread, control or eradication can be extremely costly or impossible.

RECOMMENDATION WHEN DEALING WITH INVASIVE SPECIES: (<http://www.hear.org/Pier/>)

Make every effort to keep out all the invasive species developed by your local "Invasive Species Committee". These species should have a history of serious problems elsewhere, and there is no sense in running the risk that they will act the same in the CNMI.

Warning posters should be produced to alert the public and encourage reporting of any introductions. Take all reasonable precautions to prevent movement to islands where they are not present, be vigilant to detect introductions, and take prompt action if they are found.

Species listed should be considered pests and, although they may not be presently causing serious damage to forest or wild-land ecosystems, they are certainly not desirable species. Some of them may turn out to be serious problems and there is always a chance that they could be introduced to an island ecosystem where they could do serious harm. It would be best to keep them off islands where they do not occur.

Species that are native to Micronesia, exhibit characteristics of invasive behavior and should not be introduced where they are not present. A number of tree species used in forestry and ornamental plantings are, at least to some degree, invasive. While many of these species have desirable ornamental or physical characteristics, planting exotics as opposed to native species is a policy question that needs to be carefully considered. Intact native forests are the most resistant to invasion. Any measures that limit the amount of disturbance will help keep invasive species out. Invasive species threats and problems are unique to each location. Strategies to deal with the threat of invasive species and protection of forest or wild-land ecosystems need to be developed on a state-by-state or island by island basis. If needed, assistance can be requested from U.S. or international agencies. (<http://www.hear.org/Pier/>)

ENFORCEMENTS:

Manage conservation areas in accordance with the statutory mandate that created these conservation areas. This requires our conservation officers to monitor and enforce the conservation restrictions in accordance with the statutory mandate. In addition, we will monitor the health of the forests and enhance the health through planting of native species throughout the 24,000 acreage of forestlands. Signage will be used at each of our conservation areas to better educate the public on those activities that are prohibited in each of the conservation areas.

The conservation islands of Maug, Uracas, Asuncion and Guguan, are to be maintained as sanctuaries used only for the preservation protection and enhancement of natural resources, including but not limited to bird, wildlife and plant species. These four islands are to remain uninhabited and have a no take policy and a prohibition on entry unless the purpose is scientific research and a permit for this has been issued. The conservation island of Managaha has a no take policy but it may be used for cultural and recreational activities. The conservation areas of Forbidden Island and Bird Island are sanctuaries for the preservation and propagation of plant and wildlife species. Entry is allowed into these two sanctuaries for educational and scientific purposes. The conservation areas of Kagman, Marpi and the areas on Tinian (Tinian Monarch Mitigation Area) and on Rota (I Chenchon, Sabana, Tapingot) have no take policies but are not as restrictive as the constitutionally mandated conservation areas. The Forestry Section will assist in the development of management plans for each conservation area that take into account its unique forest resources, wildlife, historical resources and recreational resources.

GOALS AND OBJECTIVES ON FOREST HEALTH ISSUES:

PHYSICAL/ BIOLOGICAL

Goal (01): CONDUCT FOREST PEST SURVEY TO DETERMINE IF THERE IS ANY NEW OR UNKNOWN PEST

Objectives:

Staff and volunteers will conduct site visits throughout the CNMI Forest of approximately 24,000 acres for any pests. This survey will involved physical inspection along with available traps to determine the present of forest pest. Such survey will be aligned with the recommendation of an entomologist or plant pathologist.

Goal (02): DECIDE THE BEST APPROACH TO DEAL WITH PARTICULAR PEST AND IMPLEMENT ACTION

Objectives:

Program managers and the Forestry Advisory Council will work with Entomologist and Plant Pathologist to determine the best approach to deal with pest outbreak in the CNMI. These collaboration will be inline with the Memorandum of Agreement between DLNR and NMC-CREES.

Goal (03): EVALUATE REGIONAL PEST AND THE SUSCEPTIBILITY TO THE CNMI BASE ON INTRODUCTION, SPEED OF SPREAD, AND DAMAGES TO THE FOREST ECOSYSTEM

Objectives:

Program managers, Entomologist and Plant Pathologist will do the evaluation. This will be based on methodology approved thru scientific approach as universally understood amongst all pest evaluators. Pest origin will be noted, damages it cause, hosts, spread and life cycle will be recorded for data purposes. These projects will be lead by recognized Entomologist and or Plant Pathologist.

Goal (04): DEVELOP INFORMATION BROCHURES OR POSTERS ABOUT EXISTING PESTS IN THE CNMI. USE IT TO INFORM THE PUBLIC SO THAT UNWANTED PESTS CAN EASILY BE RECOGNIZED AND TREATED ACCORDINGLY

Objectives:

Program managers along with its advisory council will create and develop informational and educational brochures and posters to convey the importance of pest control. These resources will be shared with all ports of entry and to school students, government, and non-government agencies to share the impact of what detrimental of pest can do in the pristine forest ecosystem. These materials can also be used as mechanism to identify and prevent insects or plants species from entering or from exported as agricultural goods.

Goal (05): BENEFICIAL INSECTS WILL BE PROMOTED TO ENSURE CONTROL OF PEST OUTBREAK AND SPREAD

Objectives:

Program managers, Entomologist and Plant Pathologist will promote and aid the spread of beneficial insects to control outbreaks of current pest listed in the CNMI. New pest discovery will be researched for its natural enemies throughout the region. If any biological control has been determined, the process will undergo specificity testing prior to requesting for approval from the USDA – APHIS. The process will be shared with the US-Forest Service and other partners in the program.

Goal (06): SUPPORT THE REDUCTION OF WILDFIRES THROUGH THE REFORESTATION PROCESS, HEALTHY FOREST HAS GREATER RESISTANCE TO WILD FIRES.

Objectives:

Program managers and staff will work with other agencies and volunteer groups to develop and establish a workable project enhancing a mono forest or grassland into a healthier forest stand while reducing bio-fuel content. In the process, these healthy forests will enhance wildlife habitat, ultimately achieving a complete bionetwork of a preferred flora and fauna.

Goal (07): DISTRIBUTE AVAILABLE PLANT STOCKS TO PRIVATE LANDOWNERS AS PART OF THE RE-PLANTING PROJECTS UNDER THE FOREST HEALTH PROGRAM IN THE CNMI

Objectives:

Program managers and staff will avail healthy plant stock to clientele to aid with recovery of devastated forest. This practice will support the coverage of open spaces disallowing pest species to overtake. In additions, such practice will ensure diversity amongst forest tree and plant species.

SOCIAL

Goal (01): SEEK VOLUNTEERS TO ASSIST IN THE REMOVAL AND DESTRUCTION OF DISCOVERED PESTS

Objectives:

Program managers and implementers will seek partnership with NGO's to assist with the removal and destruction of pest on certain project sites. This practice will also bestow the idea of site adoption while attaining group-satisfaction. Methodology will depend on the target specie or site location. A recognized Entomologist and or Plant Pathologists will head methodology of removal.

INSTITUTIONAL / EDUCATIONAL

Goal (01): THE FORESTRY SECTION WILL BE COORDINATED WITH LEARNING INSTITUTIONS TO EDUCATE AND TRAIN LOCAL STAFF ON PEST IDENTIFICATION

Objectives:

Program managers, will avail local staff time to attend trainings and workshops to improve its staff skills in support of the forestry program implementation. These training and workshops will be related to forestry and its purpose towards conservation, preservation, protection and enhancement of its natural resources.

Goal (02): CNMI FORESTER AND ITS ADVISORY COUNCIL WILL WORK TOGETHER TO ENSURE PROGRAM IMPLEMENTATION GETS CARRIED OUT ANNUALLY ACCORDING TO ITS PROPOSED AND APPROVED PROJECTS

Objectives:

Program managers and staff will work with its Advisory Council to compete needed reports every quarter or upon requests. Submission of progress will be noted and reviewed by key players.

Goal (03): CNMI FORESTER AND ITS ADVISORY COUNCIL WILL WORK WITH VARIOUS GOVERNMENTS AND PRIVATE AGENCIES TO ENSURE PROPER PLANNING GETS IMPLEMENTED WITHIN ANY DEVELOPMENT OR DISCOVERY OF PEST IN THE FOREST

Objectives:

Program managers, Entomologist and Plant Pathologist will do the evaluation. This will be based on methodology approved thru scientific approach as universally understood amongst all pest evaluators. Pest origin will be noted, damages it cause, hosts, spread and life cycle will be recorded for data purposes. These projects will be lead by recognized Entomologist and or Plant Pathologist.

Goal (04): EDUCATIONAL INFORMATION REGARDING FOREST HEALTH PROGRAM AND OTHER NATURAL RESOURCES ASPECTS WILL BE MADE AVAILABLE TO ANY PUBLIC AND PRIVATE SCHOOLS, COMMUNITIES OR INTERESTED GROUPS IN THE CNMI.

Objectives:

Program managers along with its advisory council will create and develop informational and educational brochures and posters to convey the importance of pest control. These resources will be shared with all ports of entry and to school students, government, and non-government agencies to share the impact of what detrimental of pest can do in the pristine forest ecosystem. These materials can also be used as mechanism to identify and prevent insects or plants species from entering or from

Objectives:

To utilizes the five-year strategic plan, so that the forestry staff and forest stewardship council could implement proper program throughout the CNMI. Also, to use as guide for grant submission throughout the five-year funding period.

Objective:

To improve existing projects including; Arbor planting, Neighborhood Greening, Park Planting, School and Businesses Beautification, Beach Planting and Church Grounds.

Objective:

To maintain an open communication with inter-island agencies and our Federal counterpart. These communication processes would involve Phone, fax and Internet accounts.

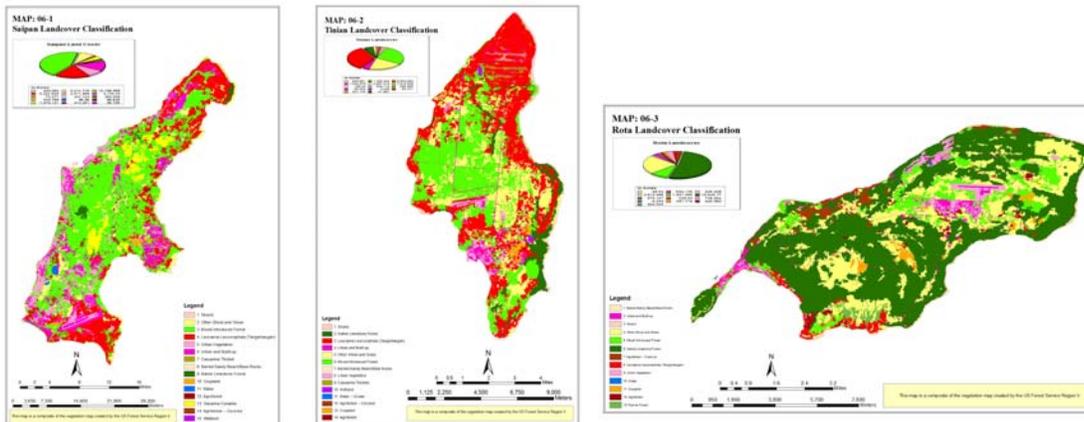
PERFORMANCE MEASURES:

A superlative performance of a Cooperative Forest Health Program rests on the acceptance of each land managers, their implementation through meeting the programs goals an objectives, raising awareness, conservation practice and participation in all aspects of tree care throughout the island’s landscape. With a successful program implementation, favorable word and action will be shared with landowners

CNMI Invasive Pest Lists:

Top Species listed to be invasive in the CNMI		
	Scientific Name	Common Name
1	<i>Coccinia grandis</i>	Scarlet/Ivy Gourd
2	<i>Mikania scandens</i>	Mile-a-minute
3	<i>Lantana camara</i>	Lantana
4	<i>Mimosa diplotricha</i>	Mimosa
5	<i>Chromolaena odorata</i>	Bitterbrush
6	<i>Mucuna pruriem</i>	Velvet Bean
7	<i>Antigonon leptopus</i>	Mexican Creeper
8	<i>Bidens pilosa</i>	Beggars tick
9	<i>Opeculina ventricosa</i>	Paper rose
10	<i>Spathodea campanulata</i>	African tulip
New Emerging Concern/Alien Invasive Species		
	Scientific Name	Common Name
1	<i>Oryctes rhinoceros</i>	Coconut rhinoceros beetle
2	<i>Eleutherodactylus coqui</i>	Coqui frog
3	<i>Wasmannia auropunctata</i>	Little fire ant
4	<i>Darna pallivitta</i>	Nettle caterpillar
5	<i>Solenopsis invicta</i>	Red imported fire ant
6	<i>Puccinia psidii</i>	Eucalyptus rust
7	<i>Quadrastichus erythrinae</i>	Erythrina gall wasp
8	<i>Aulacaspis yasumatsui</i>	Asian Cycad Scale
9	<i>Veronicella cubensis</i>	Cuban Slug
10	<i>Pbellinus noxious</i>	Root Rot Fungus

MAPS OF FOREST LAND COVER



WILDFIRE

Fire has historically been a tool for humankind, and serves important functions. However, like any tool it must be used properly, for it can be destructive if not controlled. Many users of fire in the Commonwealth today are unaware of the damage that uncontrolled fires do to the environment. As a result, most wildfires are caused by unattended fires escaping, or by fires set intentionally by hunters. The latter cause is the more serious of the two, for the hunter intends to burn as many acres of grassland as possible. This clears the area of grass temporarily, as well as destroying a portion of the adjoining forest. The new grass sprouts are a favorite food for deer. The temporarily cleared areas provide easy access for hunting. Many acres are burned annually for this reason. As a result, wildlife and their natural habitat are reduced. Repeated burning of the grasslands perpetuates its standing condition. The removal of grass cover by burning, thus leaving the soil unprotected, increases the potential for soil erosion until the grass adequately recovers.

Fire has adverse effects on the land principally by exposing bare soil to the effects of water erosion. Soil aggregates can be easily detached and moved by flowing water. The erosion hazard is quite real on this property because of the steep slopes. Because most of the soil fertility resides in the topsoil, it is imperative to prevent its erosion and the subsequent degradation of the property. Any conservation plan employed on this property will be compromised if wildfires (arson) are not controlled. Fire is a real and present danger because of the accumulated fuel. As fire appears to be the greatest threat to the natural resources on this property, fire prevention and suppression should be a part of the conservation plan.

Federal financial assistance has been availed by the United States Department of Agriculture Forest Service (USFS) to support the Commonwealth of the Northern Mariana Islands (CNMI) under the State Fire Assistance Program. This assistance is needed to continue the implementation of reducing rural fire incidences. These methodologies are thru education as well as fire protection issues presently applied by the islands. In addition to this projected activities, the CNMI is currently faced with the ever-growing wildland-urban interface developments. These developments poses more threat and hazards to the limestone forest and its wildlife residence. As outlined, emphasis will be towards mitigation and hazard assessment of all forested area in the islands of Saipan, Tinian and Rota. These projects will support all forestry activities with respect to wildland fire prevention.

In the absence of such financial assistance, not all plans and projects can be implemented or accomplished accordingly. The Cooperative Fire Assistance Plan of 2006 will be updated and will further explain the needs for federal financial assistance under the State Fire Assistance Grant Program (SFA) to fulfill and accomplish proposed plans and projects as well as to meet itemized objectives in protecting wildland and preventing unwarranted fires in the CNMI. Due to the limited equipment and work force available to the Fire Divisions, and the lack of road access to remote areas, wildfires must often be left to burn.

The Fire Divisions of the Department of Public Safety (DPS) and the Department of Lands and Natural Resources – Forestry Section have the responsibility for preventing and suppressing fires within the Commonwealth of the Northern Mariana Islands. The Forestry Section cooperates by promoting fire prevention while providing technical and financial assistance.

Currently, the Division of Fire under DPS is tasked in managing this federal programs coming into the department. In essence, it is the central office DPS that receives and implements specialized programs and grants outside the realm of local financial assistance. This department manages the financial and planning portion of the program concerning rural fire prevention and control objectives. Several responsibilities tasked under the forestry-fire programs is to develop and implement an effective fire information, education and prevention outreach throughout the general public, implement fire protection and suppression activities, and to establish a fire incident reporting system. (2006 Fire Grant Proposal)

LOSS OF NATURAL RESOURCES

Wildfires are burning many acres annually in the Commonwealth. Although they create temporary food for deer, the perpetuation of grasslands and their repeated burning on steep slopes contributes to soil erosion. The loss of more permanent wildlife habitat also results when the adjoining forests also burn. Most people in the Commonwealth are unaware of the damages caused by uncontrolled wildfires. In many instances, wildfires are purposely not reported by the public because they are not sufficiently concerned. Environmental education has been limited in the past and development and social changes are adversely affecting the environment at a more rapid pace.

The Department of Public Safety Forestry Program anticipates an increase in wildland fire incidence and activities due to the changeover of the weather patterns. The main problem we foresee in the CNMI is the continued decrease of humidity levels, which will result in an increase of wildland fire incidents. Many homeowners have relocated into these identified areas, which increases the risks of wildland fire exposures. While the communities have frequented forestlands, the forest itself has suffered great damages from fire and natural disasters. In addition, urban developments have shrunk the wildland acreage but present a risk to homeowners should a fire occur due to frequent occupancy. Arson activities are still occurring on the islands. Individuals who have no regard to the natural resources the community avails to do this practice of burning the forest and/or wildland. In addition, hunters are the other factor that affects our forest. They set fires to vegetation to replace old vegetation with new ones for wildlife to feed on while waiting for a catch. A progressive campaign and community action program to assist fire-fighting agencies in their efforts of preventing and

suppressing these fires. Other problems noted is the number of fire fighting forces versus the number of occurrences of these incidents.

In essence, the greatest problem we see for homeowners is that the lack of defensible spaces around buildings, inadequate water supply system, improper storage of hazardous materials, and lack of maintenance and poor signs & access to homeowners. This area can be remedied through an extensive guidance of implementing various programs to achieve and establish a safe and well maintained surrounding.

THE OBJECTIVES OF THE STATE FIRE ASSISTANCE PROGRAM IN THE CNMI IS TO:

1. Provide the community with an increased awareness on rural fire protection and safe burning practices.
2. Maintain and improve fire protection effectiveness and efficiency on nonfederal lands.
3. Provide a consistent information and education campaign on an annual basis to homeowners relating to fire prevention.
4. Maintain and update the Commonwealth of the Northern Mariana Islands Fire Prevention Assessment Plan.
5. Enhance communication capabilities with other State Cooperators relating to program needs.
6. Provide homeowner assistance relating to hazard fuel reduction and implementation of defensible spaces around structures.
7. Provide adequate rural fire protection and suppression services to interface and intermix settings.
8. Establish a working relation with the general community such as fanners, ranchers, and outdoor users on the importance of safeguarding our natural resources specifically forested areas.
9. Achieve higher funding benefits that exceed regular funding level earmarked for the Commonwealth of the Northern Mariana Islands (CNMI).

BASIC ASSUMPTION

1. The Commonwealth of the Northern Mariana Islands (CNMI) will maintain consistent rural fire prevention and control program to reduce unwarranted wildland fires.
2. Upgrade wildland fire fighting agencies and their services particularly in the area of wildland-urban interface intermix.
3. Provide fire protection to both State and individual landowners.
4. Establish a collaborative program with other agencies in the area of forest-wildland fire prevention.
5. Increase acquisition activities through the Federal Excess Personal Property (PEPP) program.
6. Provide the community a stable and hazard free environment.
7. Avail to technical assistance with regards to training offered.

INITIATIVE IDENTIFICATION

The following are general areas of concern for the Commonwealth of the Northern Mariana Islands State Fire Assistance Program. This five-year plan will focus on these stated issues as well as items detailing the need as they relate to the efficient and effective fire protection and suppression activities. Itemized issues and subject areas are interrelated and integrated. The Federal cooperative financial and technical support is considered the primary instrument used to target and address these issues to achieve stated objectives.

INITIATIVE 1- WILDLAND-URBAN INTERFACE

The Commonwealth of the Northern Mariana Islands (CNMO, specifically the islands of Saipan, Tinian, and Rota are faced with an increased hazard of losses with regards to wildland-urban interface (WUI) areas due to increasing relocation of homeowners from urban setting into rural settings. This problem continues to exist on a daily basis. Efforts are being made to address these issues in order to prevent major fire losses to these residents. The expected threat on these areas is considered between the months of March through July when the dry season comes in. However, weather conditions were able to disrupt the normalcy of the said season. Public Safety officials' play a key role in leading, participating in, and supporting initiatives to reduce losses with respect to WUI. In spite of previous incidence successes, several issues will remain as a key factor for all levels of wildland fire protection and suppression. The following are considered a major initiative to effectively address the goals of this program and/or activity.

1. Expand public awareness activities regarding hazards and risks associated with unmanaged fuel mitigation practices to homeowners, developers, and outdoor goers.
2. Implement an effective management technique, development of strategies, and method when dealing with wildland fire emergencies.
3. Increase training resources and sessions of wildland fire personnel in areas of WUI settings.
4. Update of modern fire fighting resources and technology relating to wildland urban interface.
5. Establish an effective understanding between urban and rural fire protection services.
6. Delineation of jurisdiction of fire agencies involved at fire incidents.
7. Emphasis to individual communities of their responsibilities as a citizen in safeguarding our resources and forested areas.

8. Work toward the introduction of legislation to enact laws or ordinances at all level of government with respect to conservation and protection of our forest.

INITIATIVE 2- TRAINING

Training opportunities has always been considered by the Commonwealth of the Northern Mariana Islands (CNMI) to be a vital element in professional development and consistency of performance. The fire service personnel has avail to these training in the past, however, future training needs are still considered to be an important element to establish reinforcement of knowledge and skills. The limiting factor with regards to wildland fire training is local funding and training schedules abroad. Presently, the CNMI is limited in finding needed training locally and must rely on either bringing instructors on-island or sending a limited number of personnel to off-island training centers. In addition, the CNMI is venturing into possible avenues to establish a an on-site cadre' of certified instructors or other "train-the-trainer" classes. With the on-going participation by the CNMI fire personnel for on-the-job training in California, we believe that this opportunity should be maintain for it provides a first-hand experience to local fire fighters when assigned with stateside cooperators. With the continued financial assistance, the CNMI fire personnel will avail to these offered training opportunities whether on-island or off-island.

INITIATIVE 3- VEGETATION MANAGEMENT

The Commonwealth of the Northern Mariana Islands (CNMI) recognizes the need for effective management in creating a healthy forest, reduce fuel accumulation and exposures, and create effective fuel breaks and fire protection measures in high-risk areas. The assistance provided to the CNMI will ensure an effective information and education program with respect to fuel management and implementing defensible spaces.

INITIATIVE 4 - FIRE EQUIPMENT DEVELOPMENT AND ACQUISITION

The Commonwealth of the Northern Mariana Islands (CNMI) expects to continue the acquisition of fire fighting equipment and fire apparatus to provide an effective and efficient fire protection and fire suppression services on the islands. The Federal Excess Personal Property (FEPP) Program and federal financial assistance are equally important for the CNMI in the acquisition of these properties. Inclusive of this program are the operational cost incurred for such maintenance performed and replacement of these equipment.

INITIATIVE 5 - INFORMATION AND EDUCATION

The Commonwealth of the Northern Mariana Islands (CNMI) have prioritized Information and Education Programs on the islands. As planned through this period, fire personnel will conduct presentations relating to fire safety to residents, business establishments, fanners, and outdoor goers. The program itself has been developed to target the islands educational system for both public and private organizations. This activity is anticipated to develop throughout the years. The goals of this campaign are to develop a fire safety conscience to the public and emphasize the importance of preserving our natural resources, specifically our forestlands as well as its wildlife.

INITIATIVE 6 - COST EFFECTIVE PROTECTION TROUGH ANALYSIS AND PLANNING

The Commonwealth of the Northern Mariana Islands (CNMI) will establish and continue identifying issues impacting rural and wildland fire protection and suppression programs as well as delineate areas for program improvement and effectiveness. The continuity of efforts and support from various fire protection and local agencies are needed to meet the ever-growing approach to rural fire protection. This activity shall focus on concepts, emphasizing interagency assistance and involvement in response phases. In addition, analysis and planning activities should be construed to various high-risk or probable areas. Effective management and monitoring of this activity will go a long ways in refining rural fire protection issues and reducing the threat of wildland fire incidents.

EVALUATION AND PRIORITIZATION

The Commonwealth of the Northern Mariana Islands (CNMI) requires a different fire protection need as compared to our US counterparts. Aside from island setup and area, organizational variations and differences in fire protection needs tailored to an island setting creates difficulty in establishing a solid prioritization lists. Issues impacting the program are basically the same, however, priorities are drawn up on a year to year basis for each project application. The programs and activities that are considered as a priority throughout this period are;

1. Federal Excess Personal Property (FEPP) which enables the *CNMI* to acquire and use equipment on a loaner basis from the Forest Service from various State Cooperators and Military Surplus (DRMO).
2. Wildland-Urban Interface (WUI) developments are considered as a growing threat to the CNMI. This activity has placed fire protection and its services to its minimum. WUI activities have doubled for the past years and are still anticipated to climb in numbers. This issue is entirely considered as a high priority on a yearly basis due to lives involved. Other initiatives and activities will vary in priority dependant on community activities and infrastructure developments in relations to interface and intermix settings. All program priorities will be re-evaluated and identified on annual basis per each fiscal project agreement submission.

ROUTING FOR THE COOPERATIVE FIRE FUNDS:

Through the collaboration between the two Departments (DPS and DLNR) it is recommended that any applicable fire funds be reverted and routed back to DLNR – CNMI Forestry. It is the responsibility of the CNMI State Forester to ensure that administrative

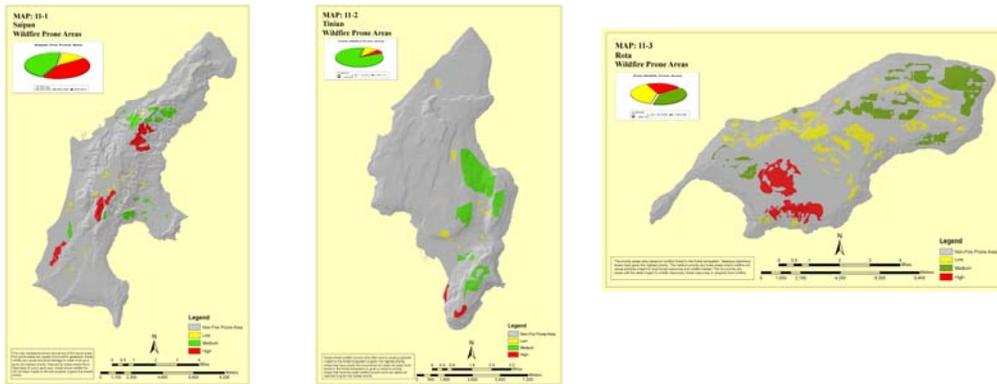
tasks under the Cooperative Fire Assistance and its programs be met as agreed under the financial assistance act of 1978. Impart of these agreement is to ensure that all program activities and expenditures be accounted and reported accordingly.

GRASSLAND (FIRE PRONE AREA)

As part of the fire, soil and water conservation, and reforestation programs, some grasslands and eroded areas will be converted to forest by planting pioneer species. Species selected for afforestation will be fast growing and fire resistant, if possible. They should also provide additional benefits such as wildlife habitat or attractive flowers to improve scenery and honey production. All species selected for planting will be evaluated to avoid the creation of new problems.

CNMI is notably a prime location for vegetation due to its climate; homeowners are frequently faced with minimal to no knowledge in effectively developing a workable vegetation management around their homes and their surrounding. With the continuous relocation and developments within rural settings around the islands, vegetation acreage has notably decreased due to such developments; however, live fuel remains to be present due to tradition and landscaping activities. These activities once unmanaged, will eventually turn into a fire hazard to each particular homeowner. Through this program, hazard fuel reduction and public education activities will be provided to homeowners in need, which will consist of prior site assessment and inspection that will be conducted by program personnel.

This assessment will be based on hazard criteria's and vulnerability of such homeowners to fire. Program personnel will target approximately 60-80 communities homeowners on the island of Saipan, 20-40 communities on the island of Tinian, and around 30-50 communities on the island of Rota. The assistance that will be provided to these individuals in their efforts in establishing and maintaining a hazard fuel reduction and vegetation management program within their premises. This assistance will also be provided to other private landowners whom are in proximity to a critical infrastructure who are qualified and classed to be in an interface and/or inter-mix setting.



BADLAND

The vegetation on the Akina soils on Saipan and Rota is savannah dominated by sword grass. It is possible that trees once grew in these areas, but reforestation experience on Guam indicates that most trees grow very poorly on the Akina soils. The main reason seems to be the low content of calcium and high content of soluble aluminum in these soils. The low reaction, or acidity, of the Akina soils is an indicator of these adverse chemical conditions.... Forest plantations should not be located on Akina soils unless reforestation is the purpose for the plantation...

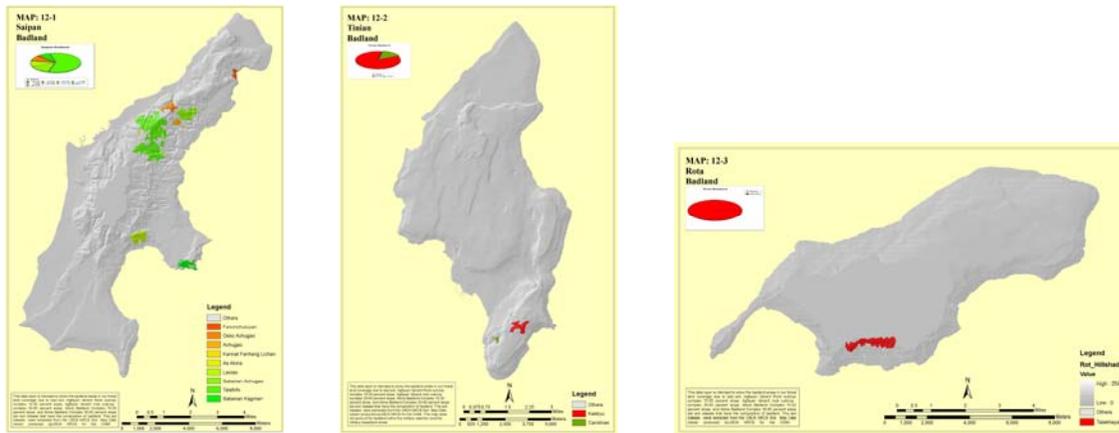
Fire perpetuates the presence of savannah at the expense of the forest. Even the calcium poor Akina soils would probably develop a forest vegetation type if fires did not kill invading shrub and tree seedlings.... Prescribed burning can be a useful tool for clearing or managing land, but wildfire can quickly destroy a young forest plantation. Firebreaks, created by clearing and maintaining borders around new plantations, can be used to protect trees. Fires in mature forests do not occur in the northern Marianas because of the lack of dry, burnable material on the ground.

There is a severe erosion problem on the Akina soils on Saipan and Rota. The vegetation type on these soils is savannah dominated by swordgrass. Because of the generally steep slopes and poor plant cover, soil slumping occurs. The resulting badland is slow to become vegetated naturally and is subject to intense erosion. Wildfires contribute to the problem by destroying the plant cover, leaving the soils particularly vulnerable to erosion and slumping.

The Commonwealth of the Northern Marianas Islands Department of Natural Resources is working to establish forests on the Akina soils. Once established, these forests are fire resistant and will reduce soil erosion from the sites. This will improve the watershed and provide better wildlife habitat. Prior to planting an area, prescribed burning is used to remove the existing sword grass. As the swordgrass re-sprouts, it is hand cleared or treated with herbicides. Trees are planted by hand on the steep slopes. Slow-release fertilizer should be placed in the planting hole. For 2 years after planting, competing vegetation must be controlled by mowing and ring weeding around the trees. Crown closure will suppress weeds after this.

Three years after planting, planted species should exceed 7 meters in height and 15 centimeters in diameter at breast height. Suitable species for planting on Akina soils or other areas where quick forest cover is desired are sickle leaf acacia, broadleaved acacia, da'ok, gagu, Casuarinas Cunningham, and eucalyptus. Of these, the acacias, particularly sickle leaf acacia, are the best adapted to the Akina soils. This is the only tree that is suited to Badland areas. Da'ok can be planted on the Akina soils, but it grows more slowly than the other trees do. The casuarinas species grow quickly but are flammable and therefore vulnerable to wildfire even when mature. Fruit trees are poorly suited to the Akina soils."

MAP OF BADLAND AREAS



The estimated Priority Area for wildfire objectives under Theme Two was developed by considering the need to protect values (a) existing infrastructure and a buffer of defensible space around it; (b) forest vegetation (c) critical habitat, and to address threats (d) areas that have historically burned, and (e) steep lands susceptible to rapid fire spread. See Appendix A for a complete description of map development. This map is likely to be revised with the development of Community Wildfire Protection Plans (see Strategy Matrix for Theme Two).

THREATEN AND ENDANGERED SPECIES

The original vegetation on Rota was probably very simple. On the limestone terraces, a mixed forest existed. On the lower terraces, the forest was semixerophytic, that is, dry season deciduous, and on the highest terraces, it was moist forest. The indigenous Chamorros who have inhabited Rota for three thousand years unquestionably made major modifications to the island's native vegetation. Today, some areas on Rota show evidence of having been terraced in ancient times for the cultivation of rice and taro.

Rota has two tree species, *Serianthes nelsonii* and *Osmoxylon mariannense*, and a perennial herbaceous species, *Nesogenes rotensis*, which are federally listed as endangered. *Osmoxylon mariannense* and *Nesogenes rotensis* are both endemic to Rota. The FWS has also identified three plant species found on Rota, *Lycopodium phlegmaria*, *Coelogyne guamensis* and *Nervilia jacksoniae*, as species of concern. The CNMI has also classified *Serianthes nelsonii* and *Lycopodium phlegmaria* var. *longifolium* as threatened/endangered species.

To date, only 121 specimens of *Serianthes* have been found on Rota. *Osmoxylon* is endemic to Rota where only about 20 specimens have been found. This small, unique population of *Osmoxylon* appears to be in decline as evidenced by the death of several previously mapped older trees and the lack of evidence of any new saplings being noted as new generation. The primary factors threatening these rare tree species are lack of regeneration probably caused by ungulate browsing and insect predation on seeds. Native flora of the Northern Mariana Islands evolved in an environment free of ungulates making several species vulnerable to heavy browsing. Three species of ungulates, Philippine deer (*Cervus mariannus*), feral pig (*Sus scrofa*), and domestic cattle (*Bos taurus*) are likely involved in the destruction of these tree species. Attempts to propagate *Osmoxylon* from cuttings have so far been unsuccessful. *Nesogenes rotensis* is another specie found only on Rota, thriving within the salt spray zone of Pona Point and that population is believed to consist of less than 20 individuals. (<http://www.nps.gov/pwrh/parkrota/pt4b.htm>)

Also, Rota provides habitat for several animal species listed by the FWS and the CNMI as threatened or endangered, or as candidates for listing. Three bird species, the Mariana crow (*Corvus kubaryi*), the Rota bridled white-eye (*Zosterops conspicillatus rotensis*), and the Mariana common moorhen (*Gallinula chloropus guami*) are federally listed as endangered. The Mariana fruit bat (*Pteropus m. mariannus*) is now listed as a threatened species. The Mariana crow and the Rota bridled white-eye populations have significantly declined in recent decades. The Mariana common moorhen is found at one location on Rota, the Rota Resort, where the island's only freshwater wetland habitat exists. Two species, the Mariana swiftlet (*Aerodramus bartschi*) and the Micronesian megapod (*Megapodius l. laperous*), were historically present on Rota, but have since been extirpated. A small population of the Mariana common moorhen has become established at the wastewater treatment ponds of the Rota Resort. Recent analysis conducted by the CNMI Division of Fish and Wildlife has shown that most other bird populations on Rota also have substantially declined over the past few decades.

Lower Limestone Terraces. In drier northeastern Rota where the terrain is more level and less rocky, small to medium size *Intsia bijuga* is common. The forest here is relatively low and scrubby with *Hibiscus tiliaceus* and *Pandanus* spp. being common. Other species here include *Guamia mariannae*, *Guetarda speciosa*, *Eugenia* spp., *Morinda citrifolia*, *Maytenus thompsonii*, *Triphasia trifolia*, *Polyscias grandifolia*, *Cycas circinalis*, *Flagellaria indica*, and *Caesalpinia major*.

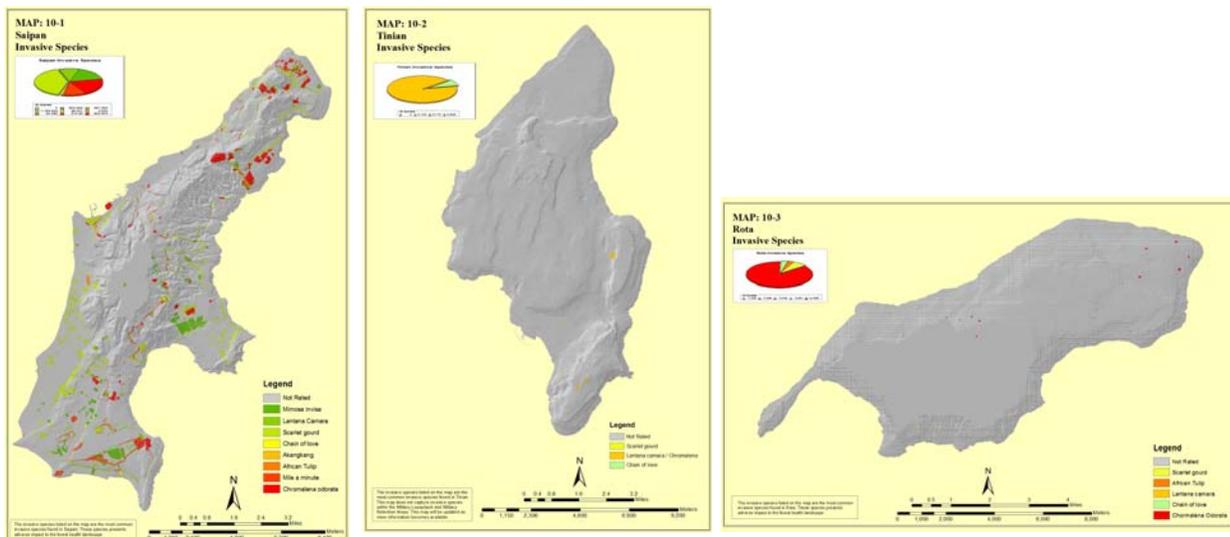
Mid-elevation Limestone Terraces. A substantial portion of the limestone terraces of the Sabana contain native forest in good condition. Species found here include: *Serianthes nelsonii*, *Heritiera longipetiolata*, *Artocarpus* spp., *Hibiscus tiliaceus*, and *Osmoxylon mariannese*. Understory species include *Macaranga thompsonii* and *Pipturus argenteus*. Epiphytes are abundant and include *Freycinetia reineckeii*, *Asplenium nidus*, *Davallia solida* and other ferns; *Coelogyne guamensis* and other orchids; and mosses.

Upper Limestone Terraces. At the higher altitudes, the forest changes to a wetter type which is very luxuriant and has a full canopy. In these wet parts the principal trees are *Elaeocarpus joga*, *Hernandia labyrinthica*, *Fagraea berteriana*, *Pandanus*, *Guetarda*, *Ficus prolixa*, *F. tinctoria*, *Artocarpus mariannensis*, *Pipturus*, *Laportea*, *Guamia*, *Claoxylon*, *Osmoxylon*, *Macaranga*, *Pisonia umbellifera* and others, with *Psychotria*, *Piper*, *Discocalyx*, *Maesa* and other shrubs and many ferns in the undergrowth. *Freycinetia* and *Alyxia* are common lianas. Epiphytic ferns and orchids are abundant.

STRATEGY MATRIX FOR THEME II

Strategy for Theme II	Program that contribute or may contribute	Resources Required	National Theme/ Objective	Performance Measure	Priority Area	Partners / Stakeholders
Implementation of Cooperative Forest Health Plan	Forest Health (Attached Addendum to SWARS) UCF and FSP	Funding Staffing	1.1 2.2	# of acres treated # of acres restored # of Volunteers (Participated)	All CNMI Jurisdiction	DLNR DFW Private Landowners
Reduction of Wildfire (Developing Community Wildfire Protection Plan)	Forest Stewardship All applicable Coop Fire (WUI) Watershed UCF	Funding Educational outreach Materials Staff	1.1 2.1 3.1 and 3.3	# of fires controlled # of acres saved # of fire volunteers participated	All CNMI Jurisdiction	DLNR DPS – Fire DPL CRMO DEQ
Forest Restoration	Forest Health Forest Stewardship All applicable Coop Fire Programs (WUI) NRCS (EQIP) UCF	Funding Staffing Planting Materials	1.2 2.2 3.4 and 3.7	# of acres restored # of projects implemented # of projects succeed	CNMI Forest Bad lands Grassland Mono Tree stand acres	DLNR DFW DPS-Fire NRCS

PRIORITY MAP FOR THEME II: FOREST HEALTH



THEME III.

ENHANCING PUBLIC BENEFITS FROM PRIVATE FORESTS, INCLUDING AIR AND WATER QUALITY, SOIL CONSERVATION, BIOLOGICAL DIVERSITY, CARBON STORAGE, FOREST PRODUCTS, FORESTRY-RELATED JOBS, WILDLIFE, WILDLIFE CORRIDORS AND WILDLIFE HABITAT, AND RECREATION.

COMMUNITY FORESTRY ASPECTS

The Forestry Section seeks to insure that the urban needs for goods and services provided by urban forest be met with the highest quality. With the Urban and Community Forestry Program, the ability to provide such services is very much a reality. This program is intended to implement good environmental protection and enhancing practices while achieving the quality of life. The kind of technical assistance provided includes approved methodology in the field of tree planting, tree caring, and tree pruning in urban development. These practices, improves the synergy relationship; improved recreation, soil, water, and wildlife resources and the reproduction of top quality plant materials.

Some of the larger public areas in the CNMI are currently under the jurisdiction of Coastal Resource Management, the Department of Public Works, the Division of Parks and Recreation, Division of Environmental Quality and the Marianas Visitor's Bureau. These agencies are members of the Forestry Advisory Council overseeing forestry programs during programs and project implementations.

The rapid growth and expansion of development left little time to consider proper vegetative planning, beautification or protection of our islands ecosystem. Most available land in the CNMI is located in an undeveloped area covered with limestone forest, ranging from the far southern to the northern coastline. Now, public lands are being divided for homestead lots as well as for governmental or commercial function. These actions resulted in fewer indigenous trees for wildlife habitat and a constant depletion of our natural resources.

Natural disasters such as Typhoon & Floods are a recurring nightmare as elsewhere in the Pacific. With the increase of developed environment, the native vegetation has been opened, allowing disasters to rip away valuable resources such as soil on erodible areas and vegetation on urban forest. In part, by the break of the urban forest, an increasing damage to homes and farms is inevitable.

As with most islands in the Pacific, CNMI urbanization occurs randomly throughout the coastal and inner fringes of the islands. This random urbanization have caused sensitive and historical areas to be disturbed and altered to meet urbanization demand.

This plan is intended to serve as a guide to instigate appropriate goals and objectives on the existing and future urban community, while coordinating existing and emerging issues for the CNMI. This plan also set forth a course of action designed to share the benefits of the limestone forest.

The future of the Urban and Community Forestry Program in the CNMI holds much promise for steady and measured growth. With references only to CNMI, Urban Forestry encompasses towns, villages, boulevards, parks, schools, churches, government areas, residential areas, commercial areas and historic memorial sites.

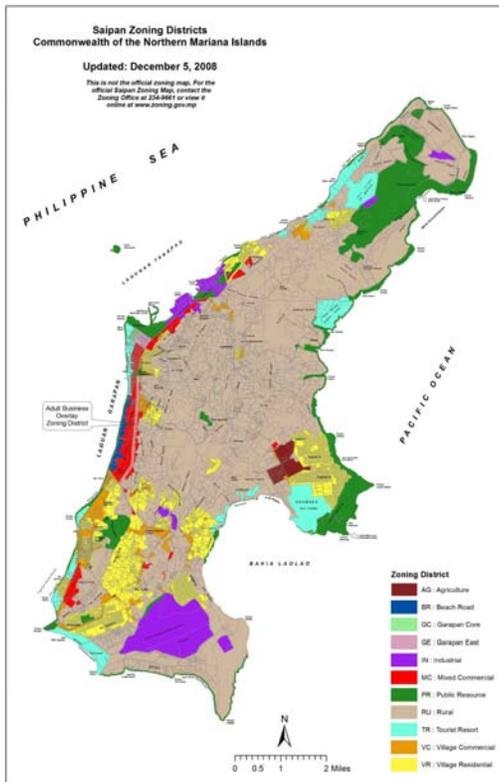
HEALTHY SUSTAINABLE FOREST ECOSYSTEM

The urban and community forestry will address the need to create and maintain healthy sustainable forest ecosystem where people live, work, and play. This healthy ecosystem includes beautification, stable shoreline, wind barriers, stable soil, clean water, diverse urban wildlife and cooler communities. In addition, this healthy ecosystem builds pride within communities along with some economic return. The ecological restoration and enhancement aspect of the urban and community forestry program will continue to encourage partnership between the USDA Forest Service, CNMI Local Leaders and the Citizens.

HOMESTEAD VILLAGE

DPL's Homestead Program was created pursuant to the CNMI Legislature's findings that many NMI residents were without the finances to purchase homes lots in order to construct safe and decent housing. There are two types of homestead programs – the village and agricultural homestead programs. The village homestead program allows eligible applicants an ample public land lot for the construction of a residential dwelling. The agricultural homestead program allows eligible applicants a sizable lot for the development and maintenance of farms crops. The dwindling inventory of public land has compelled the DPL to place a moratorium on the acceptance of village and agricultural homestead applications on the islands of Saipan and Rota. However, residents on Tinian may apply for either of these programs. Nonetheless, current applicants (who have not received their homestead permits) are highly encouraged to continually update their application packets. <http://www.dpl.gov.mp/whatwedo.php>

SAIPAN ZONING MAP



TOURISM AND ECONOMIC PERSPECTIVE

As for the CNMI economic standpoint, tourism remains a major industry for the islands economic stability. This economic factor increases the demands for expansion on the housing/land use development. As tourism industry experiences its variation, still, it influences the development of the CNMI's economic situation.

URBAN FOREST LANDSCAPE

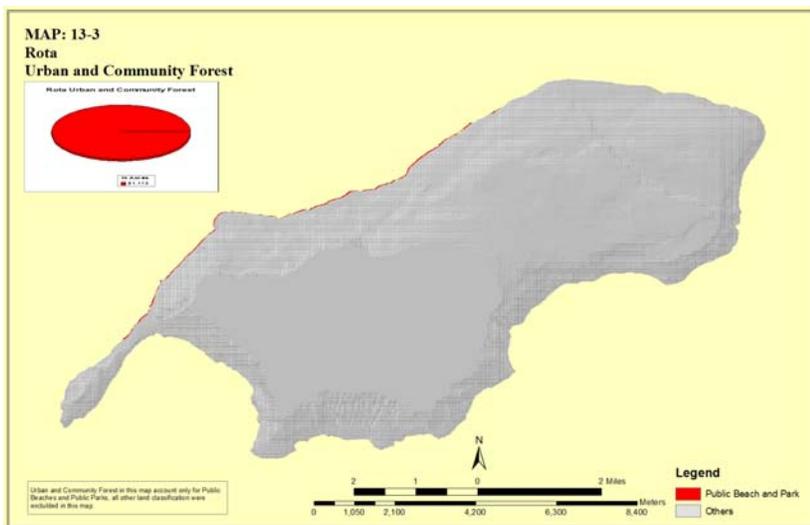
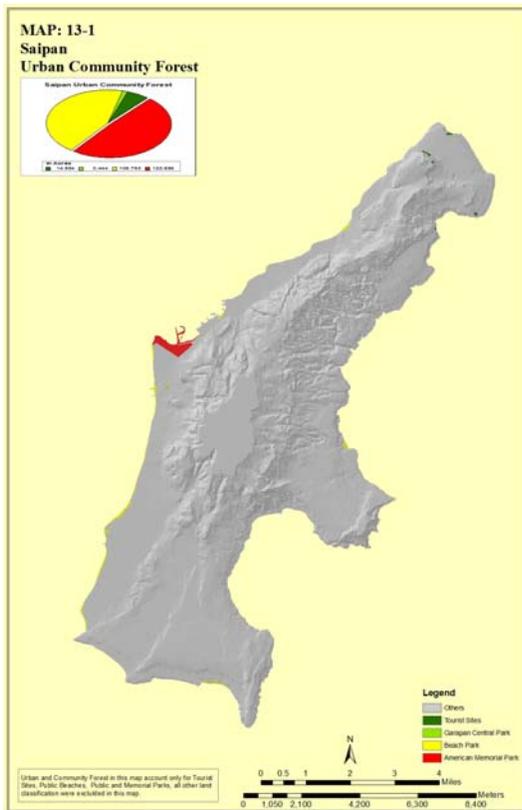
These islands have both natural and developed environments. There are native limestone forests and secondary forest within villages, parks and undeveloped areas. The urban and community forests are made up of boulevards, public parks, school/church grounds, residential areas, green belt areas, and commercial/tourist sites with accompanying backdrop of coastal zones. With references only to CNMI, its urban encompasses towns, villages, boulevards, parks, schools, churches, government areas, residential areas, commercial areas and historic memorial sites.

The three major populated islands are experiencing heavy pressure on its remaining available lands. The pressure over available land distribution for homestead uses continuous to be an issue over the past few years. Due to the increase of human population and massive construction and expansion of the urban areas, the available land will soon be diminished thru urbanization's. Some effort has been made to look at other islands in the Archipelago to absorb the needs of the CNMI's growing population.

From an environmental stand point, the Division of Environmental Quality (D.E.Q) and the Coastal Resources Management (C.R.M), Division of Fish and Wildlife (D.F.W.) and the Historical Preservation Office (H.P.O.) has maintained and continues to enforce CNMI and Federal regulation addressing environmental protection, preservation and conservation practices. These Divisions are working together for the benefit of the CNMI and the CNMI Urban forests.

PUBLIC PARKS / BEACHES

The urban and community forestry will address the need to create and maintain healthy sustainable forest ecosystem where people live, work, and play. This healthy ecosystem includes beautification, stable shoreline, wind barriers, coastal runoffs, stable soil, clean water, diverse urban wildlife and cooler communities. In addition, this healthy ecosystem builds pride within communities along with some economic return. The ecological restoration and enhancement aspect of the urban and community forestry program will continue to encourage partnership between the USDA Forest Service, CNMI Local Leaders and the Citizens.



SOCIAL AND CULTURAL VALUE (NON-SPATIAL)

CNMI has been described by professional archeologists as having the most numerous, most intact, and generally the unique prehistoric sites of any of the islands in the Mariana Archipelago. The indigenous Chamorro people have continually occupied the island for three millennia. For many Chamorros throughout the CNMI, the island of Rota specifically is considered their cultural home.

The social changes and economic developments that took place, reshaped Guam, Saipan and Tinian since the end of World War II have had comparatively little effect on the island of Rota. The absence of major and intensive military activities during and after World War II and the lack of a large-scale tourism industry have permitted Rota to retain many tangible aspects of its ancient cultural heritage.

The Mariana Archipelago contains the remains of civilian and military sites or features related to the Japanese period and there are a few structures remaining going back to the German period and the Spanish colonial period.

Starting in the early 1970s, several surveys have been carried out by professional archeologists. These surveys covered most of the islands in the Mariana. The earlier surveys tended to be research oriented, while those occurring over the past 15 years have been more concerned with the management of cultural resources.

Rota has two important sites, the Mochon Latte Stone Village and Taga Latte Stone Quarry, have been surveyed several times during which excavations were carried out. During one of the surveys of Mochon, a small test pit was excavated at the base of one of the latte stones. The charcoal sample taken from the near the bottom of the test pit revealed an uncalibrated date of about 500 B.C. Other findings include; assemblages of latte, stone quarries, pottery shards, rock shelters, and water wells. Burials were uncovered at some of the sites.

One issue now facing the CNMI is the federal requirements under the Endangered Species Act (ESA) for the conservation of three endangered plant species, two endangered bird species, and one threatened mammal species, the Mariana fruit bat. These species and other rare plant, animal and invertebrate species are all found on Rota. As noted, Rota's forests comprise some of the most intact and extensive native primary forests remaining on any of the islands of the Mariana Archipelago. Since nearly all of the native limestone forest originally found on the islands of Saipan and Tinian either was destroyed during World War II or has since been altered by commercial or residential development, the protection of the native forest on Rota is an issue of importance to the entire Commonwealth.

The 1996 Rota Economic Master Plan for Rota called for the development and implementation of an island wide Habitat Conservation Plan (HCP) to address ongoing issues with regard to habitat requirements for the endangered Mariana crow while also allowing the development of agricultural homesteads. The "no take" requirements of the ESA have prevented some Rota residents from being able to obtain agricultural homestead permits. The MPLA is currently negotiating with the U.S. Fish and Wildlife Service (FWS) to legally use the I Chenchon Bird Sanctuary and adjoining areas as long-term mitigation for the loss of Mariana crow habitat. The ESA requires mitigation not only for Rota's currently proposed homestead projects, but also for other future projects that may adversely affect the habitats of threatened or endangered species.

CULTURAL RESOURCES

Surveys have also taken place along Rota's southern and southeastern coasts. These surveys included the Alaguan area where surface scatters of cultural materials have been described by professional archeologists as the "richest they had observed." A major (370 acres) archeological survey of the area immediately northeast of the summit of the Sabana revealed the presence of more than 200 features of the Japanese period. No evidence of prehistoric use was found in this area.

The most extensive archeological work on Rota occurred in 1992 when nearly 1,600 acres were surveyed in the Dugi, Gampana, As Nieves and Chenchon areas for the MPLC. The survey was carried out to compile baseline resource information needed for the preparation of a HCP for the homestead project area being proposed in the eastern part of the island. During the survey, a total of 79 individual sites were recorded, and 48 of these were determined to be prehistoric. Nine of the prehistoric sites were selected for subsurface testing and typical latte period features were recovered from each of the sites. The calibrated dates of these features ranged from 1000 to 1700 A.D.

Three of the four significant prehistoric sites described below are listed on the National Register of Historic Places and one has been nominated for listing on the Register. Authorized under the National Historic Preservation Act of 1966, the National Register of Historic Places is part of a nationwide program to identify, evaluate, and protect historic and archeological resources. Properties listed on the National Register include districts, sites, buildings, structures, and objects that are significant in archeology, history, and culture. The National Register helps preserve these significant historic places by recognizing their irreplaceable heritage. Sites on the National Register are recognized nationally as highly significant and worthy of preservation. CNMI residents particularly value the four sites described below for their cultural value and importance. (<http://www.nps.gov/pwrh/parkrota/pt4b.htm>)

WILDLIFE

During the last 350 years, native wildlife in the Commonwealth has been greatly affected by habitat loss, as well as by introductions of new, exotic species. Yet, besides the numerous species of native birds, various mammals and reptiles can still be found. Many of the species traditionally used for food are being threatened by over hunting, especially on Saipan and Tinian. These include the introduced, Sambar deer, and the native coconut crab and fruit bat. Responsibility for the protection and enhancement of wildlife in the Commonwealth lies with the Department of Lands and Natural Resources, Division of Fish and Wildlife. Current efforts to reverse the trend of declining wildlife populations include limited hunting seasons, wildlife population assessments, and a habitat improvement program. Benefits that can be realized from larger wildlife populations include more resident and non-resident hunting licenses, and opportunities for photographing and watching wildlife.

The Forestry Section assist the Division of Fish and Wildlife by concentrating on the protection of Commonwealth Forests and the improvement of habitat needed by wildlife. In addition, the Forestry Section has the capacity to grow trees and other plants that Fish and Wildlife requires for their habitat improvement projects.

One of the important ways that wildlife habitat can be improved is by identifying, collecting, and replanting species of vegetation that have been lost from one or more of the Mariana Islands, which are known to provide some benefit for wildlife. The Luta Commonwealth Forest on Rota has forested areas more representatives of the original forests of the Marianas than those found on Tinian or Saipan. These forests can serve as a source for seeds or cuttings to be used to improve the forests elsewhere. A diversity of vegetation types, including native forest, must be maintained and protected to assure the continued presence of scarce wildlife species within the CNMI. The establishment and management of a system of Commonwealth Forests and Wildlife Areas is an attempt to accomplish this goal. (See addendum ~ CNMI Forest Resource Plan of 1987)

In recent memory, most social events included food that was harvested locally. Deer, coconut crab, and fruit bat are popular dishes. With the exception of Rota, these traditional foods have almost disappeared from the table. Deer on Tinian have not been sighted since 1976. Fruit bats on Saipan and Tinian are rarely sighted. Although population estimates have only recently been undertaken, there is a growing concern that these animals are disappearing.

Because our native forest cover has been so drastically changed by colonial era conversions, war, and introduced plant pests, the quality and quantity of habitat for native wildlife has declined significantly. Native plant species and their associated communities are now found in sizeable areas only on Rota. As a result, Rota has the best native wildlife populations remaining in the Commonwealth

ENHANCE WATER QUALITY AND QUANTITY

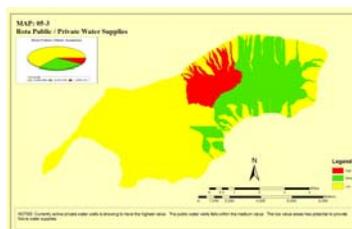
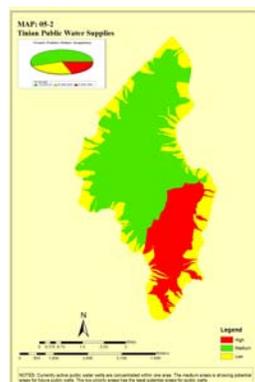
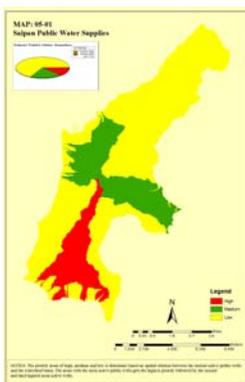
The public water system is currently not able to satisfy the ever-increasing demands placed on it by commercial development and rapid population growth. The Commonwealth Utilities Corporation (CUC) is the operating agency that acts as a “wholesaler” selling treated water to private sector retailers. Often these private firms add further treatment, like desalination, and sell water to the public or provide it to its employees. Retailers that sell or give water to more than 25 people are called “Public Water Systems,” or firms that get water directly or consecutively from a CUC pipeline. There are currently 45 Public Water Systems (PWS) on Saipan and Tinian, where approximately nine to seven million gallons is pumped from Saipan’s underground aquifers. In order to meet the demands for water, 11 new water wells were opened and eight pipeline projects were completed in 1998, with an additional 14 wells opened in 1999.

In addition to deep-water wells, facilities on Saipan, Tinian and Rota make use of reverse osmosis and rainwater catchments systems. On the island of Saipan, freshwater is derived from primarily deep wells and springs. The CUC operates 138 wells on Saipan, three springs, and a rainwater catchments facility. Water is pumped from these places to reservoirs where the water is treated. The majority of the treated water source is either chlorinated groundwater or spring water that has been infused with chlorinated groundwater. The most prevalent contamination sources are from inorganic contaminants (salts and metals from storm water runoff, discharge from septic tanks, or industrial wastes); organic chemical contaminants (volatiles from gas stations, septic systems, and storm water runoff); microbial contaminants (bacteria, viruses and protozoa derived from sewage treatment plants, agricultural livestock, and septic systems); pesticides and herbicides (discharge from agricultural operations, storm water runoff, or residential users of such chemicals); and radioactive contaminants (can be naturally occurring from gas operations or mining).

On the island of Tinian, freshwater is derived from a Maui-type well and three deep wells near Marpo. The majority of the water source is chlorinated groundwater. The most prevalent contamination sources are from natural erosion, fertilizer and sewer discharge or runoff, toxins derived from corroded materials such as batteries, paints, and galvanized pipes.

On the island of Rota, freshwater is derived primarily from water caves and deep wells (used in times of drought). The majority of the water source is chlorinated groundwater. The most prevalent contamination sources are from natural erosion, discharge & runoff from orchards, glass and electronics, drilling wastes, metal refineries, battery wastes and paints, fertilizer and aluminum factories, animal wastes, leaking septic tanks, sewage, corrosion of galvanized pipes, and discharge from petroleum discharge (perhaps WWII by-products).

MAPS OF PUBLIC WATER-WELLS AND AQUIFER:



A large portion of the CNMI’s population resides near coastline. With climate change, coastal residents will experience sea-level rise and increasing frequency and ferocity of storm surges exacerbated by the loss of coastal vegetation. Flooding of low-lying property, loss of coastal wetlands, beach erosion, and damage to infrastructure and saltwater contamination of drinking water are all likely impacts of climate change in the CNMI. Majority of these island villages have already experienced increased flooding and coastal erosion. Worsening conditions may require the relocation of many small coastal villages at taxpayers’ expense.

FOREST IMPACTS

Climate change is expected to bring about immense changes in forest composition and health. Studies show that catastrophic wildfire in populated areas may be one of the most costly effects of climate change. These changes allow the unwanted pest to encroach and overtake pristine forest. This outbreak challenges the ability for the native forest species to regenerate and continue to flourish, as it should be.

ACTIVELY AND SUSTAINABILITY OF MANAGE FORESTS:

Much of the active and sustainable practices were driven by the idea and methodology of restoration, conversion and enhancement of flora and fauna species. These protected and conserved acreages host the majority of these native and values species [see table of species]. The initiative to continue species of interest that thrives in Limestone Forest encompasses the symbiosis of the limestone’s true flora and fauna ecosystem.

[Native trees and shrub species]

SPECIES*	COMMON NAME (Chamorro)	ENGLISH NAME
<i>Artocarpus altilis</i>	Lemai	Seedless breadfruit
<i>Artocarpus mariannensis</i>	Dokdok	Seeded breadfruit
<i>Morinda citrifolia</i>	Lada	Indian mulberry
<i>Ficus tinctoria</i>	Hodda	Banyan
<i>Ficus prolixa</i>	Nunu	Banyan, Strangler fig
<i>Psycotria mariana</i>	Aploghating	Psycotria
<i>Pouteria obovata</i>	Lalaha	Pouteria
<i>Neisosperma oppositifolia</i>	Fagot	Neisosperma
<i>Guamia mariannae</i>	Pepei	Guamia
<i>Premna obtusifolia</i>	Ahgao	False elder
<i>Eugenia palumbus</i>	Agatelang	Eugenia
<i>Terminalia catappa</i>	Talisai	Pacific almond
<i>Ocrosia mariannensis</i>	Langiti	Lipstick tree
<i>Pipturus argenteus</i>	Amahadyan	Silvery pipturus
<i>Melanolepis multiglandulosa</i>	Alum	Melanolepis

Restoration strategy:

Much of the forests flora setting is a mixture of native and introduced or established species throughout the Micronesia. Certain species thrives mainly on Rota, a 32.97 square miles landscape, hosts endemic species known as *Seriantbes nelsonii*, *Oxmoxyulum mariannensis* and the *Tabornea Montana*. These species are listed in the Threaten and Endangered lists, and is protected by Section 7(a)(2) of the Endangered Species Act of 1973,. With the listed “Protected and Conserved landscapes”, monitoring efforts continues throughout the year for threats that may impose on the continuance of its intended ecosystem.

ENHANCING PUBLIC BENEFITS FROM FORESTS, INCLUDING AIR AND WATER QUALITY, SOIL CONSERVATION, BIOLOGICAL DIVERSITY, CARBON STORAGE, FOREST PRODUCTS, FORESTRY-RELATED JOBS, WILDLIFE, WILDLIFE CORRIDORS AND WILDLIFE HABITAT, AND RECREATION.

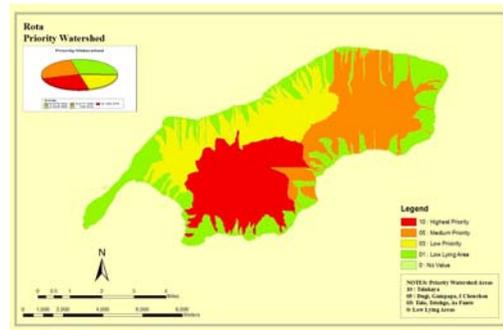
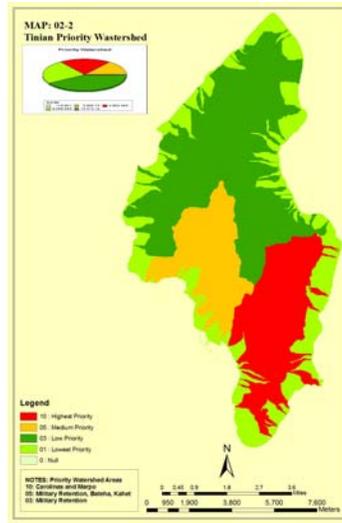
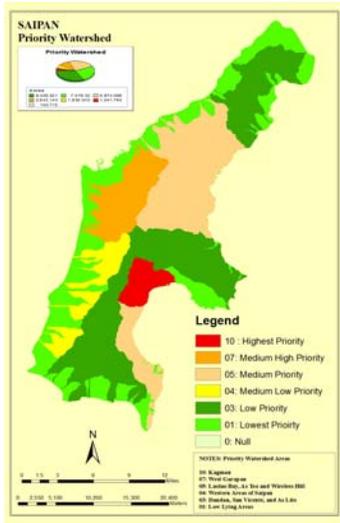
Strategy Matrix for Theme III

Strategy for Theme III	Program that contribute or may contribute	Resources Required	National Theme/ Objective	Performance Measure	Priority Area	Partners / Stakeholders
Watershed Restoration	CFHP	Funding Staffing	1.2	# of acres restored	CNMI Forest Bad lands	DLNR
	FSP		2.2	# of projects		DFW

	WUI NRCS	Planting Materials	3.4 and 3.7	implemented # of projects succeed	Grassland Mono Tree stand acres Laolao and Talak Haya	DPS-Fire NRCS CRMO NMC-CREES
Enhance Outreach to private Landowners	Forest Stewardship Urban Forestry DPS – WUI EQIP – WHIP - CAP - CSP	Funds Staffing Equipmen ts Planting Materials	1.2 2.2 3.3, 3.4 and 3.6	# of landowners reached # of acres planted Types of plant species used	All private land (SAP)	DLNR DPW DPL NRCS CRMO NGO
Upgrade or Enhance existing tree stand on Parks and Recreational places	Urban Forestry DPS – WUI EQIP – WHIP – CAP - CSP	Funds Staffing Equipmen ts Planting Materials	1.1 2.2 3.4 and 3.6	# of on-the-ground projects # of volunteers assisted # of tree species used	All Public Access and Resting spots	DLNR DPW DPL NRCS CRMO NGO
Certification and Training Forestry related courses	Urban Forestry Coop Fire ISA	Funds Technolog ies Education al Resources	1.2 2.2 3.3, 3.4 and 3.7	# of Staff certified # of workshops and training hosted # of volunteers participated	All Public and Private Access	DLNR DPW DPL NRCS CRMO DEQ NGO

Conservation Action Plan (CAP)
Wildlife Health Incentive Program (WHIP)
International Society of Arboriculture (ISA)

Conservation Stewardship Program (CSP)
Environmental Quality Incentive Program (EQIP)



PRIORITY AREA FOR THEME III: WATERSHED

Note: This map specifies the entire watershed on Saipan Rota and Tinian. Its priority falls within these red-colored areas. The approach in deriving the weight of importance is based on active and prone areas of soil erosion and land degradation through lack of or poor vegetation. See appendixes on page 30 for further explanation on Maps and priority landscapes.

SUMMARY:

The CNMI Statewide Assessment and Resource Strategy is a comprehensive document that encompasses all programs and projects that deals with Forestry in general. The approved of the Farm Bill Sec. 8002 drove the development of this document's *Long-Term Statewide Assessment and Strategies for Forest Resources*. With this developed resource and strategy plan, congress and the US Forest Service will have the general overview of the CNMI-Forests and its landscape thus help make the determination in programs and its funding distribution. This developed Statewide Assessment and Resource Strategies (SWARS) conveys the majority of the programs and concerns brought forth by the SWARS Council and its counterpart as issues and threats as well as benefits that deals the CNMI's fragile ecosystem.

At most, the content of this strategic plan talks about terrestrial and its current floral and fauna status. It is good for five (5) years – 2010-2015 only, with options to amend simply to improve its methodology of program delivery and application and to update changes addressing landscape issues. As for other non-applicable programs, this may be sought after in the near future, thus were inserted in the matrix system, allowing the ability of land managers to develop as the need arises.

As CNMI progresses into the future, its natural resources become more threaten by economic development. These developments include the urbanization requirements such as homestead establishment and recreation areas. With this plan, forestry program may have the funded capacity to continue working with colleagues and counterparts to ensure that most of its natural resources continue to be protected, conserved and enhanced as stipulated in its mission statement.

Stakeholder consultation: applicable Federal land management agencies: The only Federal lands in the CNMI are military lands and an urban park described below. The status of military lands is a sensitive issue within which CNMI-Forestry has little to no power to conduct consultation. Military lands were considered in the SWARS insofar as existing wildlife plans have taken habitats and populations of rare species into consideration as a result of previous consultation including the US Fish & Wildlife Service. Military lands are on Tinian, which has a flat interior and no watershed issues requiring consultation. As for any potential relocation of military facilities, CNMI-Forestry's role was to ensure that any development be cross reference with other regulating agencies, i.e. Division of Environmental Quality, Coastal Resource Management, Historic Preservation Office and the Division of Fish and Wildlife in regards to natural resources. Through these agencies, forestry can provide technical and practical approach in employing best management practices of preservation, conservation and mitigation. In addition, forestry stands as a provider of seeds and or seedling source for any replanting and mitigating projects.

The American Memorial Park is situated on 133 acres (54 hectares) of land along the western side of Saipan; the Park commemorates those who fought in the Marianas campaign of World War II. The Park's concept of a "living memorial" offers activities enjoyed over half a century ago by American service men and women. Visitors to the Park can enjoy similar activities today, including water sports, tennis, softball, jogging and bicycling. Bordering the Park is Micro Beach, one of Saipan's finest white sand beaches, beckoning windsurfers, snorkelers, sunbathers and picnickers. A photographer's fancy, Micro Beach provides a breathtaking view of Managaha Island and dramatic evening sunsets. The park has a 1.5-mile walking path along its scenic and historic length. For the tennis enthusiast, the Park offers four tennis courts with night lighting for evening sets. The Park's modern 1,200-seat Amphitheater is a popular stage for a wide variety of local events such as the annual Liberation Day Celebration, arts and craft festivals, concerts, and graduations. The local government operates a public marina, which is integrated within American Memorial Park.

One of the best-kept secrets in American Memorial Park is a 30-acre wetland and mangrove forest. Consisting of mudflats, marshes, and mangroves, this remnant habitat is now quite scarce in the Northern Marianas. The wetland is an excellent environment for native bird species, including the endangered Nightingale Reed-Warbler.

American Memorial Park features a Court of Honor and Flag Circle, where the names of more than 5,000 American soldiers, seamen, and airmen who died in "Operation Forager" (the World War II battles for Saipan and Tinian islands) and in the Battle Of The Philippine Sea are inscribed. The Court of Honor and Flag Circle was dedicated in 1994, coinciding with the 50th anniversary of Operation Forager. Over 100 veterans of the Marianas and Iwo-Jima campaigns of World War II returned for the 50th Anniversary Commemoration ceremonies to pay tribute to their fallen comrades.

A carillon bell-tower in the park tolls every half-hour. At certain times of the day, bells chime the American and the Marianas Anthems, a selection of patriotic tunes, hymns, and songs of hope and cheer. The carillon plays *Taps* each evening to honor those who paid the ultimate sacrifice in the fight for freedom. American Memorial Park is managed by the National Park Service, in partnership with the Government of the Commonwealth of the Northern Mariana Islands (CNMI). <http://www.nps.gov/archive/amme/main.htm>

The information retrieved for this entire document is a compilation of various resources and approved strategic/management plans that deals with natural resources. With emphases on national themes as derive from the Farm Bill of 2008. Through these approached the council highlighted areas, projects of interest, and build matrixes that would identify potential partnership with other agencies that can be forged to achieve best management practices. These matrixes also indicate other programs that may contribute resources and project success.

The CNMI-Forestry Advisory Council (CFAC) is a body of professionals and individuals with interest in protecting and enhancing the CNMI's landscape. This council oversees all forestry programs and operations funded under its jurisdiction. Most of these council members sat in the developmental of the CNMI-SWARS since its development. This council also represents interest in private businesses, federal programs, municipal advisors, farmers, ranchers and NGOs.

Stakeholder consultation: State Technical Committee: The "State" Technical Committee convened by the NRCS in the Pacific is intended to cover all Pacific islands by quarterly videoconference meetings, but in fact, its membership and agenda tends to focus on Hawaii. The NRCS suggested that SWARS consultation be conducted through the CNMI Local Working Group convened by NRCS staff on the CNMI. To comply with this requirement, DLNR consulted with the CNMI NRCS District Conservationist extensively.

Whereas each development and changes on the SWARS Review, the listed agencies and technical committees was provided with copies and reports of what has and will be discussed.

Stakeholder consultation: State wildlife agency. The Division of Fish and Wildlife, Wildlife Section, is a part of the Department of Lands and Natural Resources, which prepared the SWARS. Laura William of DFW is listed above as key personnel in the CNMI’s SWARS Development.

Stakeholder consultation: Lead Agency for the Forest Legacy Program. Not applicable; the CNMI is not currently engaged in the Forest Legacy Program.

Stakeholder consultation: State Forest Stewardship Coordinating Committee. The Forest Stewardship Committee in the CNMI is called the “CNMI Forestry Advisory Council,” which also serves as the state-wide Urban & community forestry Advisory Council. Current membership is as follows. The CNMI Forestry Advisory Council was consulted in the development of the SWARS at group meetings on a quarterly schedule. The Chairperson for the Forestry Advisory Council provided the updates and changes made in the development of the CNMI-SWARS and were also consulted as individuals.

THE CNMI-FORESTRY ADVISORY COUNCIL:

Private Business owners and NGO’s:

- o Mr. Frank DLG Aldan (Chairperson for CNMI-Forestry Advisory Council – 2009 / 2011, Owner of Saipan Zoo and Tropical Garden Landscaper)
- o Dr. Tony Stern (Owner of Marianas Medical Center and Wireless Ridge Plant Nursery)
- o Mr. Vicente S. Borja (Owner of Uncle Ben Studio and Saipan Farm – also a Cooperator of the Forest Stewardship Program)
- o Samantha Sablan (Chairperson for the Marianas Islands Nature Alliance)
- o Mr. Isidoro T. Cabrera (Private Consultant for the all Agricultural Practices)

Agencies and Technical Groups:

- o Ms. Nerissa Benavente (Capital Improvement Project Coordinator)
- o Mr. James Eller (District Conservationist for the Natural Resource Conservation Services)
- o Mr. James Manglona (Rota Forester – Rota Department of Lands and Natural Resources)
- o Mr. William Torres (Vice-Chairperson for the CNMI-Advisory Council and also the Advisor for the Saipan Municipal Council)
- o Mr. Manuel M. Pangelinan (Chief Administrator for the Department of Lands and Natural Resources and also the GIS person for Forestry Projects and Programs)
- o Dr. Dilip Nandwani (Plant Pathologists – Northern Marianas College – Cooperative Research Extension and Education Services)
- o Ms. Ana C. Agulto (Planner Coastal Resource Management Office)
- o Ms. Laura William (Biologist for the Division of Fish and Wildlife – Department of Lands and Natural Resources)
- o Mr. Tim Lang (Planner for the Division of Environmental Quality)
- o Officer Daniel Suel (Manager CNMI Forest Fire – Department of Public Safety)
- o Ms. Brook Nevitt (Planner Coastal Resource Management Office)
- o Mr. Benjamin Cepeda (Beautification Manager – Saipan Mayor’s Office)

Supporting Staff and Group: (none-voting body)

- o Mrs. Susan B. Deleon Guerrero (CNMI Forestry Program Coordinator)
- o Ms. Thelma Taitano (Forestry Technician)
- o Mr. Jason A. Tenorio (Forestry Technician)
- o Mr. James N. Babauta (Forestry Technician)
- o Mr. George Moses (Director of Saipan Agriculture)
- o Honorable Ramon Dela Cruz (Tinian Mayor)
- o Mr. Richard K. Ferrell (Tinian Resident Director for Lands and Natural Resources)
- o Honorable Melchor A. Mendiola (Rota Mayor)

KEY PERSONNEL AND ROLE IN THE SWARS DEVELOPMENT:

<u>Name</u>	<u>Title and Department</u>	<u>Position in the SWARS document</u>
Dr. Ignacio T. dela Cruz, D.V.M	Secretary, Department of Lands and Natural Resources (DLNR)	Main contact and expenditure authority
Victorino C. Deleon Guerrero, Jr.	CNMI Forester - DLNR	Writer and editor of SWARS Document
Nerissa A. Benavente	Program Coordinator – CIP	Writer and editor of SWARS Document
James Manglona	Rota Forester – Rota DLNR	Writer and editor of SWARS Document

Manuel M. Pangelinan	Chief, Administrative Services, DLNR	GIS Analyst
Paul Camacho	GIS Specialist – DLNR	GIS Analyst
Marianne Teregeyo	Special Assistant to the Secretary, DLNR	Writer and editor of SWARS Document
James Eller	District Conservationist - NRCS/USDA	State Technical Committee
Dr. Dilip Nandwani	Plant Pathologist - NMC-CREES	Technical Committee
Dr. Marisol Quintanilla	Entomologist / Nematologist - NMC-CREES	Technical Committee
Mr. Isidoro T. Cabrera	NMC-CREES Ag. Advisor	Technical Committee
Daniel Suel	Program Manager - DPS/Fire	Technical Committee
Ana C. Agulto	CRMO	Technical Committee
Brooke Nevitt	Planner – CRMO	Technical Committee
Sam Sablan	MINA – NGO	Technical Committee
Laura William	State Planner – DLNR – DFW	Technical Committee
Frank DLG. Aldan	Forestry Advisory Chair – NGO	Technical Committee
George M. Moses	Director of Agriculture – DLNR – DOA	Technical Committee
Vicente S. Borja	Agriculturist – DLNR – DOA	Technical Committee

Acronyms:

DLNR	-	Department of Lands and Natural Resources
NRCS	-	USDA Natural Resource Conservation Services
NMC	-	Northern Marianas College - CREES Cooperative Research Education and Extension Services
PIO	-	Public Information Officer
CRMO	-	Coastal Resource Management Office
MINA	-	Mariana Islands Nature Alliance
DLRS	-	Division of Lands and Registration
DFW	-	Division of Fish and Wildlife
DPS	-	Department of Public Safety
DPL	-	Department of Public Land
DPW	-	Department of Public Works
CIP	-	Capital Improvement Projects
DOA	-	Division of Agriculture

APPENDIX A Assessment

1. Methodology for geospatial analysis
2. Detail concerning data gaps
3. References
4. Maps of priority landscapes
 - a. See addendum sheets for a full scale of Map 1-14

APPENDIX B Stakeholder and coordinating groups for the Statewide Assessment and Strategy.

1. State Forest Advisory Council
 - a. Private Business Owners
 - b. Saipan Municipal Council Advisor
 - c. Island Representative (Rota and Tinian)
 - d. Saipan Mayor's Office Representative
 - e. Representative from the educational institution - Northern Marianas College – Cooperative Research Extension and Education Services
2. State Technical Committee
 - a. Natural Resource Conservation Services
 - b. Soil and Water Conservation District
3. State wildlife agency
 - a. Division of Fish and Wildlife – Wildlife Section
4. Land management agencies
 - a. Division of Lands and Survey
 - b. Division of Environmental Quality
 - c. Coastal Resource Management

APPENDIX C Other Plans Incorporated and sited in development of the Statewide Assessment and Resource Strategy.

1. 1987 Forest Resource Plan
2. 2007 Standard State Mitigation Plan EMO

3. 2009 Wildlife and Vegetation Surveys of Asuncion Island 16-25 May 2008 (CNMI Division of Fish and Wildlife, Department of Lands and Natural Resources, Laura L. Williams, Paul Radely, Tony Castro and Scott Vogt)
4. CNMI Census 2000 (Commonwealth of the Northern Mariana Islands Summary File – 2000 Census of Population and Housing, US Department of Commerce Economic and Statistics Administration US. CENSUS BUREAU)
5. NOAA Coral Reef Ecosystem Research Plan
6. CNMI Decision Document June 23, 2003 (CNMI Coastal Non-Point Program NOAA/EPA Decisions on Conditions of Approval)
7. CNMI Local Action Strategy Fact-sheet (Erica Cochrane and Adam Turner)
8. CNMI Vegetation Map (Zhanfeng Liu, Lisa Fischer; USDA Forest Service Pacific Southwest Region, Forest Health Protection)
9. Final Bird Island Management Plan (Greg Schroer, Resources Northwest Consultant, LLC. May 15, 2007)
10. Final Kagman and Forbidden Island Management Plan (Greg Schroer, Resources Northwest Consultant, LLC. May 15, 2007)
11. Fire Grant (2006 – Ramon C. Mafnas, Acting Commissioner of Public Safety)
12. Forest Management Planning Process (November 2009 – Forest Management Planning Manual)
13. Soil Quality Agroforestry In the Mariana Island (Bob Gavenda, PHD, Soil Scientist USDA-NRCS Pacific Islands Area)
14. Environmental Assessment March 24, 2008 (Field Release of *Heteropsylla spinulosa* (Homoptera: Psyllidae) for control of *Mimosa diplotricha*)
15. Sustainable Forage and Livestock System for the Island of Tinian (Allan Sabaldica, D.V.M. CSREES-Northern Marianas College)
16. Laolao Watershed Revegetation Plan (September 2005, Natural Resources Conservation Services)
17. Agroforestry Standards (John H. Bart Lawrence, Pacific Islands Area Forester, NRCS)
18. NAASF Guide for Statewide Forest Resource Assessment (July 21, 2009)
19. Remedial Action Plan (CNMI Department of Public Safety, Marpi Point DPS Explosive Demolition Site)
20. Forest Stewardship Program (Spatial Analysis Project, June 2009)
21. Wildlife and Vegetation of Sarigan and Island (2008 Technical Report #14 (CNMI Division of Fish and Wildlife, Gayle Martin, Laura L. Williams, Justine B. dela Cruz, Nathaniel B. Hawley , Scott Vogt and Barry D. Smith, Dr. Ortwin Bourquin, Shelly Kremer and Curt Kessler)
22. Sustainable Development on the Island of Rota (Greg L. Schroer Northwest Consultant 2/10, 1998)
23. Title VIII – Forestry Subtitle A – Amendment to Cooperative Forestry Assistance Act of 1978 (Public Law 110-246- June 18, 2008)
24. Pacific Islands L Climate Change Cooperative (U.S. Fish & Wildlife Service – October 2009)
25. Rezones for Draft Zoning
26. CNMI Soil Map
27. Saipan Zoning Map
28. 2010 Statewide Forest Resource Assessment and Strategies (National Association of State Forester – Jake Donnay February 2010)
29. UCF 5-Year Plan of 2004
30. UCF 5-Year Plan of 2009
31. Cooperative Forest Health 5-Year Plan (2010-2014)
32. Forest Health Plan-Revised and Updated Version (2010-2014)
33. Five Year Cooperative Fire Protection Plan (2002-2006)

CNMI – MAPS IN REFERENCE TO THE STATEWIDE ASSESSMENT AND RESOURCE STRATEGY

METHODOLOGY FOR GEOSPATIAL ANALYSIS

As mandated by the Farm Bill of 2008 through the US-Forest Service, the Commonwealth of the Northern Mariana Islands (CNMI) through the Department of Lands and Natural Resources – CNMI Forestry has developed the first CNMI-Statewide Assessment and Resource Strategy (SWARS) for 2010 to 2015. The SWARS enables the CNMI-Forestry to continue acquiring financial assistance to develop and implement good management plans and practices while producing and maintaining a healthy forest ecosystem.

This critical component of the CNMI-Forestry plan will further provide helpful information for managing sustainable forestland in the CNMI for a long-term period. The SWARS will be the guiding and managing tool use to evaluate and strategically identify across the landscape what forest resources and threats exist. The tool will further enable the CNMI to recognize areas of opportunity to focus future forestry projects based on importance, high, medium and low.

DETAIL CONCERNING DATA GAPS

Unavailable data layer are manually digitized depicting known areas and occurrences such as fire, invasive species, and shoreline stabilization data-layers. Insofar as the invasive species data layer, known GPS points were used and then manually digitized to represent coverage. With the completion of the CNMI gained valuable knowledge with the use of GIS and the application of spatial analysis, the understanding of GIS based management tool, and the importance of spatial data. The CNMI SWARS will continue to be updated as more and better data are acquired. This is particularly useful in providing updates to the CNMI Forester, natural resources managers and planners, partners and the SWARS Council to effectively evaluate projects and program implementation.

REFERENCES

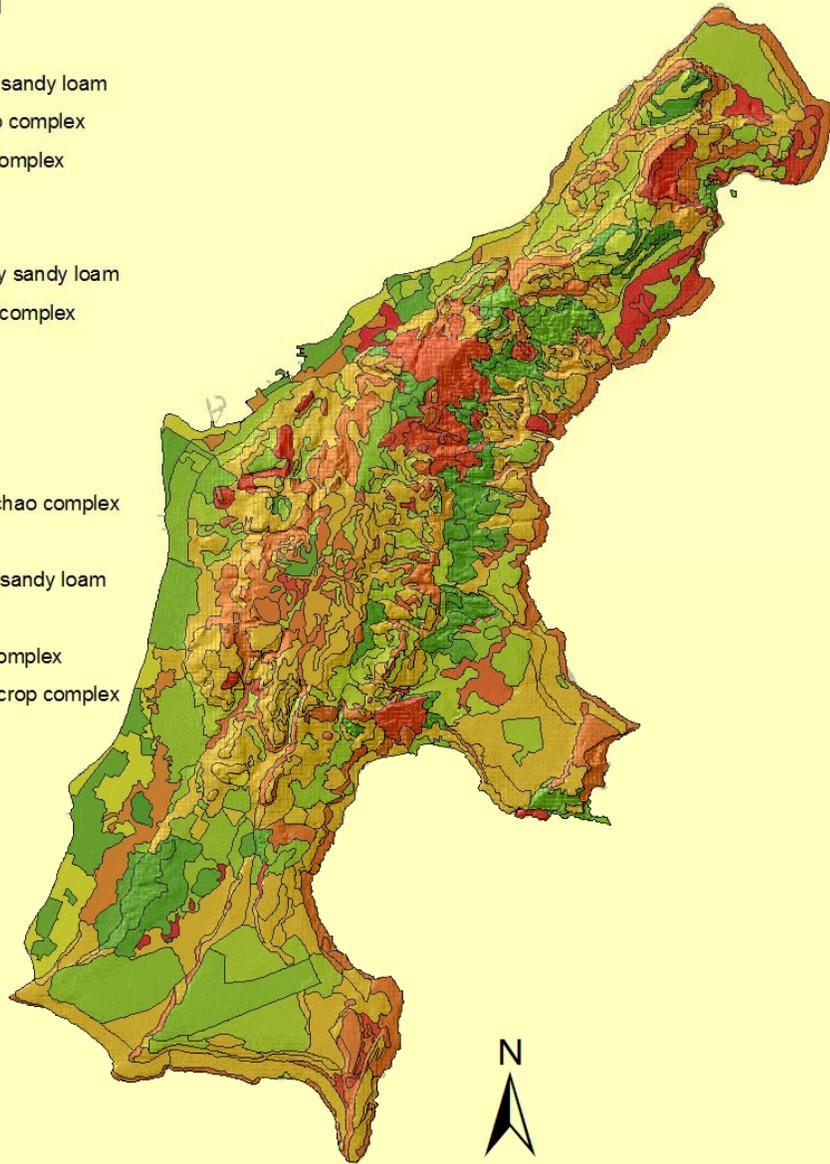
The CNMI SWARS is developed based on the national guidelines and nationally established themes. Through consultation with the CNMI Forester and the SWARS Council, fourteen data layer themes were selected, consisting of High-Medium and Low priorities (Soil Classification, Priority Watershed, Erodible Soil, Public Water Supplies, Land-cover Classification, Non-Industrial Private Forest Land, Wildlife Conservation, Invasive Species, Wildfire Prone Areas, Badland, Urban and Recreational Areas, Industrial and Business Areas). The SWARS Council based on relative importance determined a weigh on resource richness and resource threats data layers. Weighing of data layers is central in processing the suitability analysis and ultimately deriving the final map products.

A Suitability analysis was created by means of identifying and then combining all the data layers, applying a weight to each respective layer based on the National Theme. Project potentials are considered throughout the CNMI with open water, and developmental needs in mind. The result of the combined data layers when run in the model builder and reclassified using natural breaks will produce a potential delivery class of low, medium and high across the islands. The suitability analysis is used throughout the process in producing the required final maps. Five masks were created using the model builder to complete the SWARS mapping requirements.

The use of GIS and especially the application of spatial analyst is new to the CNMI. Many available data layers were initially done in AutoCAD using local coordinate system (Guam 1963). With the continued upgrade and enhancement of Arc-View, transformation on the fly from local coordinate system to WGS-84 becomes easier and friendlier.

MAP: 01-1
Saipan Soil Map Unit

- Agfayan variant-Rock outcrop complex
- Akina-Badland complex
- Banaderu clay loam
- Banaderu-Rock outcrop complex
- Chacha clay, drained
- Chinen clay loam
- Chinen very gravelly sandy loam
- Chinen-Rock outcrop complex
- Chinen-Urban land complex
- Inarajan clay
- Kagman clay
- Kagman very gravelly sandy loam
- Kagman-Urban land complex
- Landfill
- Laolao clay
- Mesei variant muck
- Quarry
- Rock outcrop-Takpochao complex
- Saipan clay
- Saipan very gravelly sandy loam
- Shioya loamy sand
- Shioya-Urban land complex
- Takpochao-Rock outcrop complex
- Water

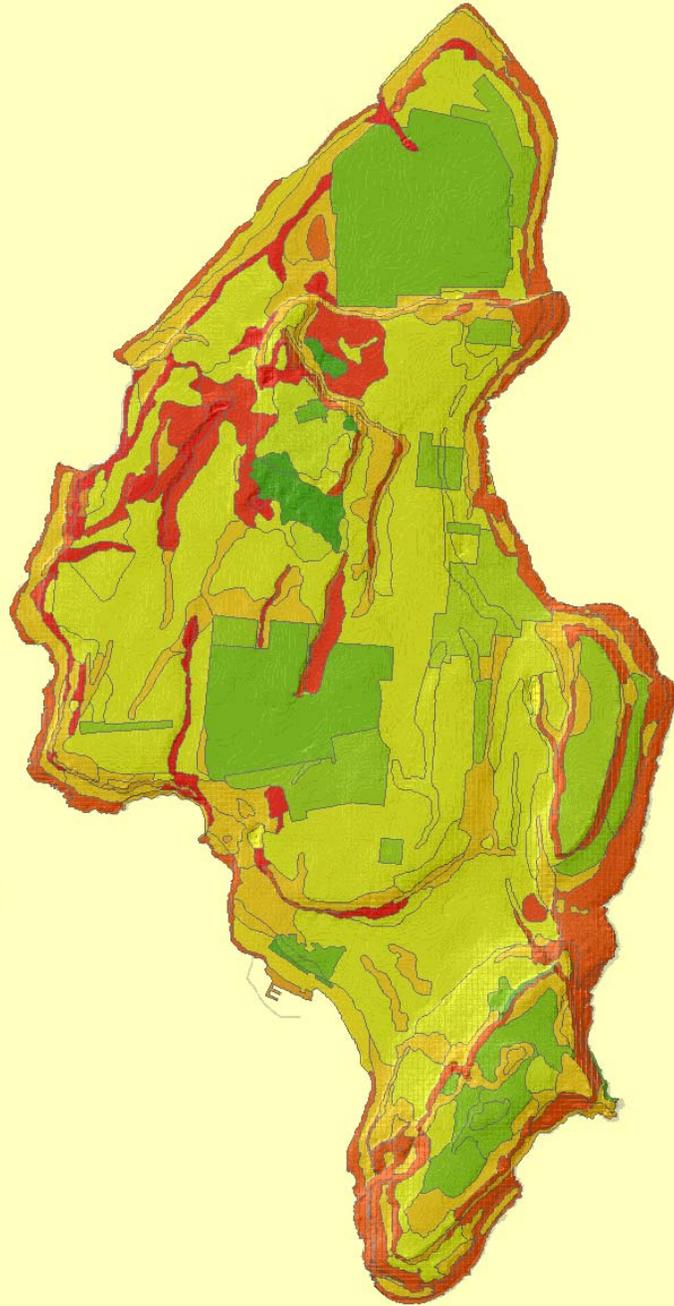


MAP NOTES: This soil map is created for the CNMI Statewide Resource Strategy to show the different classes of soil for the Island of Saipan. The soil map unit is extracted from the USDA NRCS Soil Data Viewer.

CONTACT PERSON:
 Manny M. Pangelinan
 Department of Lands & Natural Resources
 P.O. Box 10007
 Saipan, MP. 96950
 Email: mmpangelinan@gmail.com

**MAP: 01-2
Tinian Soil Map Unit**

- Banaderu clay loam
- Banaderu-Rock outcrop complex
- Chacha clay, drained
- Chinen clay loam
- Chinen very gravelly sandy loam
- Chinen-Rock outcrop complex
- Chinen-Urban land complex
- Dandan-Chinen complex
- Dandan-Chinen-Pits complex
- Dandan-Saipan clays
- Inarajan clay
- Kagman clay
- Landfill
- Laolao clay
- Luta cobbly clay loam, moist
- Mesei variant muck
- Quarry
- Rock outcrop-Takpochao complex
- Saipan clay
- Saipan very gravelly sandy loam
- Saipan-Rock outcrop complex
- Shioya loamy sand
- Shioya-Urban land complex
- Takpochao variant-Shioya complex
- Takpochao-Rock outcrop complex



0 0.45 0.9 1.8 2.7 3.6 Miles

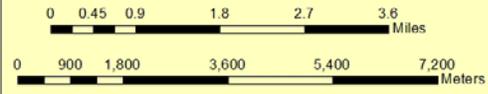
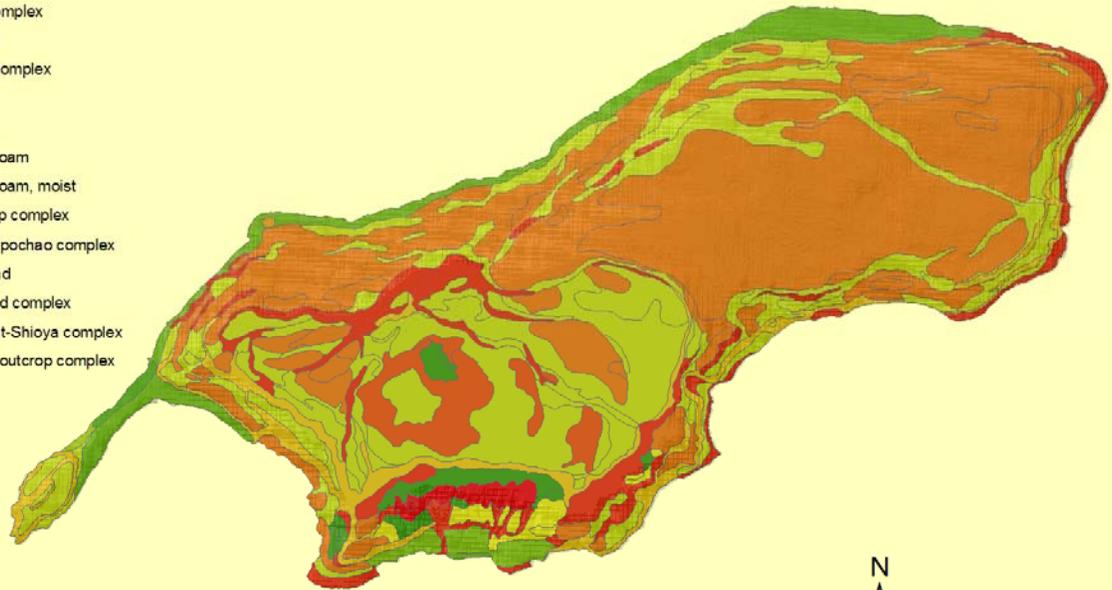
0 1,150 2,300 4,600 6,900 9,200 Meters

MAP NOTES: This soil map is created for the CNMI Statewide Resource Strategy to show the different classes of soil for the Island of Tinian. The soil map unit is extracted from the USDA NRCS Soil Data Viewer.

CONTACT PERSON:
Manny M. Pangelinan
 Department of Lands & Natural Resources
 P.O. Box 10007
 Saipan, MP, 96950
 Email: mmpangelinan@gmail.com

**MAP: 01-3
Rota Soil Map Unit**

- Akina-Badland complex
- Chinen clay loam
- Dandan-Chinen complex
- Landfill
- Laolao clay
- Luta cobbly clay loam
- Luta cobbly clay loam, moist
- Luta-Rock outcrop complex
- Rock outcrop-Takpochao complex
- Shioya loamy sand
- Shioya-Urban land complex
- Takpochao variant-Shioya complex
- Takpochao-Rock outcrop complex



MAP NOTES: This soil map is created for the CNMI Statewide Resource Strategy to show the different classes of soil for the Island of Rota. The soil map unit is extracted from the USDA NRCS Soil Data Viewer.

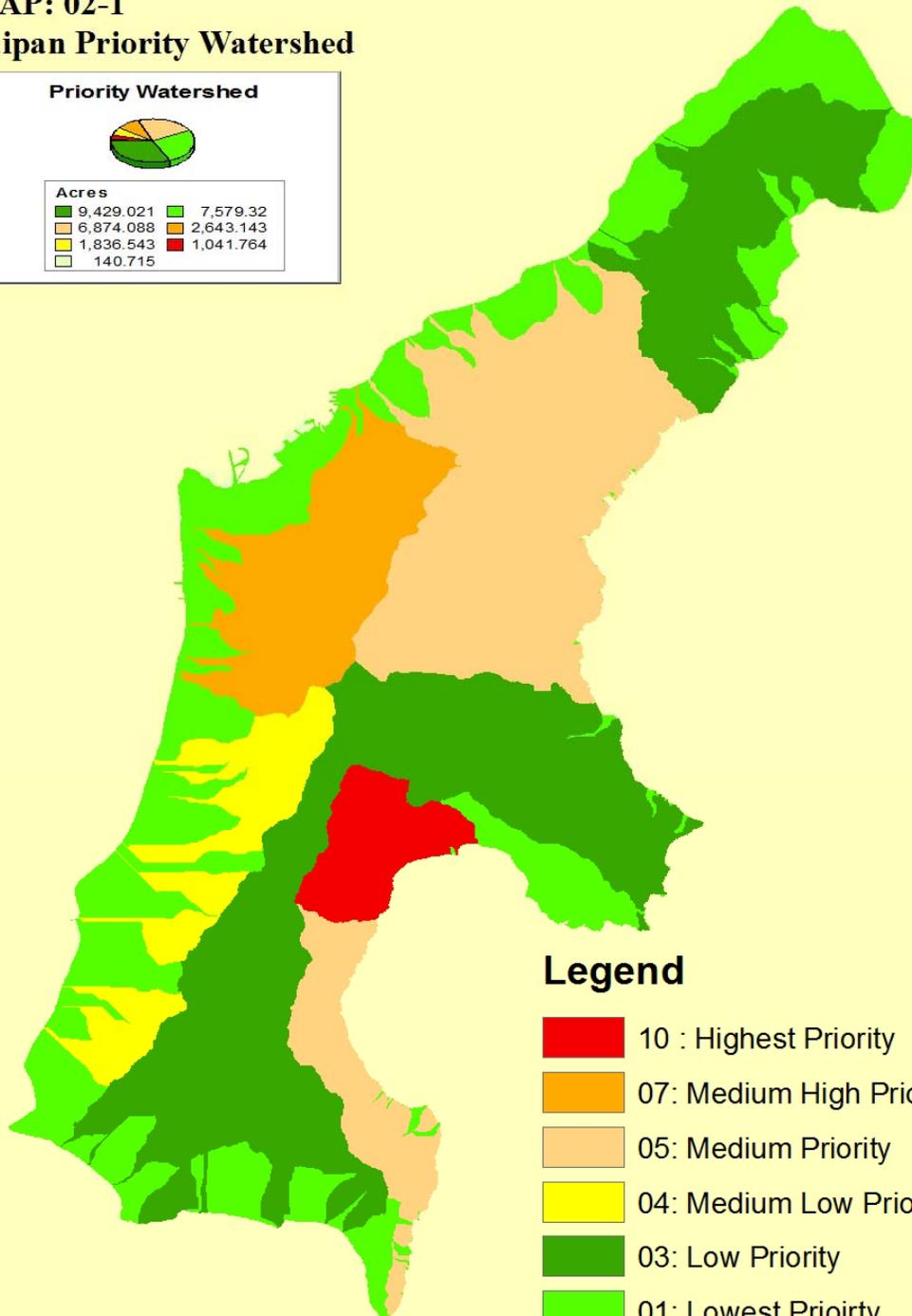
CONTACT PERSON:
Manny M. Pangelinan
Department of Lands & Natural Resources
P.O. Box 10007
Saipan, MP. 96950
Email: mmpangelinan@gmail.com

MAP: 02-1
Saipan Priority Watershed

Priority Watershed



Acres	
9,429.021	7,579.32
6,874.088	2,643.143
1,836.543	1,041.764
140.715	

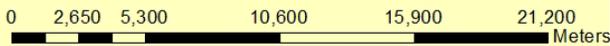
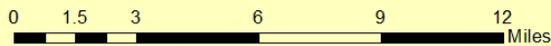


Legend

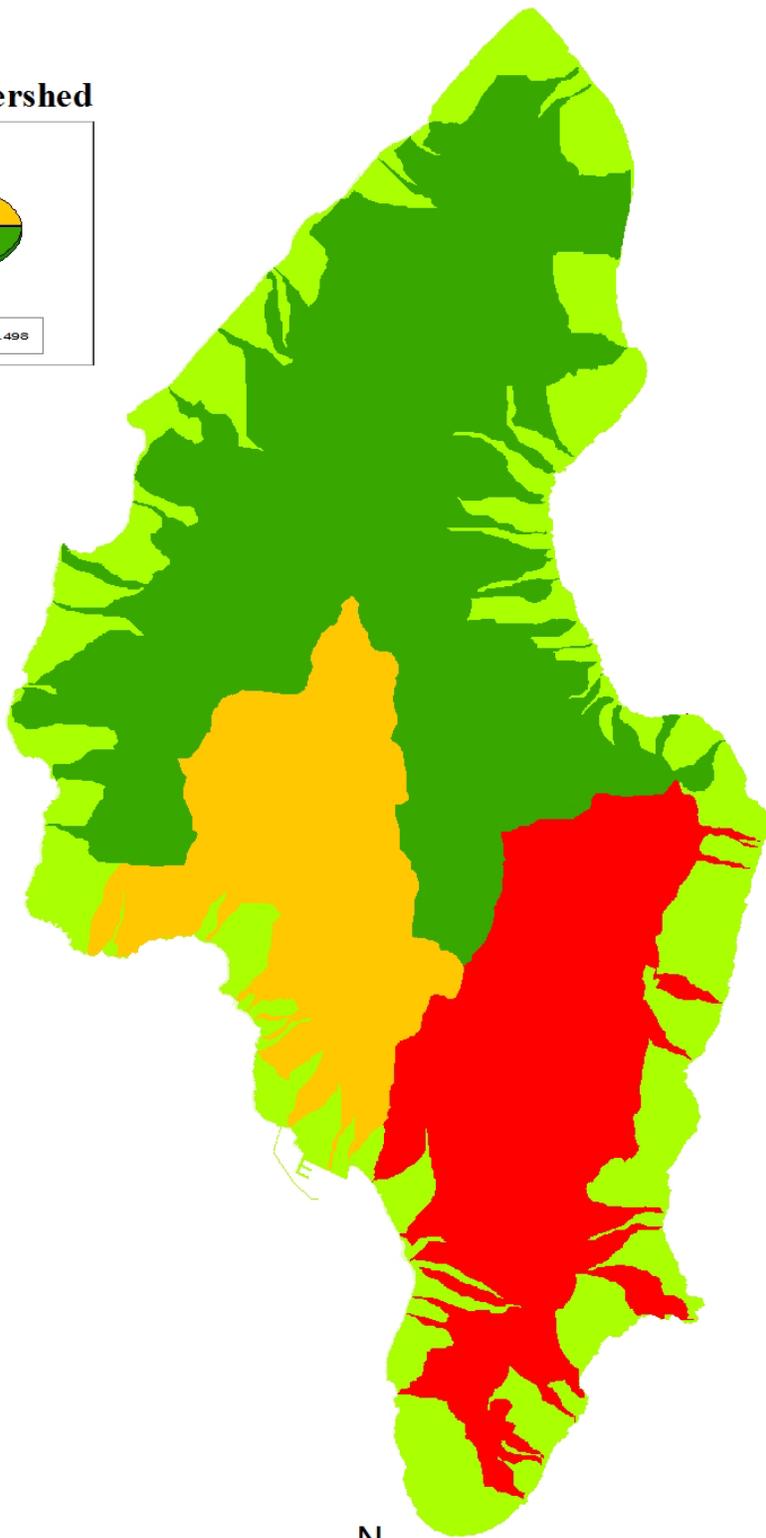
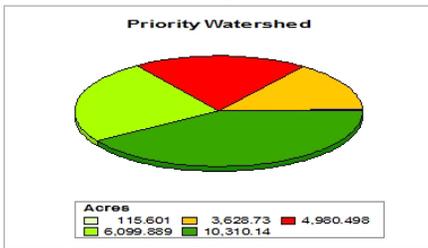
- 10 : Highest Priority
- 07: Medium High Priority
- 05: Medium Priority
- 04: Medium Low Priority
- 03: Low Priority
- 01: Lowest Priority
- 0: Null

NOTES: Priority Watershed Areas

- 10: Kagman
- 07: West Garapan
- 05: Laolao Bay, As Teo and Wireless Hill
- 04: Western Areas of Saipan
- 03: Dandan, San Vicente, and As Lito
- 01: Low Lying Areas



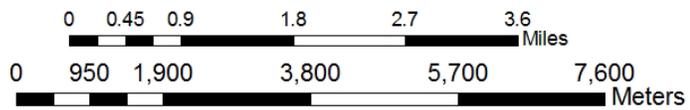
MAP: 02-2
Tinian Priority Wastershed



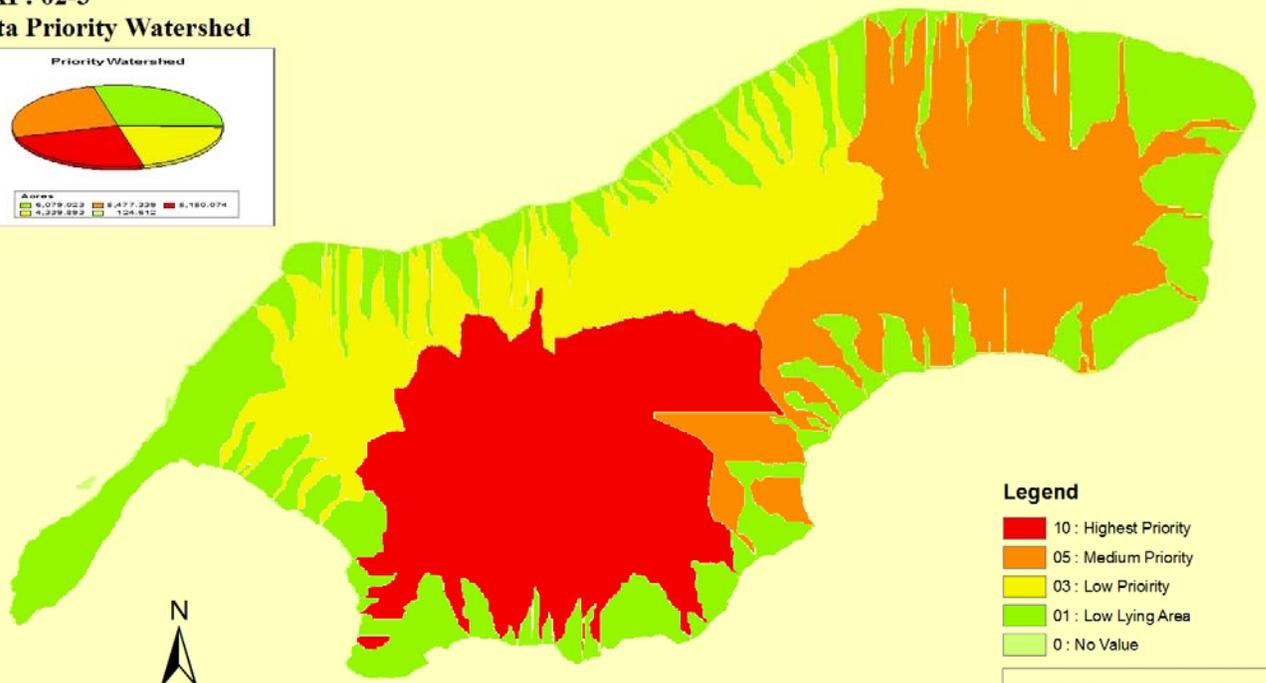
Legend

- 10 : Highest Priority
- 05 : Medium Priority
- 03 : Low Priority
- 01 : Lowest Priority
- 0 : Null

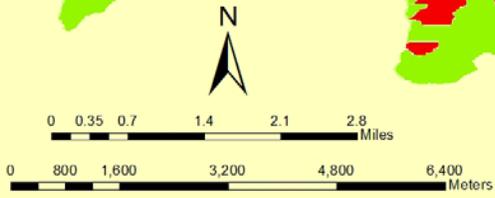
NOTES: Priority Watershed Areas
 10: Carolinas and Marpo
 05: Military Retention, Bateha, Kahet
 03: Military Retention



MAP: 02-3
Rota Priority Watershed

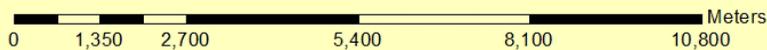
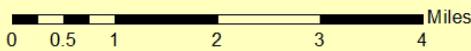
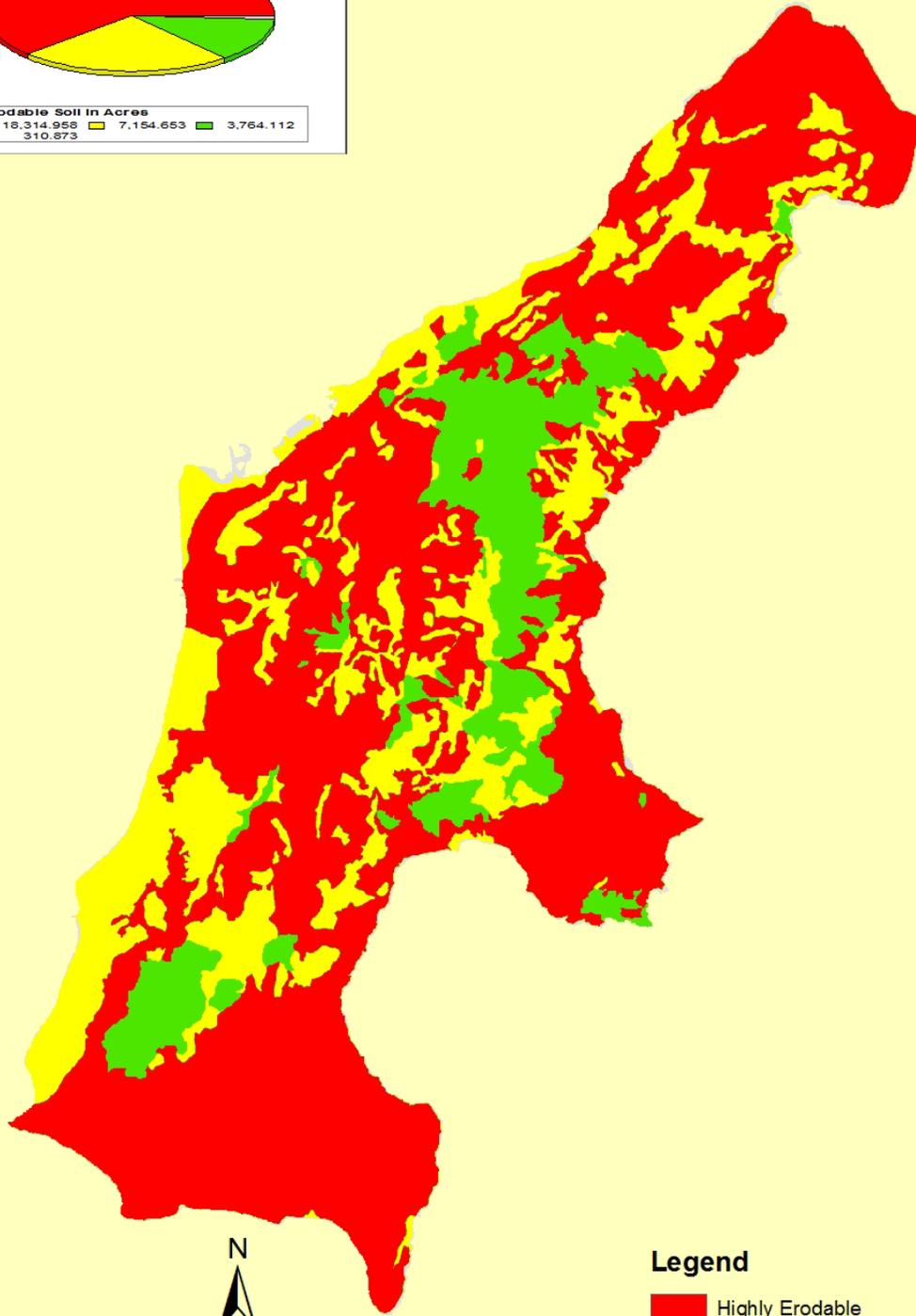
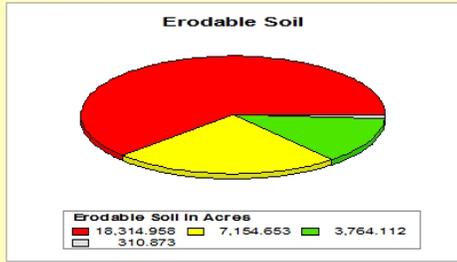


- Legend**
- 10 : Highest Priority
 - 05 : Medium Priority
 - 03 : Low Priority
 - 01 : Low Lying Area
 - 0 : No Value



NOTES: Priority Watershed Areas
 10 : Talakaya
 05 : Dugi, Gampapa, I Chenchon
 03: Talo, Tetohge, As Funte
 0: Low Lying Areas

MAP: 03-1
Saipan Erodable Soil

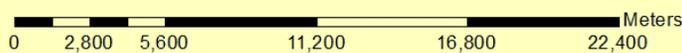
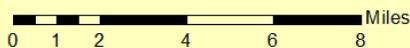
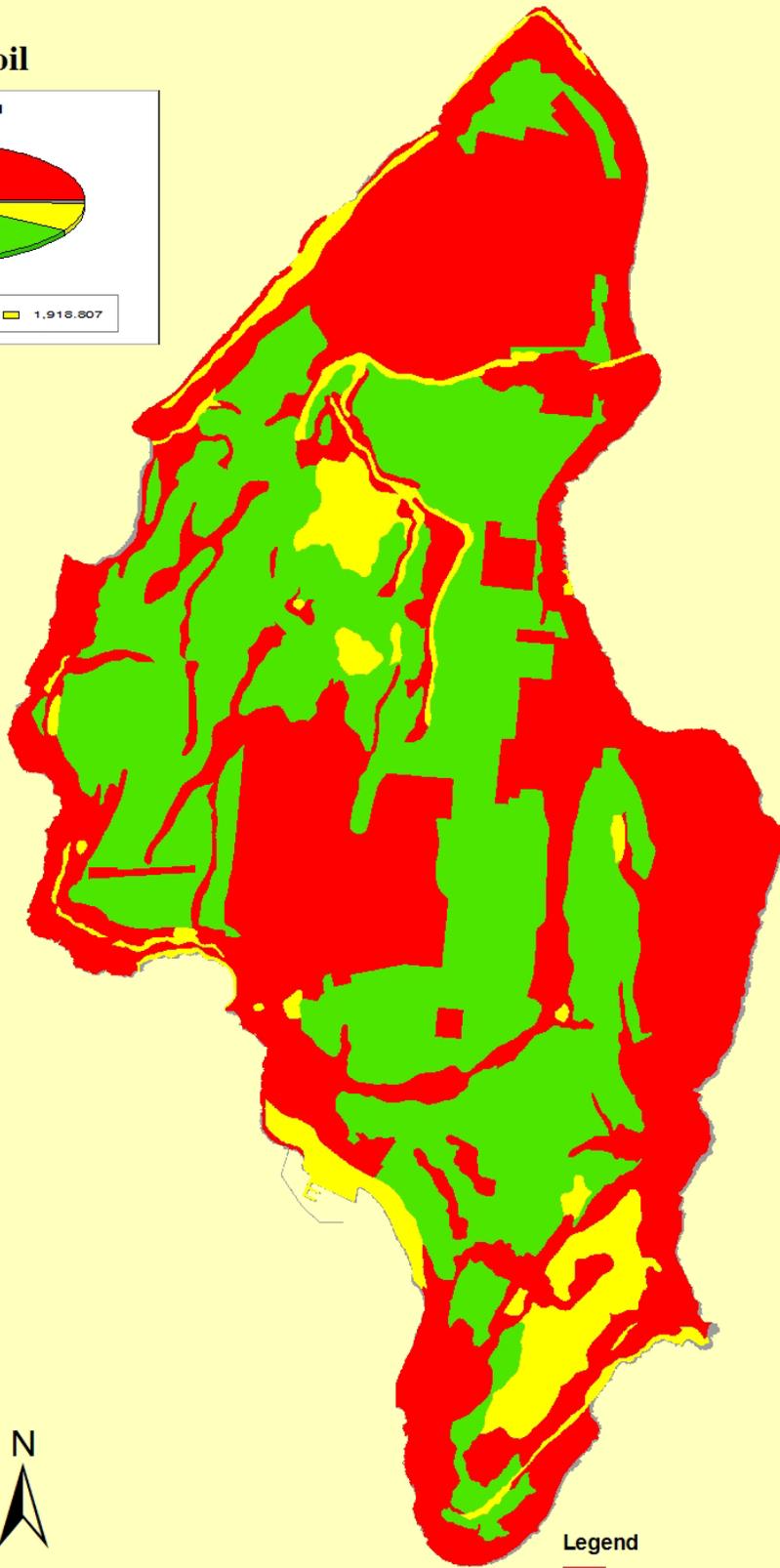
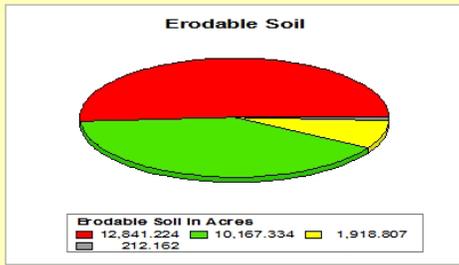


Legend

- Highly Erodable
- Moderately Erodable
- Least Erodable
- Not Rated or Not Available

NOTES: The soil map is extracted from the USDA - NRCS Soil Data Viewer under Soil Erosion Factors. This map is a representation of the soil erosion T Factor.

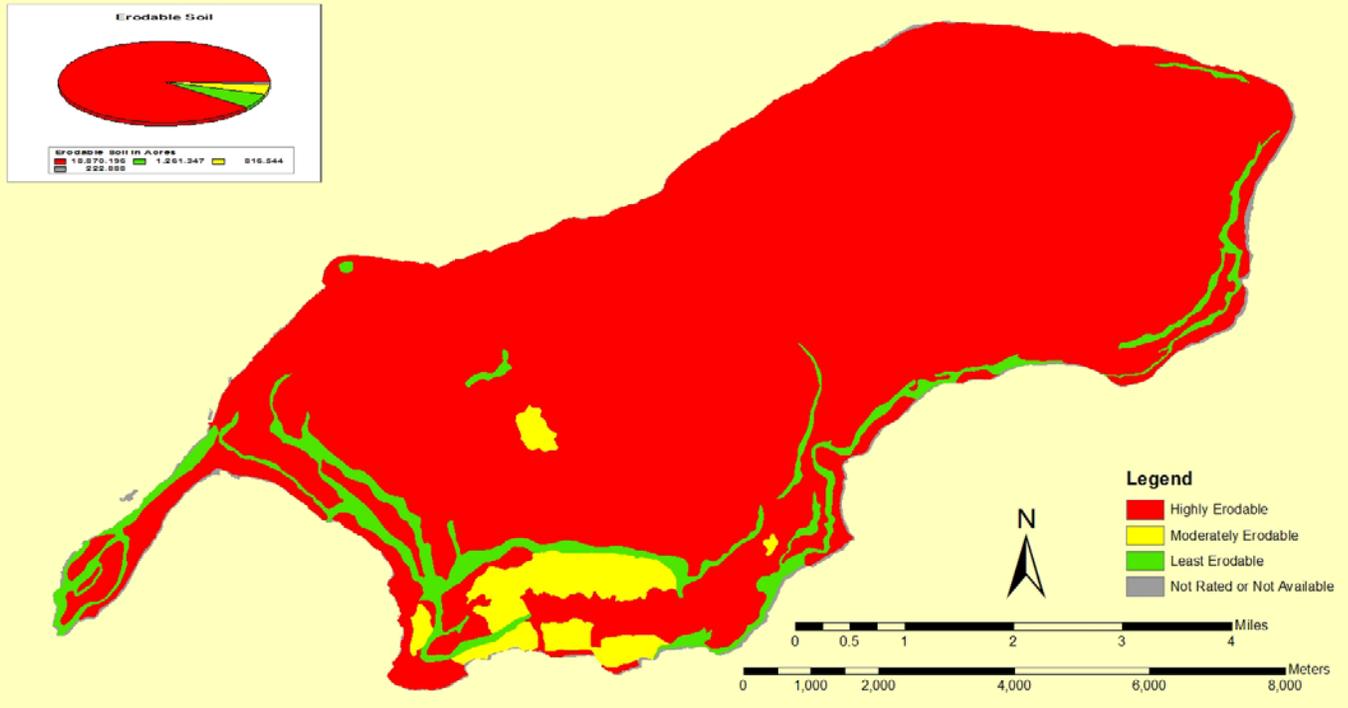
MAP: 03-2
Tinian Erodable Soil



- Legend**
- Highly Erodable
 - Moderately Erodable
 - Least Erodable
 - Not Rated or Not Available

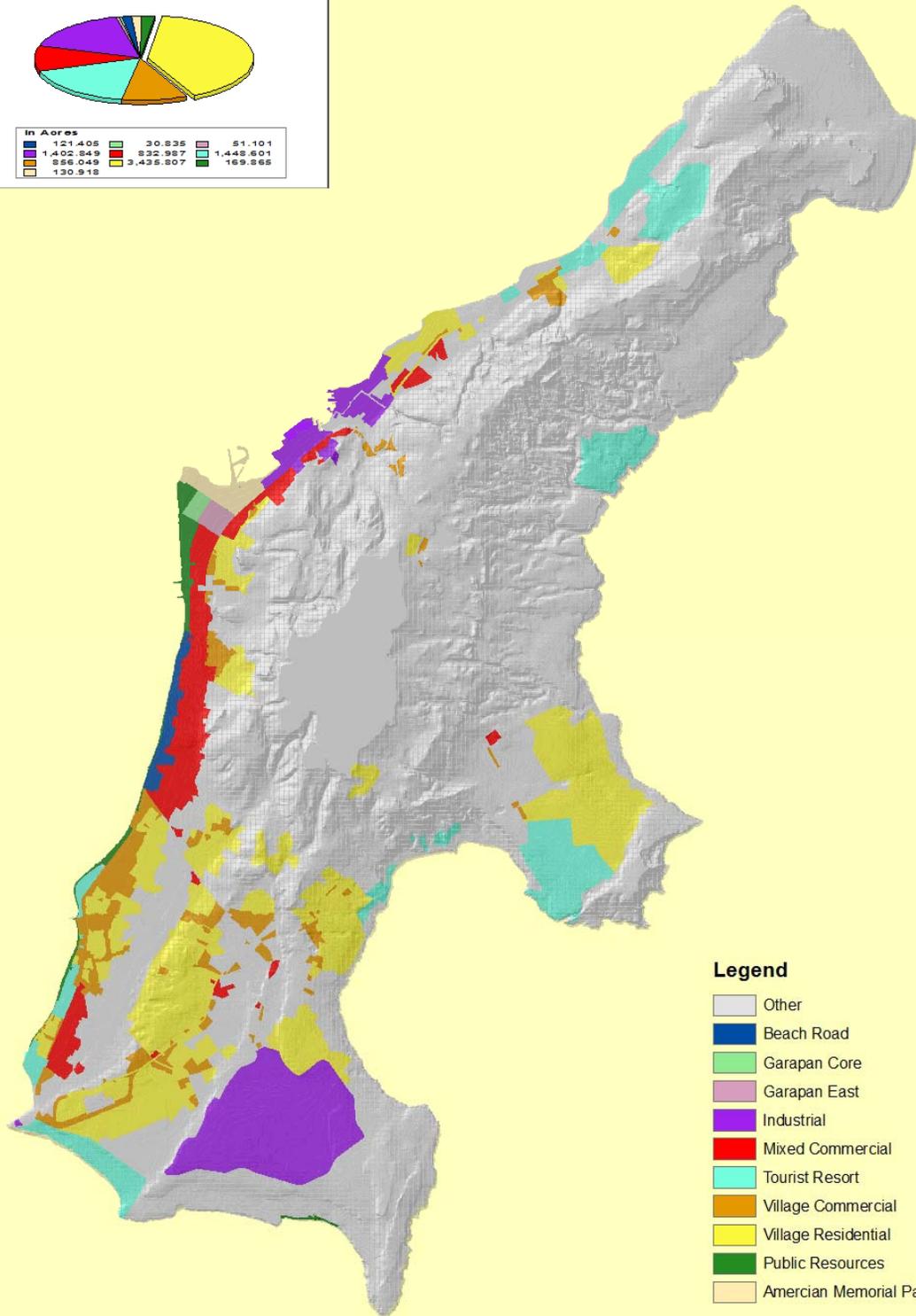
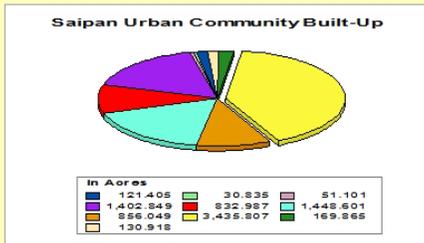
NOTES: The soil map is extracted from the USDA - NRCS Soil Data Viewer under Soil Erosion Factors. This map is a representation of the soil erosion T Factor.

MAP: 03-3
Rota Erodeable Soil

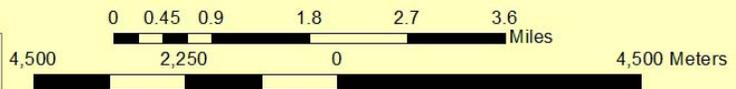


NOTES: The soil map is extracted from the USDA - NRCS Soil Data Viewer under Soil Erosion Factors. This map is a representation of the soil erosion T Factor.

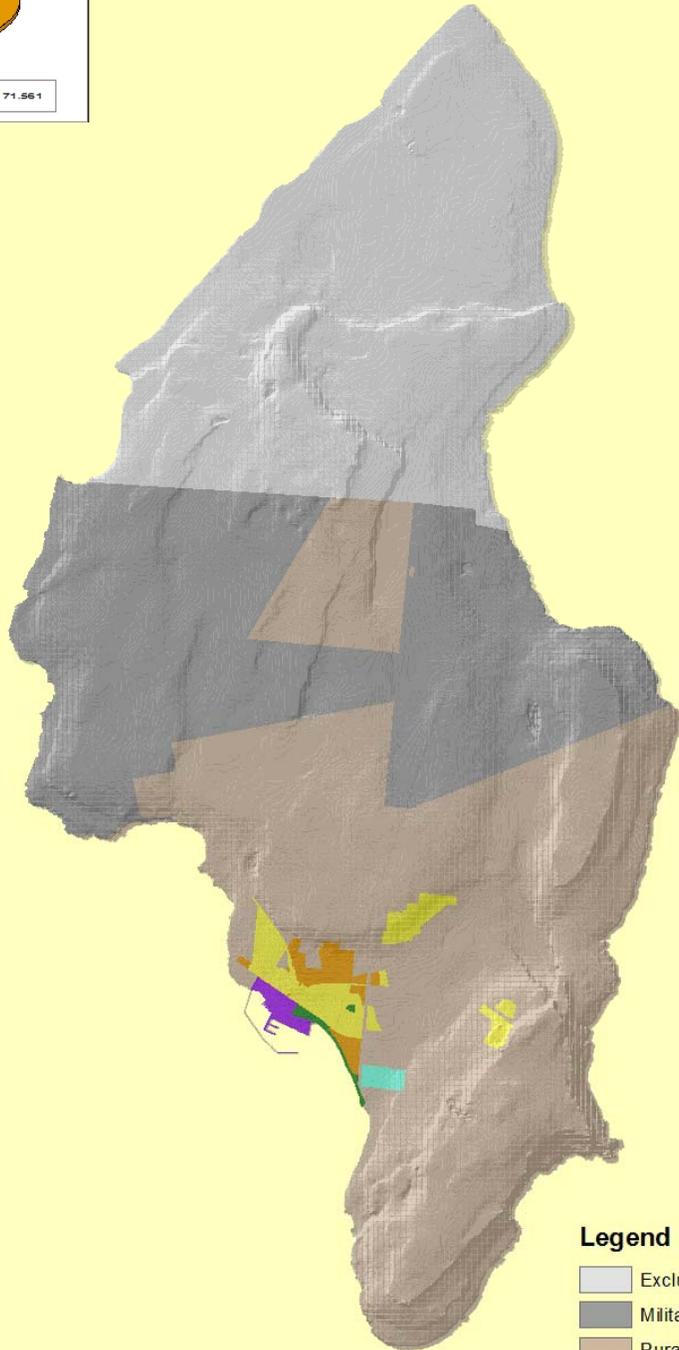
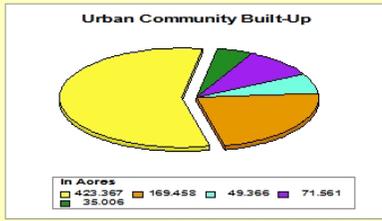
MAP: 4-1
Saipan
Urban Community Built-Up



Urban Built-up is based on the current Saipan Zoning District as per Saipan Zoning Law.

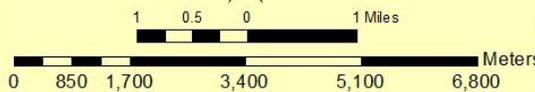


MAP: 4-2
Tinian
Urban Community Built-Up



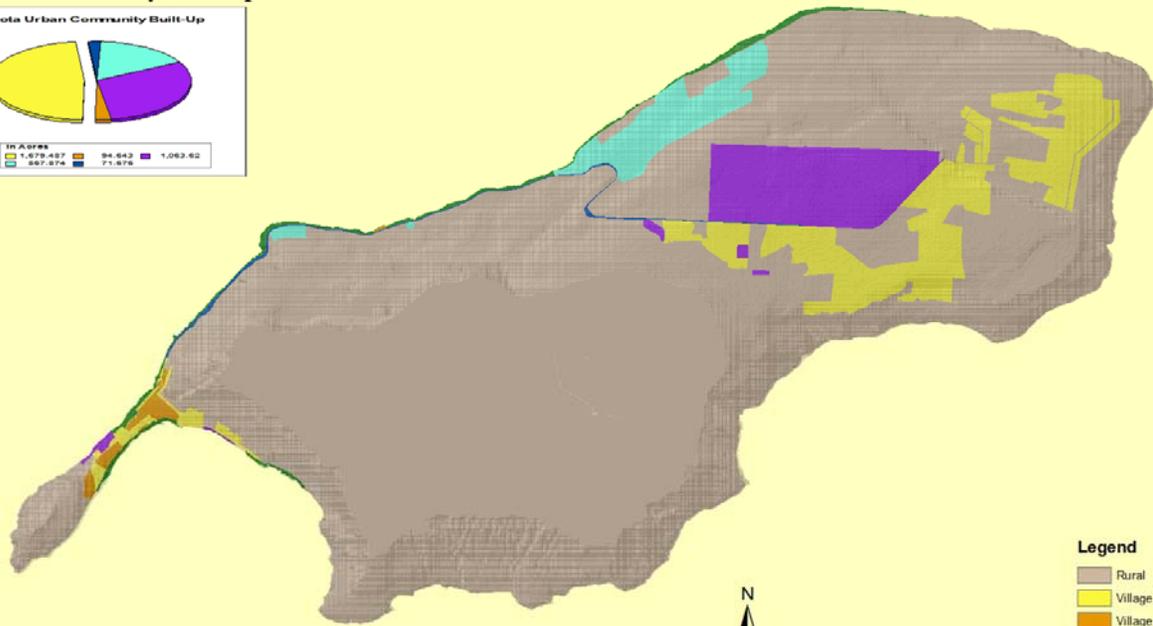
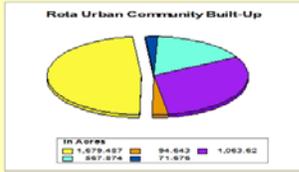
Legend

- Exclusive Military Area
- Military Leaseback
- Rural
- Village Residential
- Village Commercial
- Tourist Resort
- Industrial
- Public Resources

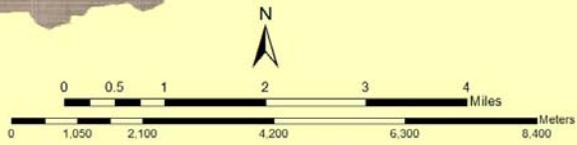


This map is to show the areas of urban built-up for the Island of Tinian.

MAP: 4-3
Rota
Urban Community Built-Up



- Legend**
- Rural
 - Village Residential
 - Village Commercial
 - Public Resources
 - Industrial
 - Tourist Resort
 - Main Highway

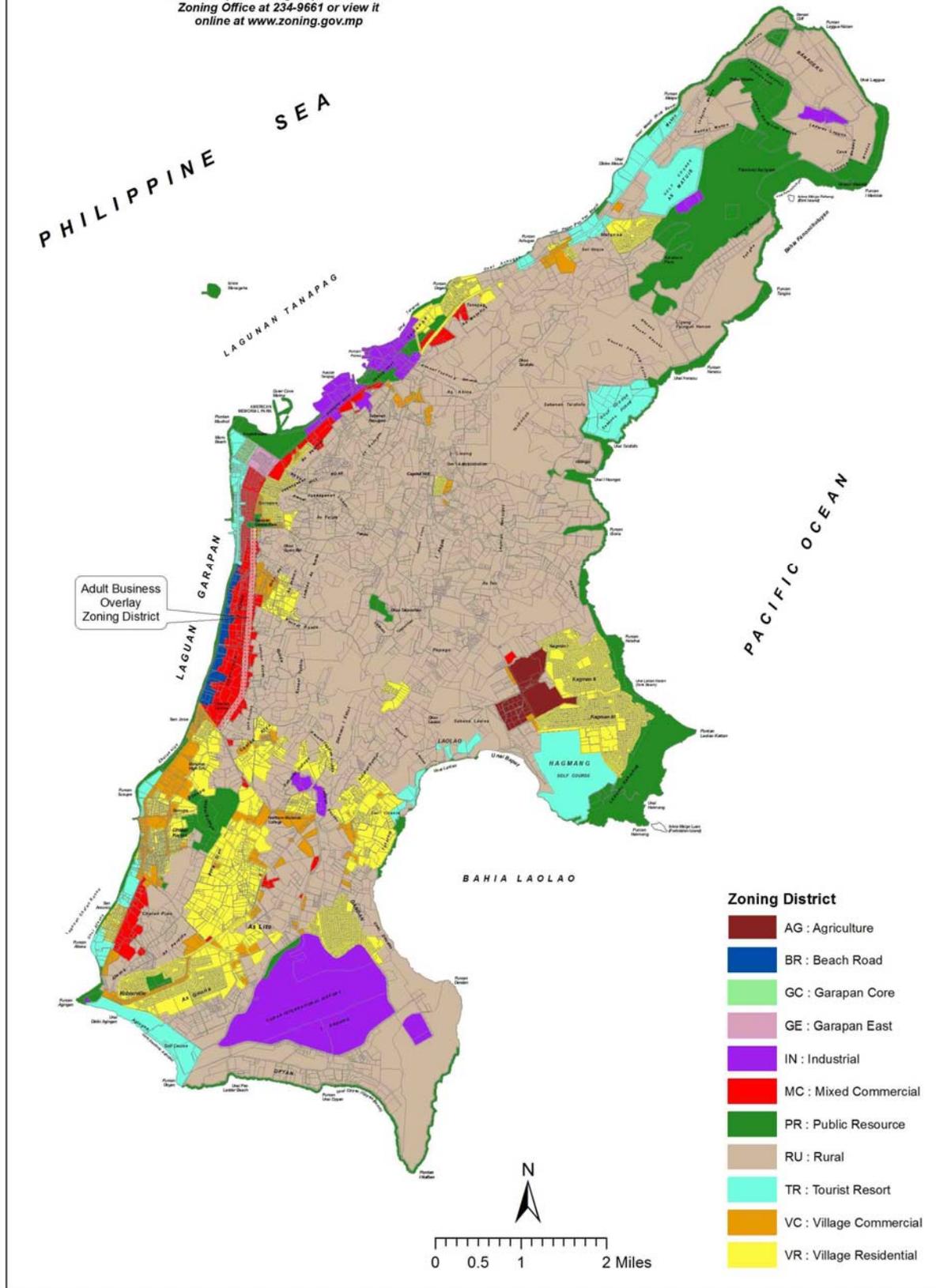


The datalayer contained in this map represent urban built-up only.

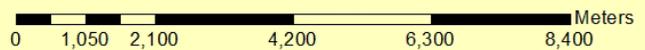
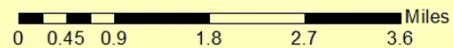
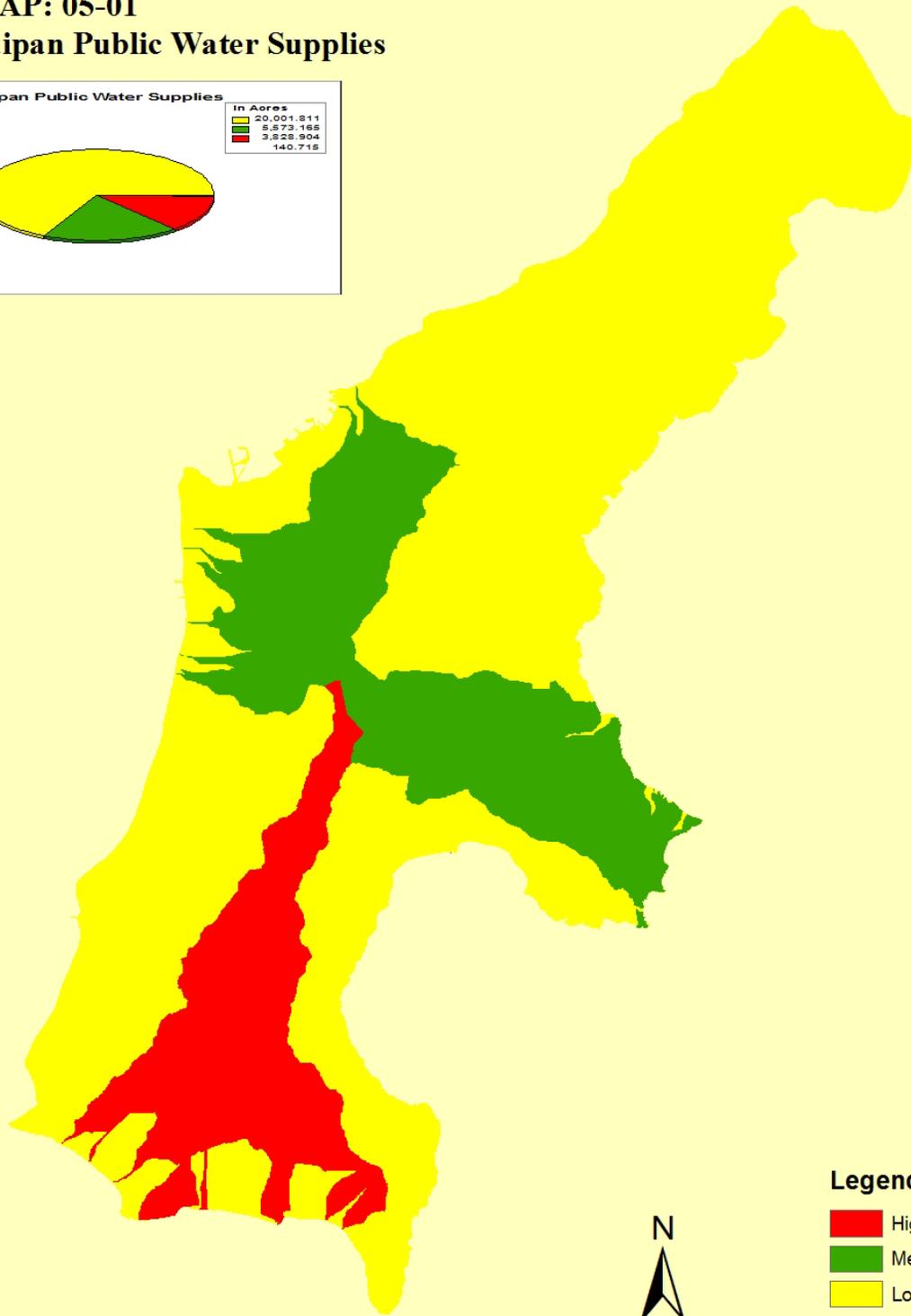
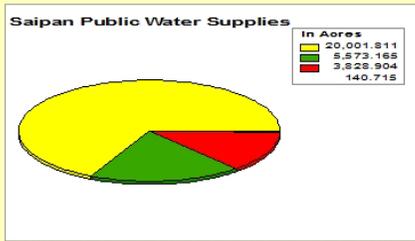
Saipan Zoning Districts
Commonwealth of the Northern Mariana Islands

Updated: December 5, 2008

This is not the official zoning map, For the official Saipan Zoning Map, contact the Zoning Office at 234-9661 or view it online at www.zoning.gov.mp

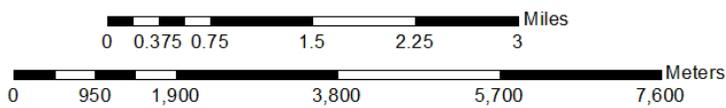
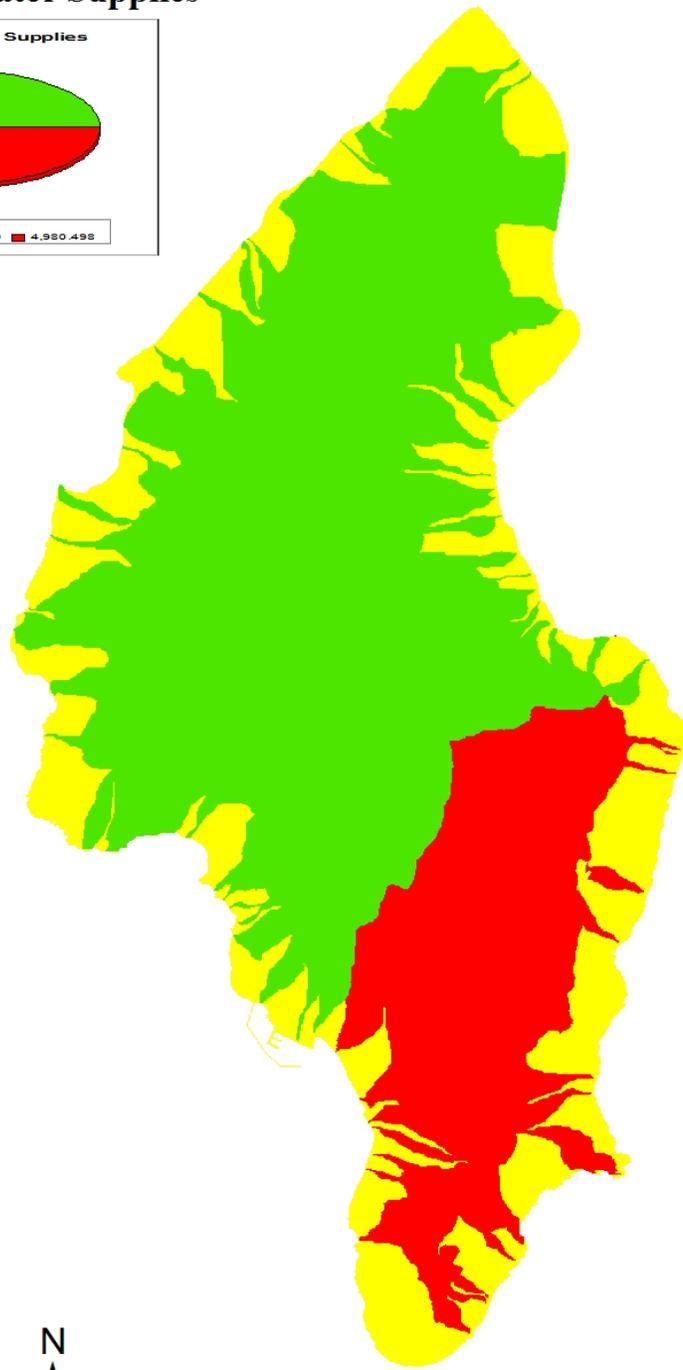
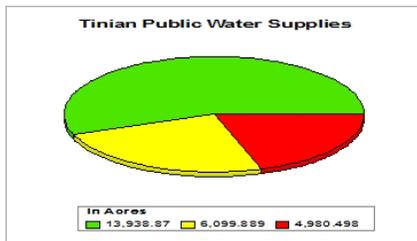


MAP: 05-01
Saipan Public Water Supplies



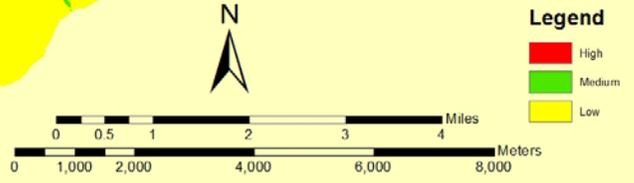
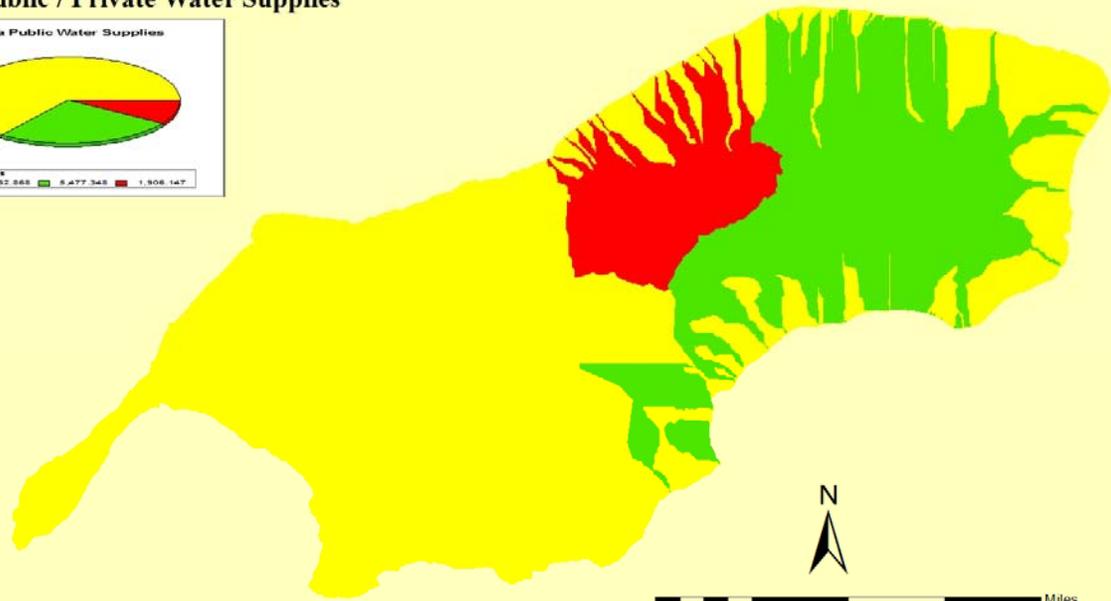
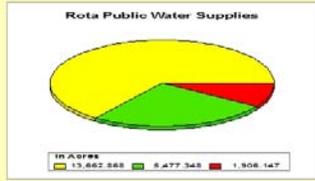
NOTES: The priority areas of high, medium and low is determine based on spatial relation between the current active public wells and the watershed basin. The areas with the most active public wells gets the highest priority followed by the second and third highest most active wells.

MAP: 05-2 Tinian Public Water Supplies



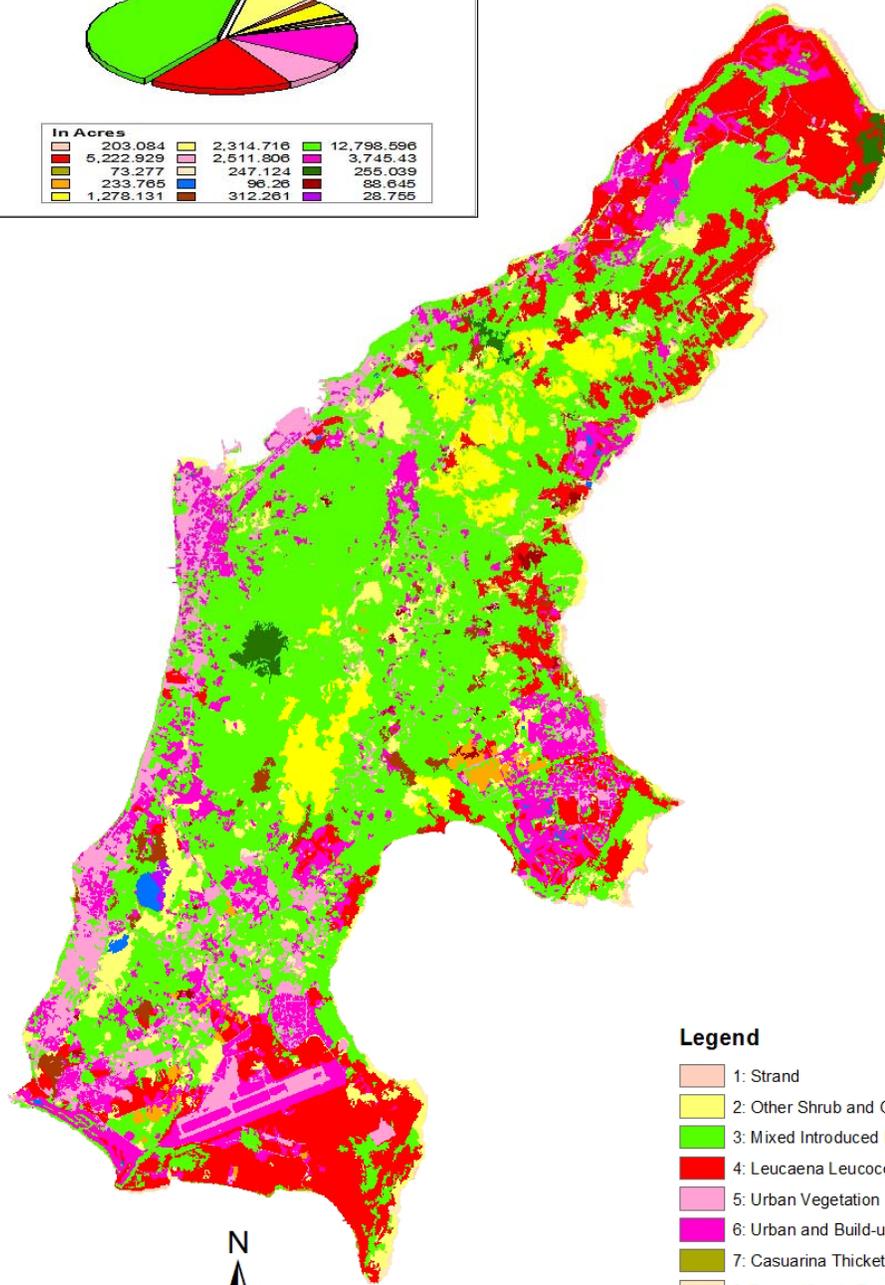
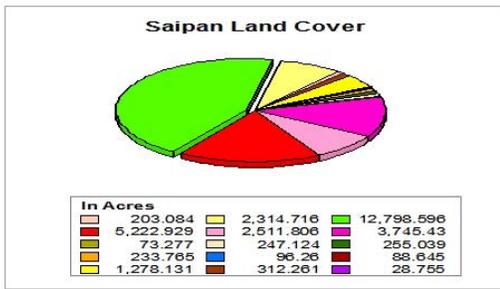
NOTES: Currently active public water wells are concentrated within one area. The medium areas is showing potential areas for future public wells. The low priority areas has the least potential areas for public wells.

MAP: 05-3
Rota Public / Private Water Supplies



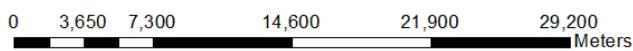
NOTES: Currently active private water wells is showing to have the highest value. The public water wells falls within the medium value. The low value areas has potential to provide future water supplies.

MAP: 06-1 Saipan Landcover Classification



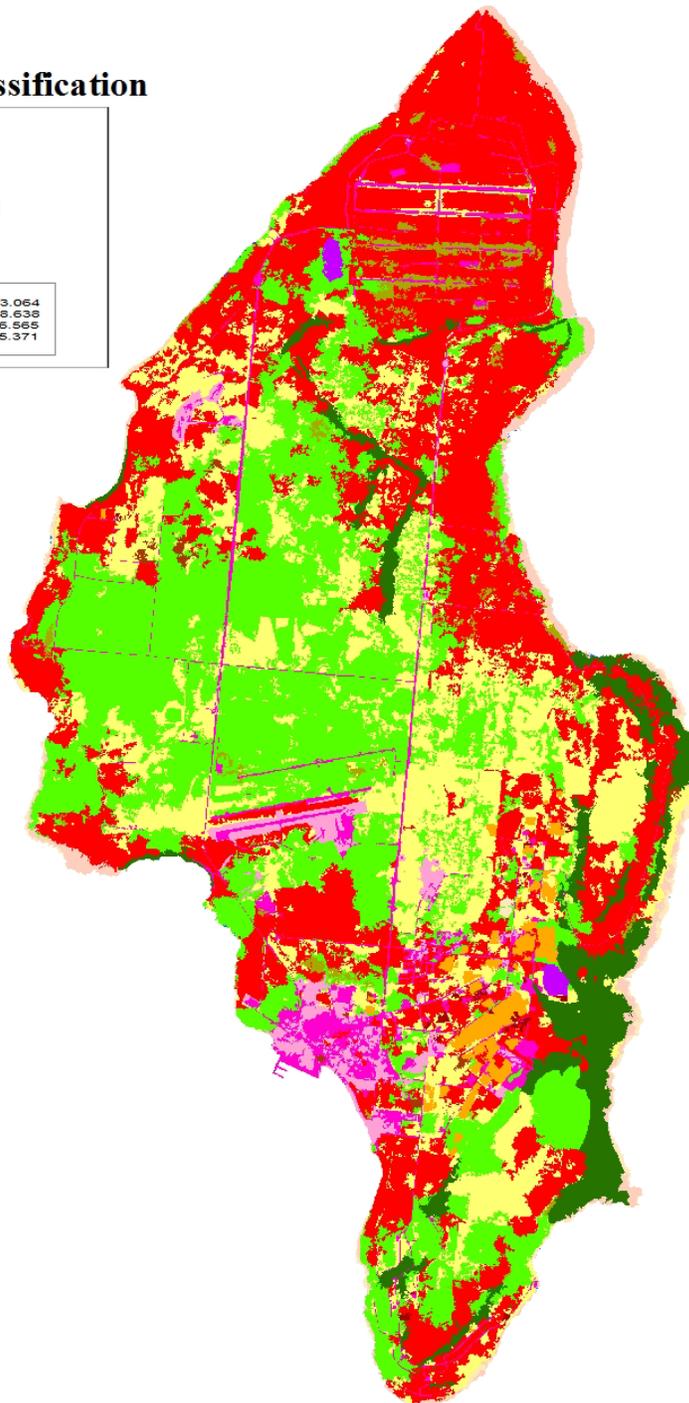
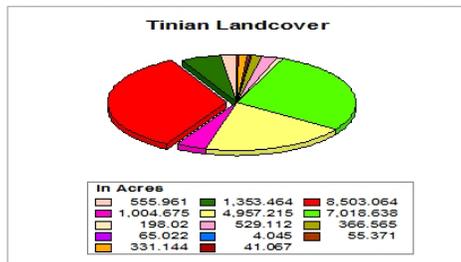
Legend

- 1: Strand
- 2: Other Shrub and Grass
- 3: Mixed Introduced Forest
- 4: Leucaena Leucocephala (Tangantangan)
- 5: Urban Vegetation
- 6: Urban and Build-up
- 7: Casuarina Thicket
- 8: Barren/Sandy Beach/Bare Rocks
- 9: Native Limestone Forest
- 10: Cropland
- 11: Water
- 12: Agroforest
- 13: Savanna Complex
- 14: Agroforest -- Coconut
- 15: Wetland



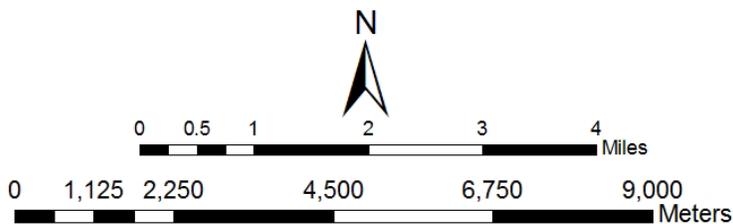
This map is a composite of the vegetation map created by the US Forest Service Region V

MAP: 06-2 Tinian Landcover Classification



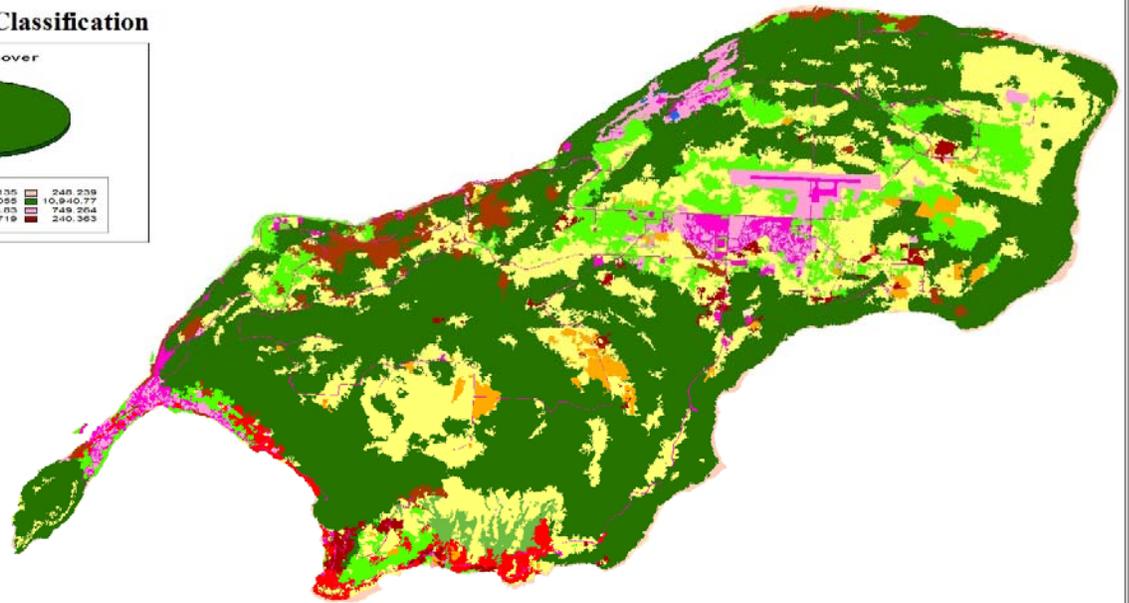
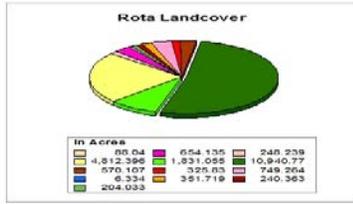
Legend

- 1: Strand
- 2: Native Limestone Forest
- 3: Leucaena Leucocephala (Tangantangan)
- 4: Urban and Built-up
- 5: Other Shrub and Grass
- 6: Mixed Introduced Forest
- 7: Barren/Sandy Beach/Bare Rocks
- 8: Urban Vegetation
- 9: Casuarina Thickets
- 10: Wetland
- 11: Water -- Ocean
- 12: Agroforest -- Coconut
- 13: Cropland
- 14: Agroforest



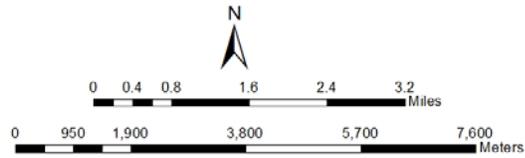
This map is a composite of the vegetation map created by the US Forest Service Region V

MAP: 06-3
Rota Landcover Classification



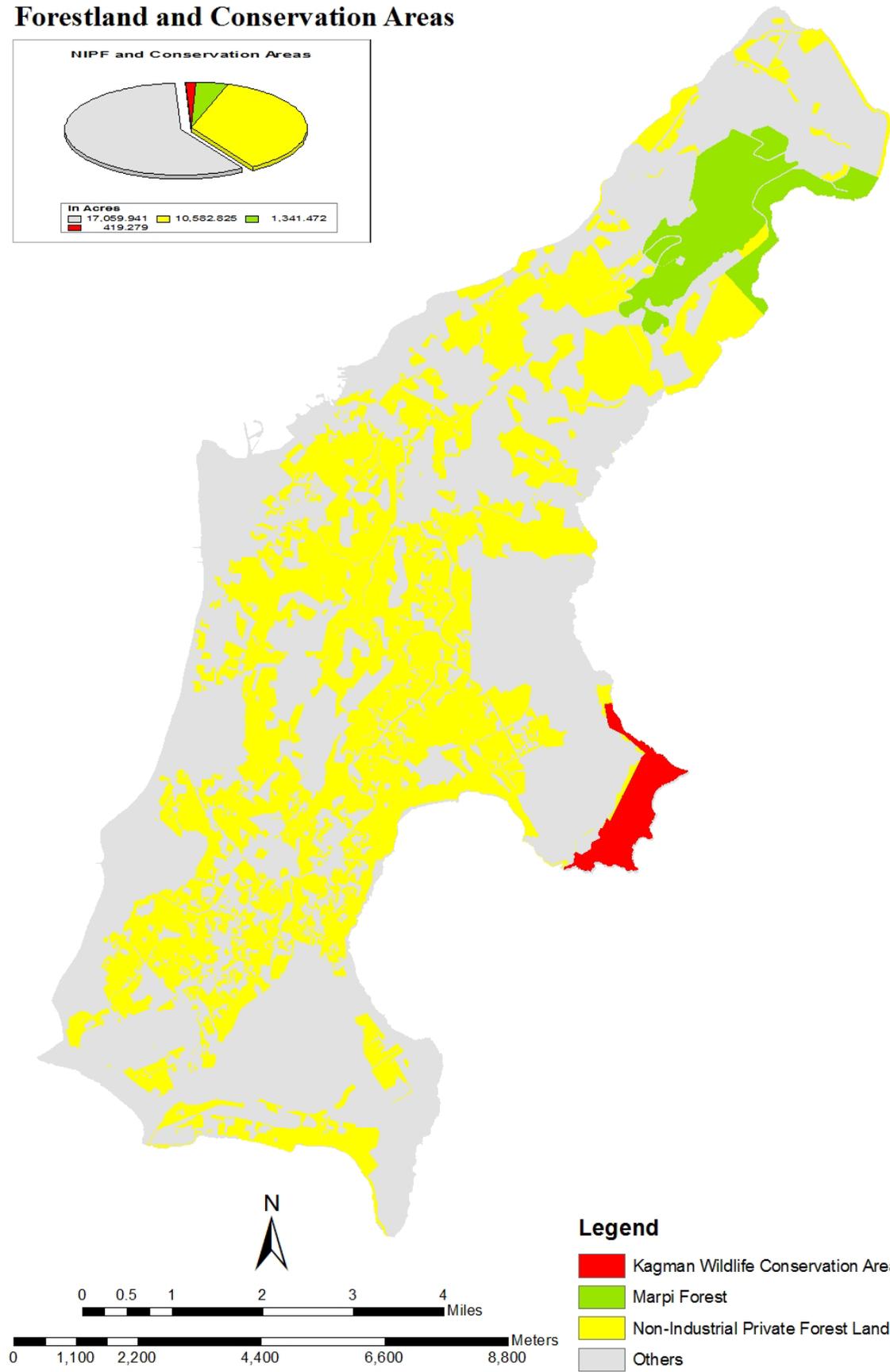
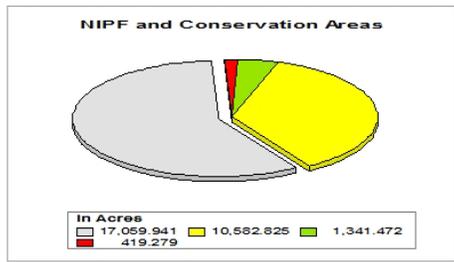
Legend

- 1: Barren/Sandy Beach/Barren Rocks
- 2: Urban and Built up
- 3: Stand
- 4: Other Shrub and Grass
- 5: Mixed Introduced Forest
- 6: Native Limestone Forest
- 7: Agroforest - Coconut
- 8: Leucaena Leucocephala (Tingantangan)
- 9: Urban Vegetation
- 10: Water
- 11: Copeland
- 12: Agroforest
- 13: Ravine Forest



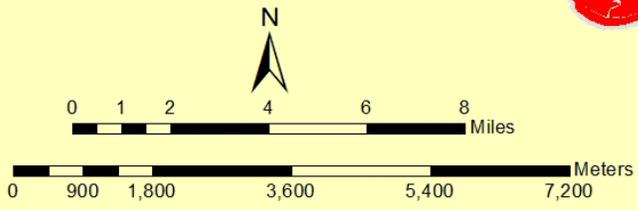
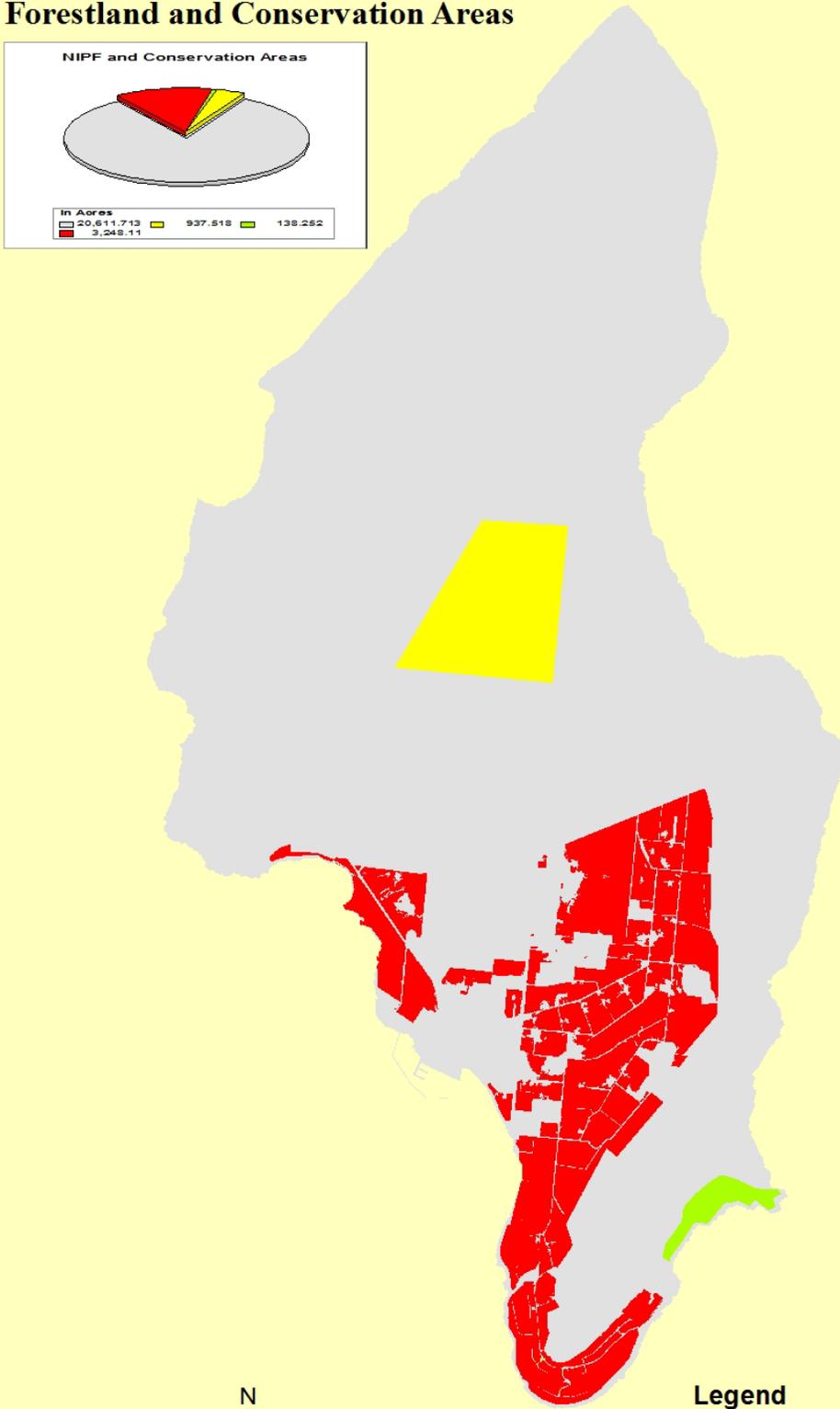
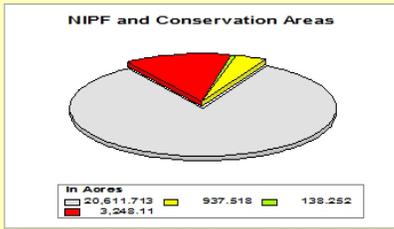
This map is a composite of the vegetation map created by the US Forest Service Region V

MAP 07-1
Saipan Non-Industrial Private
Forestland and Conservation Areas



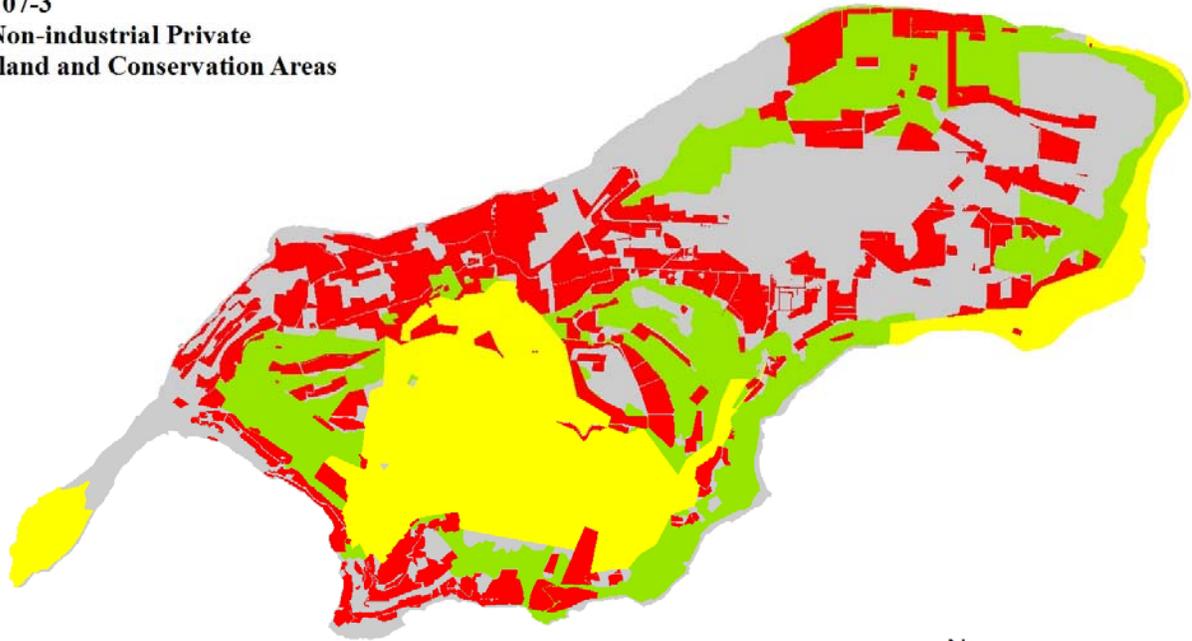
- Legend**
- Kagman Wildlife Conservation Area
 - Marpi Forest
 - Non-Industrial Private Forest Land
 - Others

MAP 07-2
Tinian Non-industrial Private
Forestland and Conservation Areas



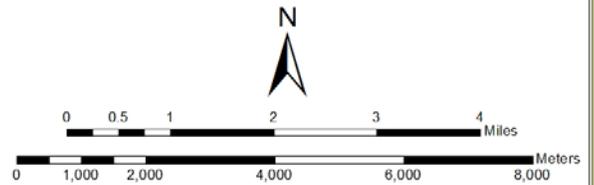
- Legend**
- Non-industrial Private Forestland
 - Critical Habitat
 - Conservation Area
 - Others

MAP: 07-3
Rota Non-industrial Private
Forestland and Conservation Areas

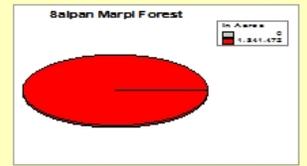
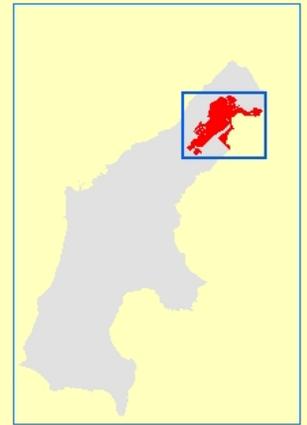
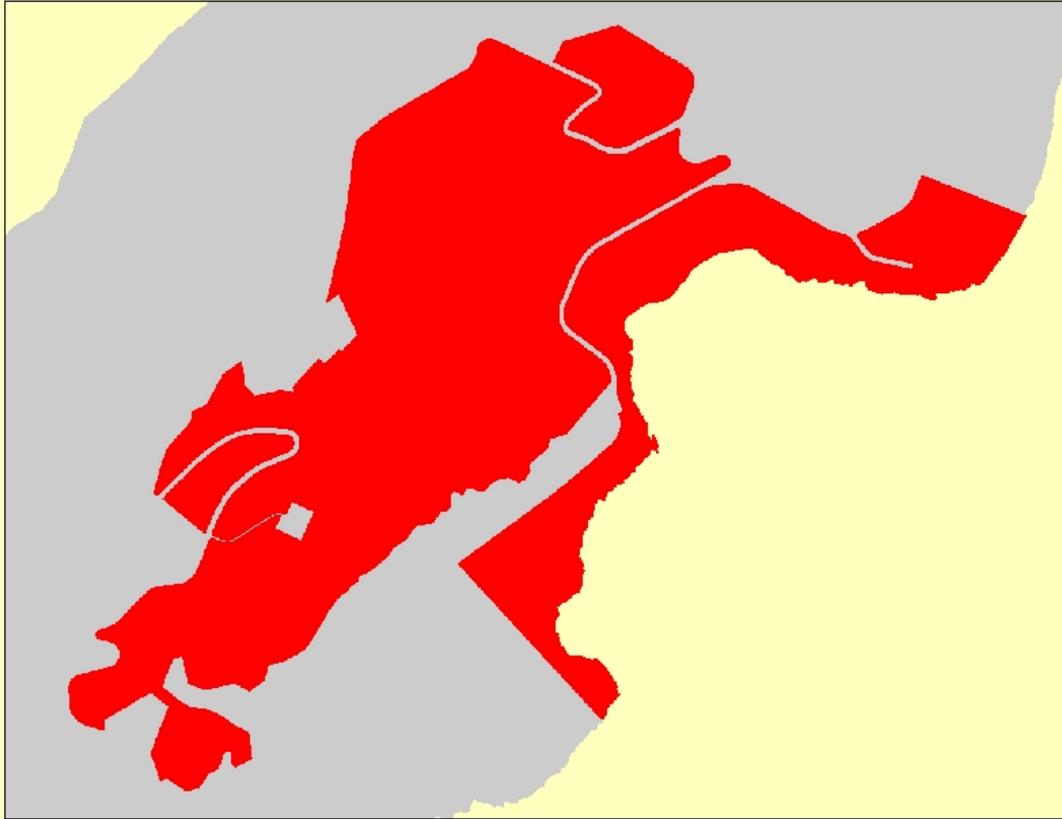


Legend

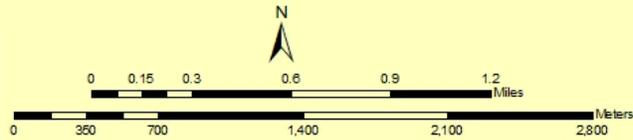
-  Others
-  Conservation Area
-  Critical Habitat
-  Non-industrial Private Forestland



MAP 08-1
Saipan Marpi Forest
Wildlife Conservation Protected by Law



Saipan Marpi Forest is preserved by enabling statutes for wildlife conservation purposes. It is also used as an upland mitigation bank for endangered wildlife species.

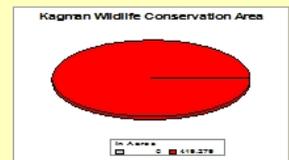
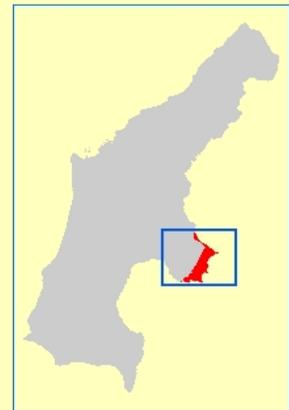
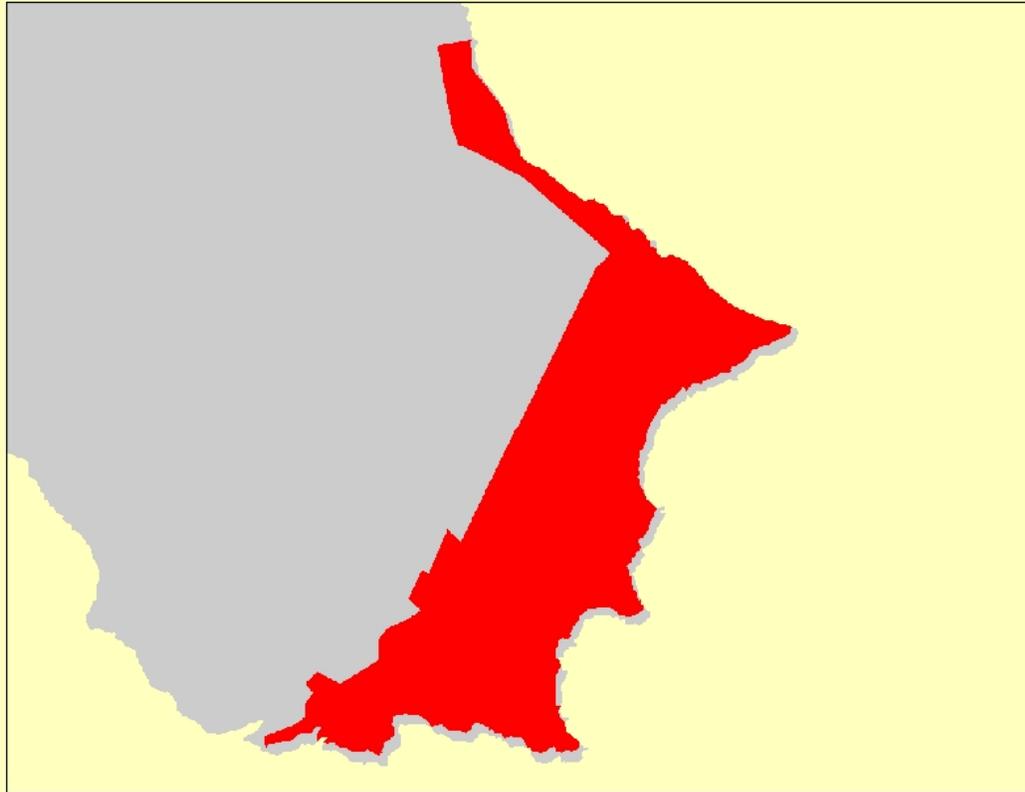


Legend
Others
Marpi Forest

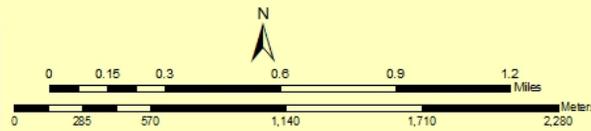
MAP 08-2

Saipan

Kagman Wildlife Conservation Area Protected by Law



Saipan Kagman Wildlife Conservation Area is preserved by enabling statutes for wildlife conservation purposes.



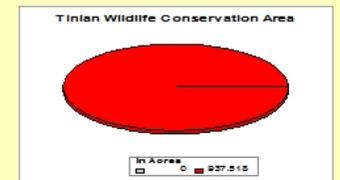
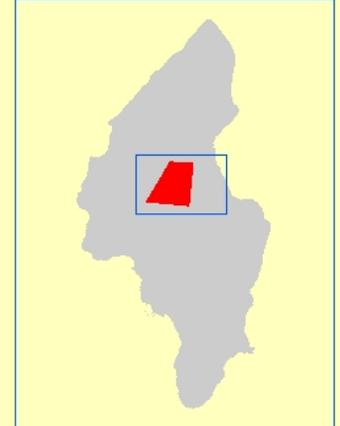
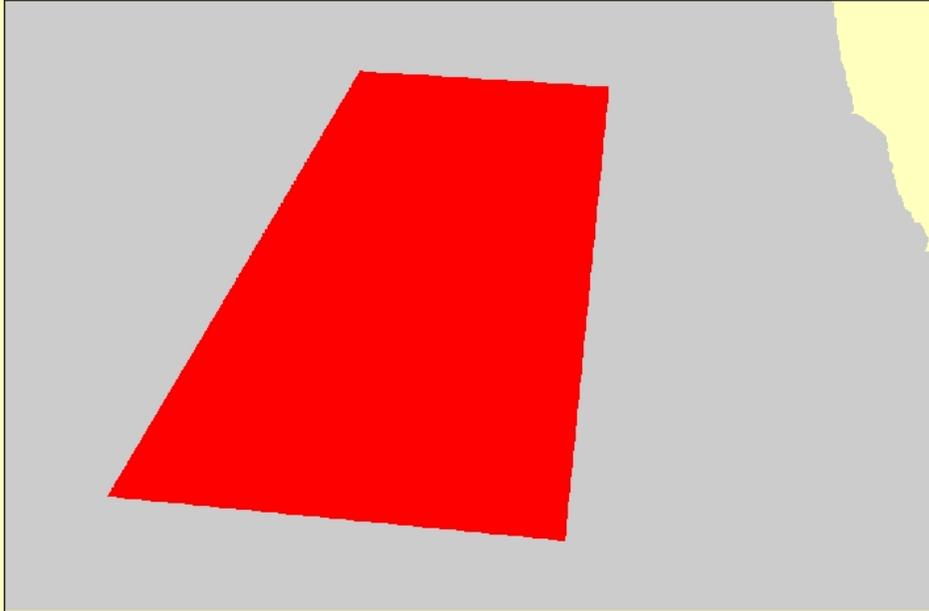
Legend

- Others
- Kagman Wildlife Conservation Area

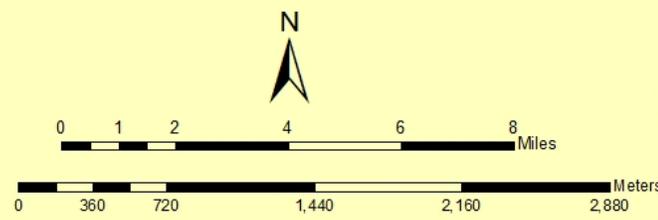
MAP 08-3

Tinian

Wildlife Conservation Area Protected by Law



Tinian Wildlife Conservation Area is preserved by enabling statutes for wildlife conservation purposes.



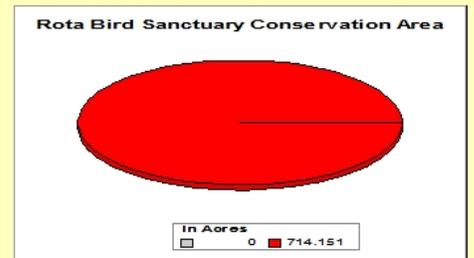
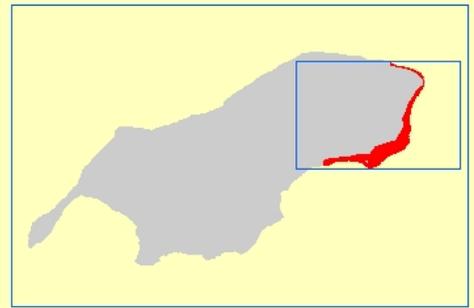
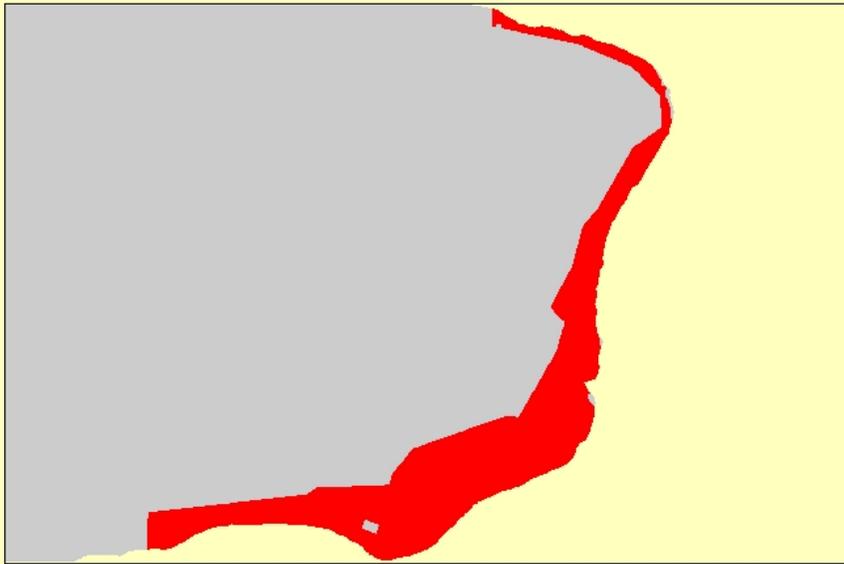
Legend

- Others (grey square)
- Wildlife Conservation Area (red square)

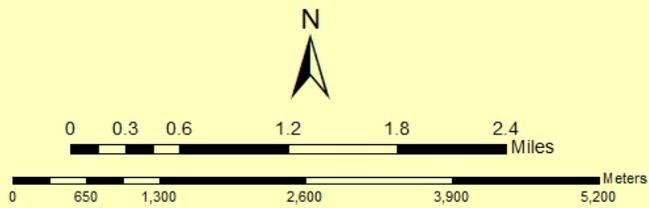
MAP: 08-4

Rota

Bird Sanctuary Wildlife Conservation



Rota Bird Sanctuary Conservation Area is preserved by enabling statutes for wildlife conservation purposes.



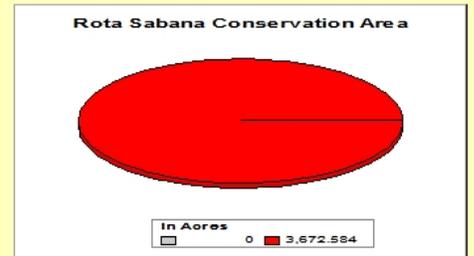
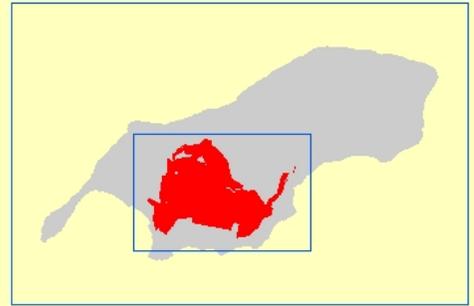
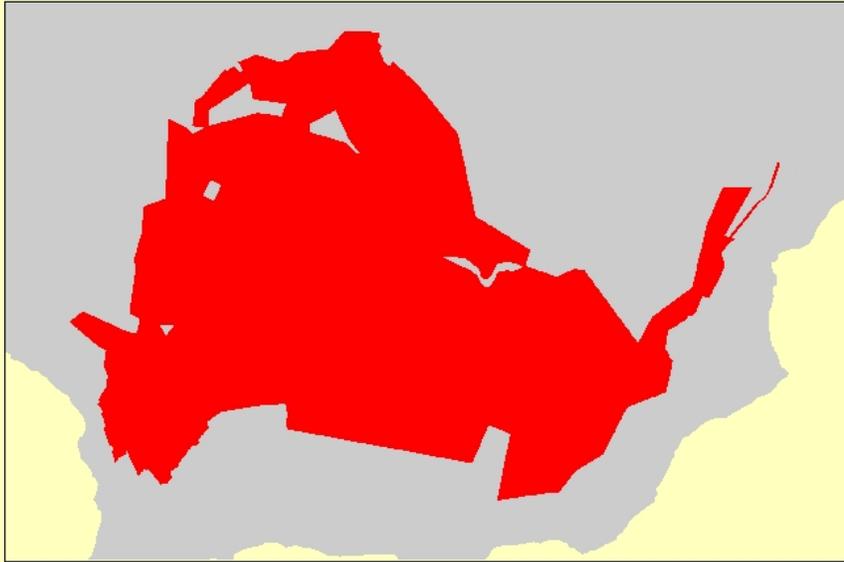
Legend

- Others (light gray square)
- Bird Sanctuary (red square)

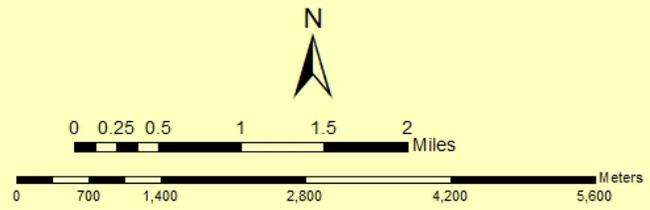
MAP: 08-5

Rota

Sabana Conservation Area



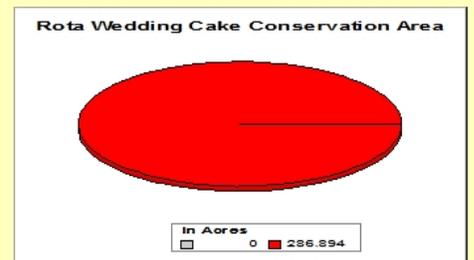
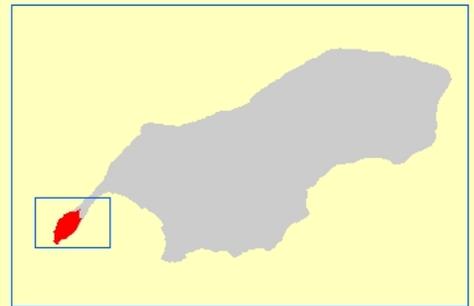
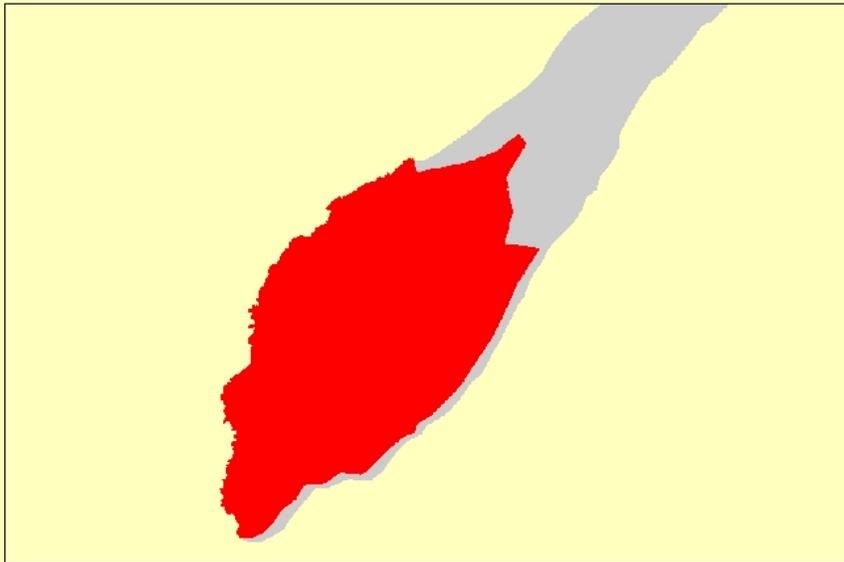
Rota Sabana Conservation Area is preserved by enabling statutes for wildlife conservation purposes.



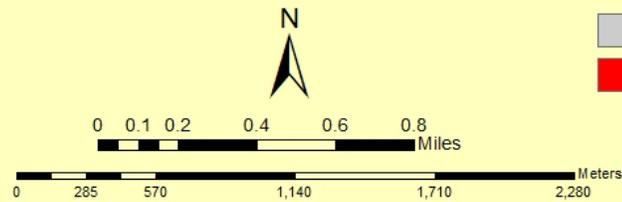
MAP: 08-6

Rota

Wedding Cake Conservation Area



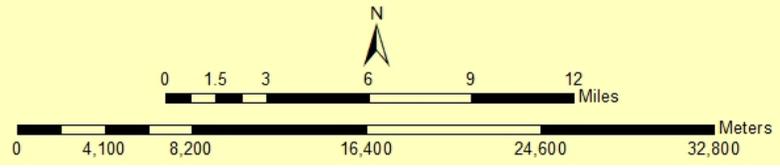
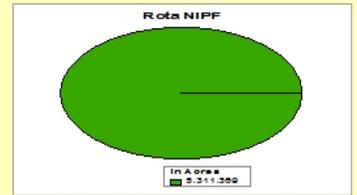
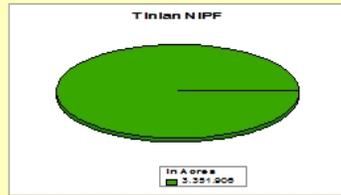
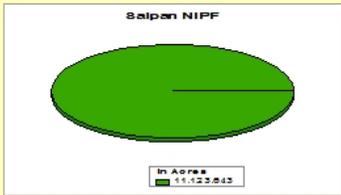
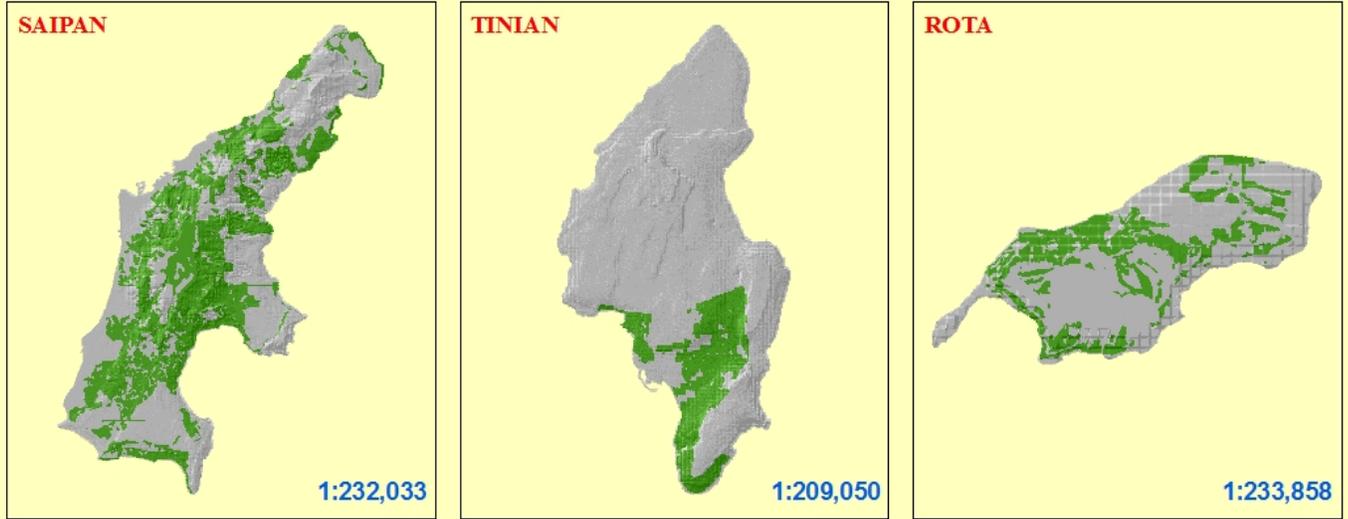
Rota Wedding Cake Conservation area is preserved by enabling statutes for wildlife conservation purposes.



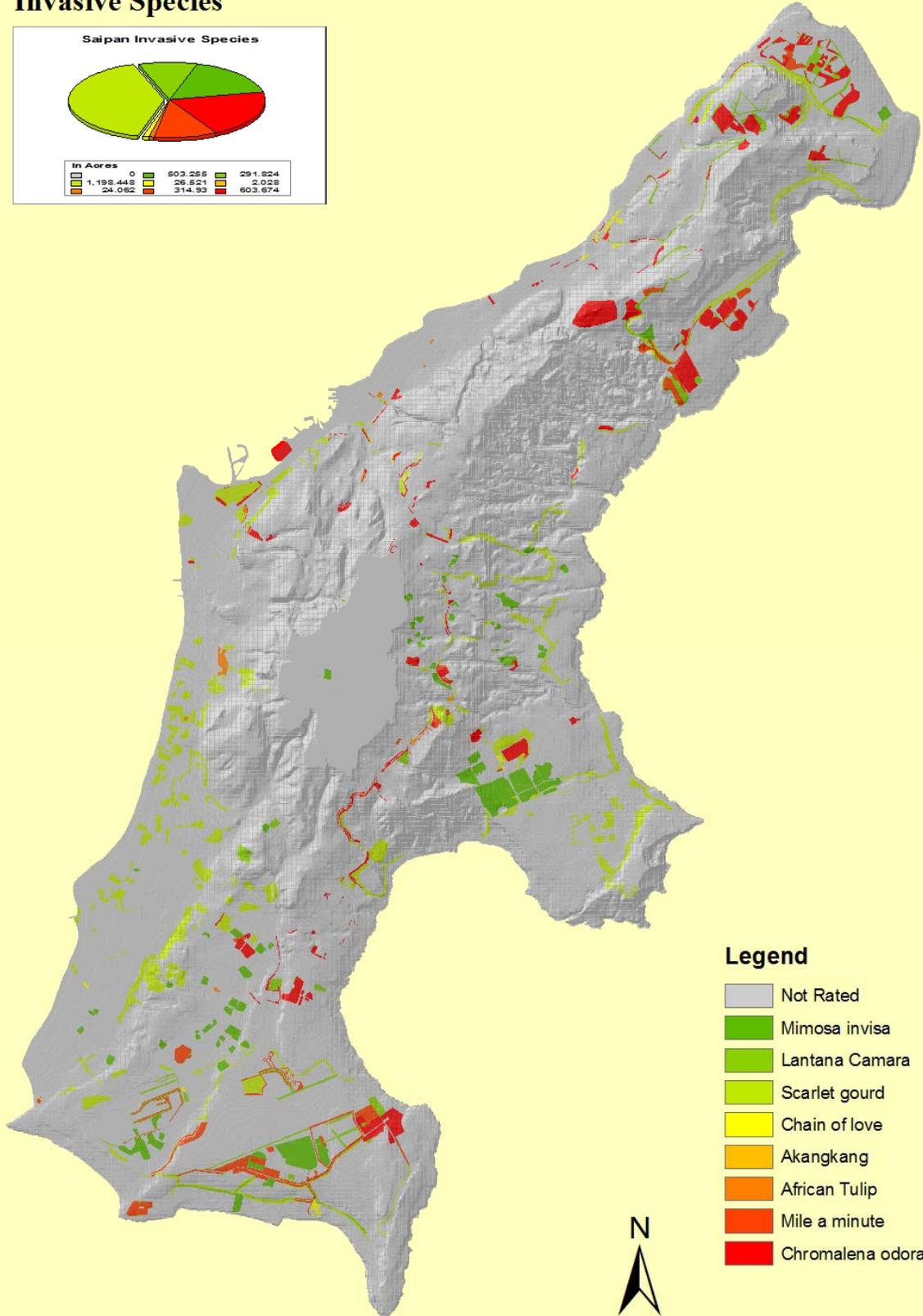
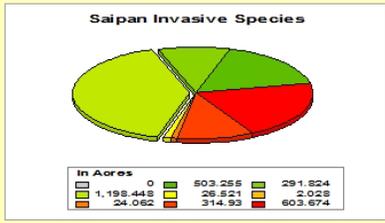
Legend

-  Others
-  Wedding Cake Conservation Area

MAP 09: 01 Non-industrial Private Forestland

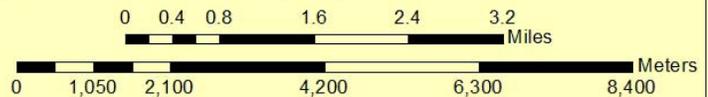


MAP: 10-1 Saipan Invasive Species



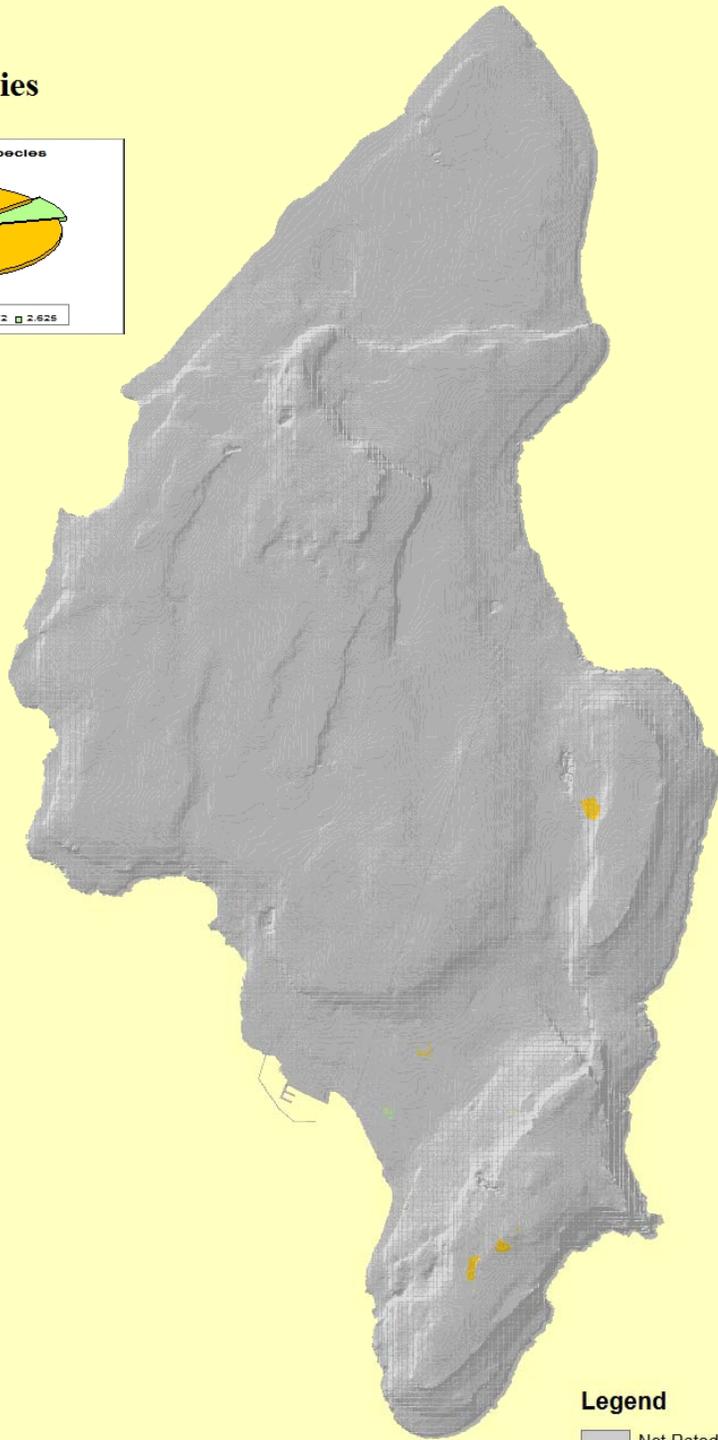
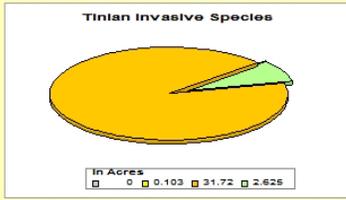
Legend

- Not Rated
- Mimosa invisa
- Lantana Camara
- Scarlet gourd
- Chain of love
- Akangkang
- African Tulip
- Mile a minute
- Chromalena odorata



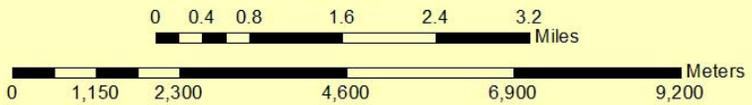
The invasive species listed on the map are the most common invasive species found in Saipan. These species presents adverse impact to the forest health landscape.

MAP: 10-2
Tinian
Invasive Species



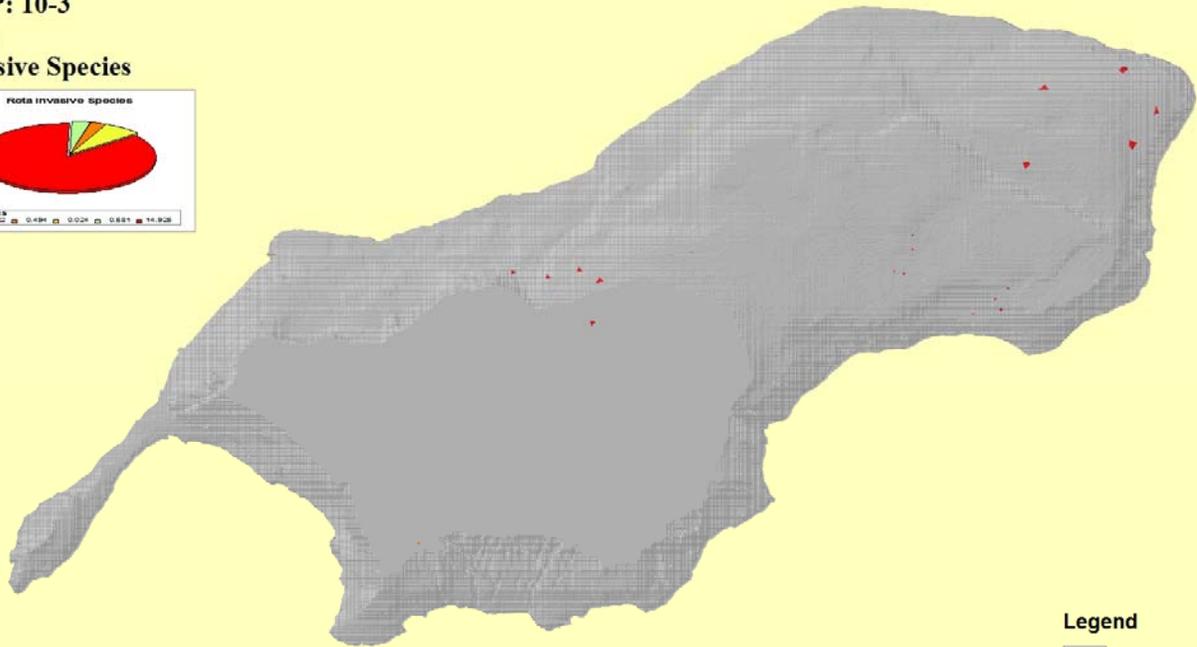
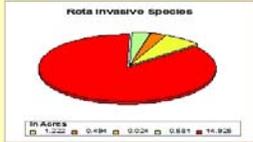
Legend

- Not Rated
- Scarlet gourd
- Lantana camara / Chromalena
- Chain of love



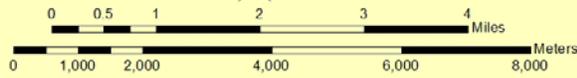
The invasive species listed on the map are the most common invasive species found in Tinian. This map does not capture invasive species within the Military Leaseback and Military Retention Areas. This map will be updated as more information becomes available.

MAP: 10-3
Rota
Invasive Species



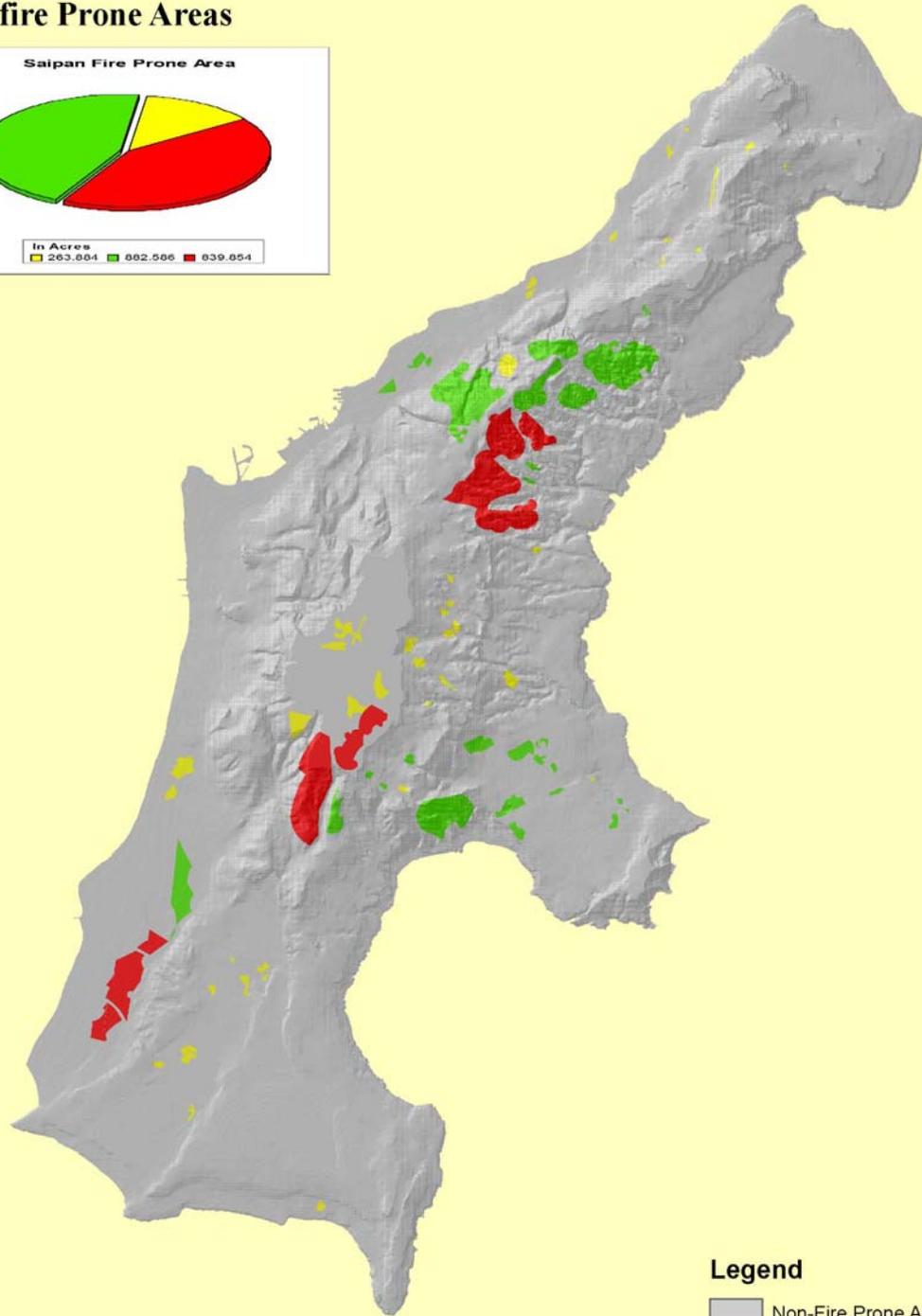
Legend

- Not Rated
- Scarlet gourd
- African Tulip
- Lantana camara
- Chain of love
- Chormalena Odorata



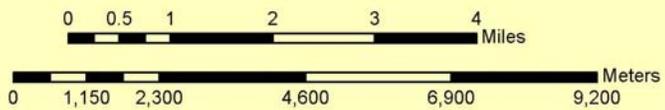
The invasive species listed on the map are the most common invasive species found in Rota. These species presents adverse impact to the forest health landscape.

MAP: 11-1
Saipan
Wildfire Prone Areas



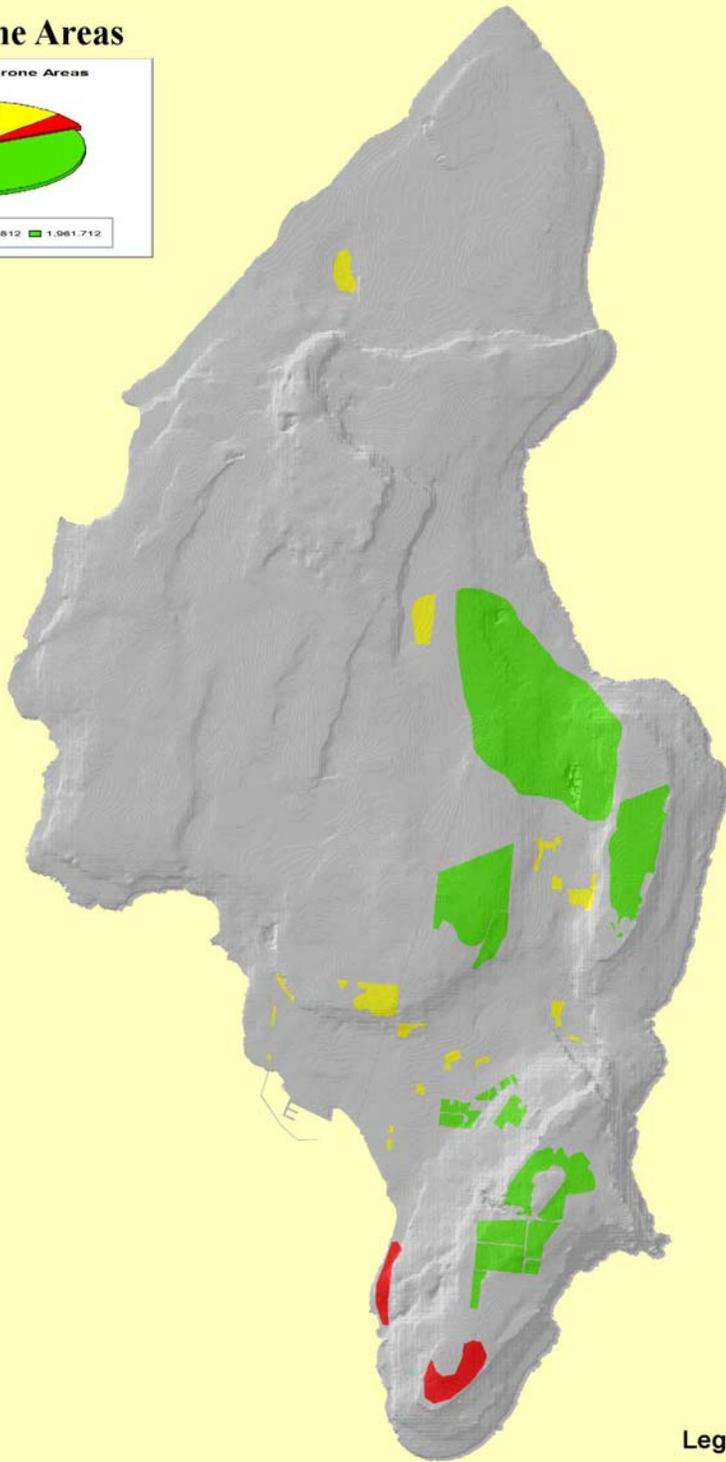
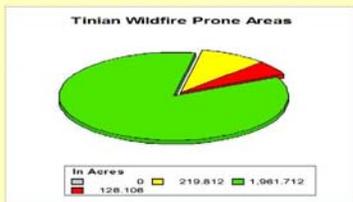
Legend

- Non-Fire Prone Area
- Low
- Medium
- High

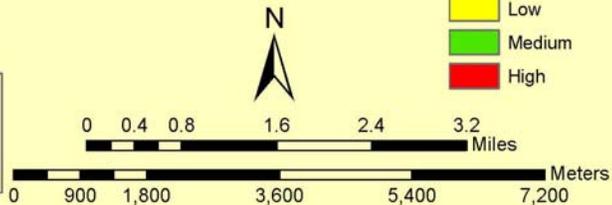


This map represents known occurrence of fire prone areas. Fire prone areas are usually found within grassland. Areas wildlife can cause structural damage to urban built-up is given the highest priority, followed by areas where fire is most likely to occur each year. Areas where wildlife fire will not have impact to life and property is given the lowest priority.

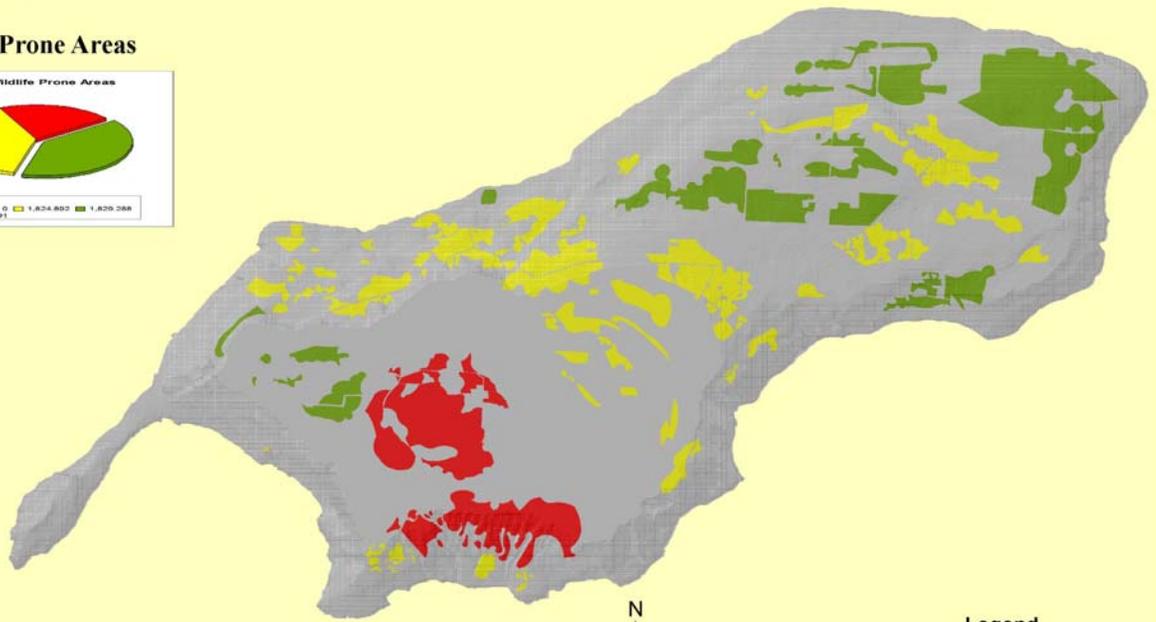
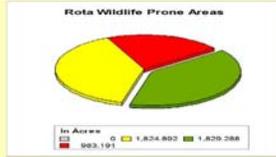
MAP: 11-2
Tinian
Wildfire Prone Areas



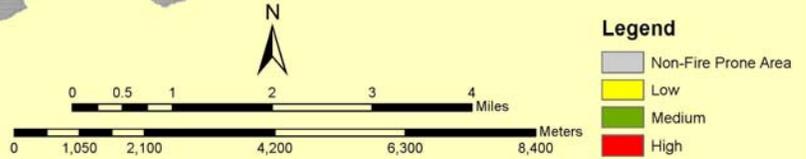
Areas where wildlife occurs more often and is causing adverse impact to the forest ecosystem is given the highest priority.
 Areas that have yearly fire occurrence but does not pose much threat to the forest ecosystem is given a medium priority.
 Areas that have the least wildfire concern and can easily be reached is given the lowest priority.



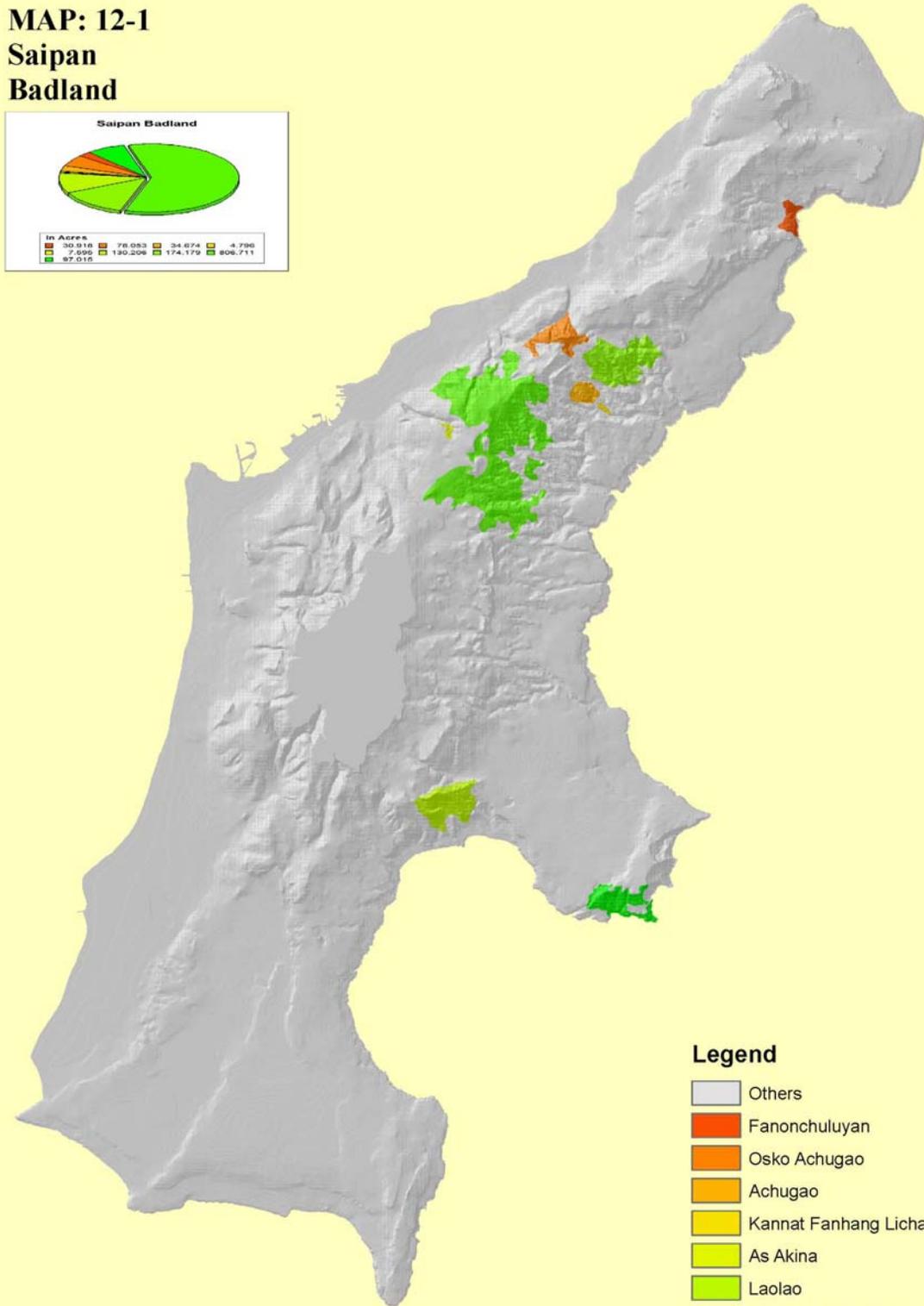
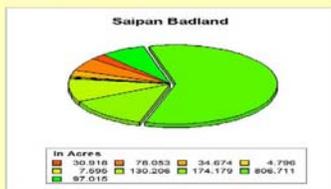
MAP: 11-3
Rota
Wildfire Prone Areas



The priority areas were based on wildfire threat to the forest ecosystem. Talakaya watershed areas were given the highest priority. The medium priority are those areas where wildfire will cause adverse impact to local forest resources and wildlife habitat. The low priority are areas with the least impact to wildlife resources, forest resources or property from wildfire.



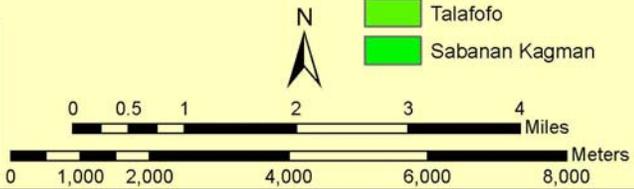
MAP: 12-1 Saipan Badland



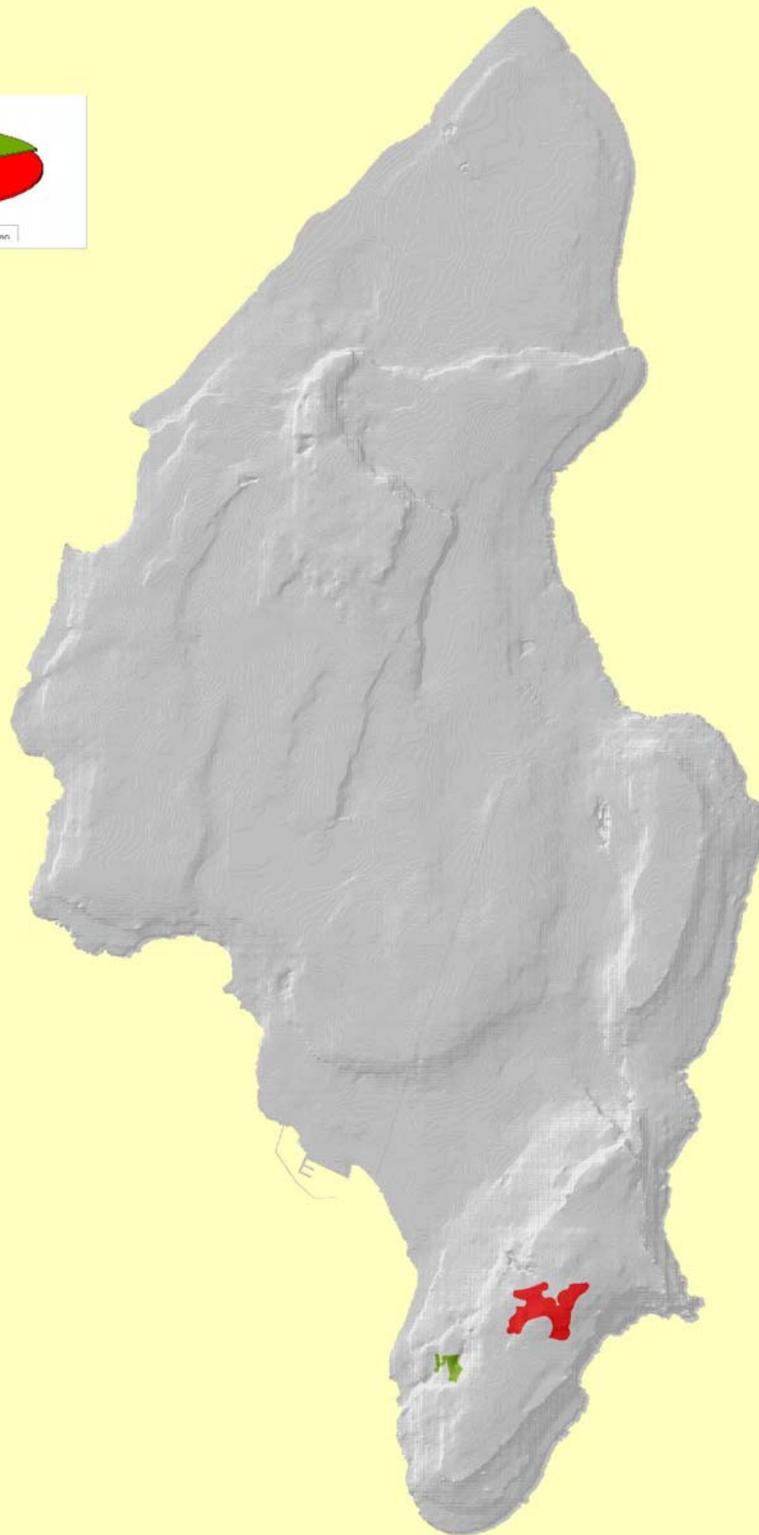
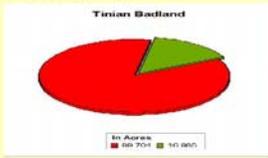
Legend

- Others
- Fanonchuluyan
- Osko Achugao
- Achugao
- Kannat Fanhang Lichan
- As Akina
- Laolao
- Sabanachugao
- Talafofo
- Sabanankagman

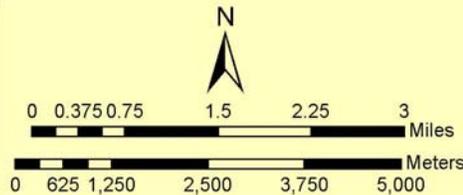
This data layer is intended to show the badland areas in our forest land coverage due to bad soil. Agfayan Variant Rock outcrop complex 15-30 percent slope, Agfayan Variant rock outcrop complex 30-60 percent slope, Akina Badland Complex 15-30 percent slope, and Akina Badland Complex 30-60 percent slope are soil classes that have the composition of badland. This soil classes were extracted from the USDA NRCS Soil Map Data viewer produced by USDA NRCS for the CNMI.



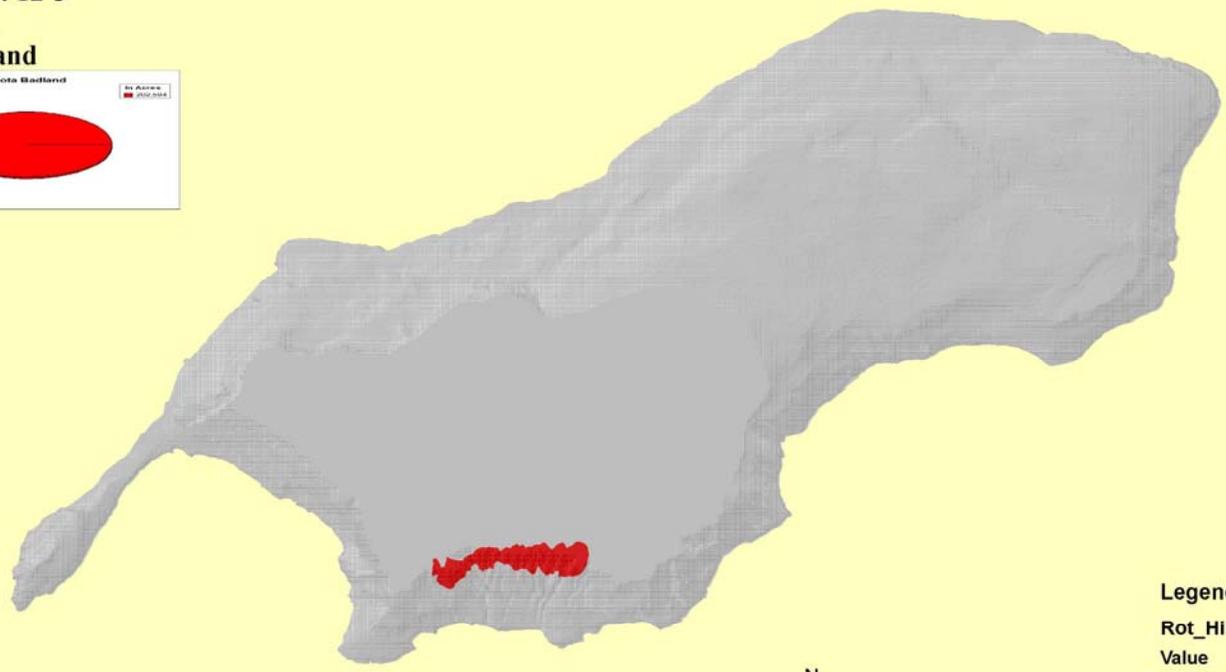
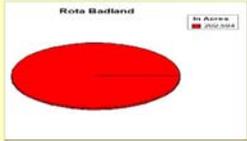
MAP: 12-2
Tinian
Badland



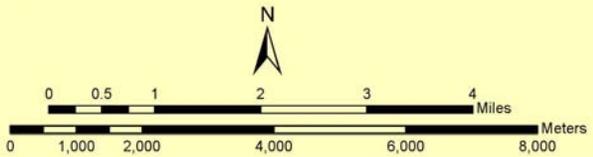
This data layer is intended to show the badland areas in our forest land coverage due to bad soil. Agfayan Variant Rock outcrop complex 15-30 percent slope, Agfayan Variant rock outcrop complex 30-60 percent slope, Akina Badland Complex 15-30 percent slope, and Akina Badland Complex 30-60 percent slope are soil classes that have the composition of badland. This soil classes were extracted from the USDA NRCS Soil Map Data viewer produced by USDA NRCS for the CNMI. This map does not account for badland within the military retention and the military leaseback areas.



MAP: 12-3
Rota
Badland



This data layer is intended to show the badland areas in our forest land coverage due to bad soil. Agfayan Variant Rock outcrop complex 15-30 percent slope, Agfayan Variant rock outcrop complex 30-60 percent slope, Akina Badland Complex 15-30 percent slope, and Akina Badland Complex 30-60 percent slope are soil classes that have the composition of badland. This soil classes were extracted from the USDA NRCS Soil Map Data viewer produced by USDA NRCS for the CNMI.

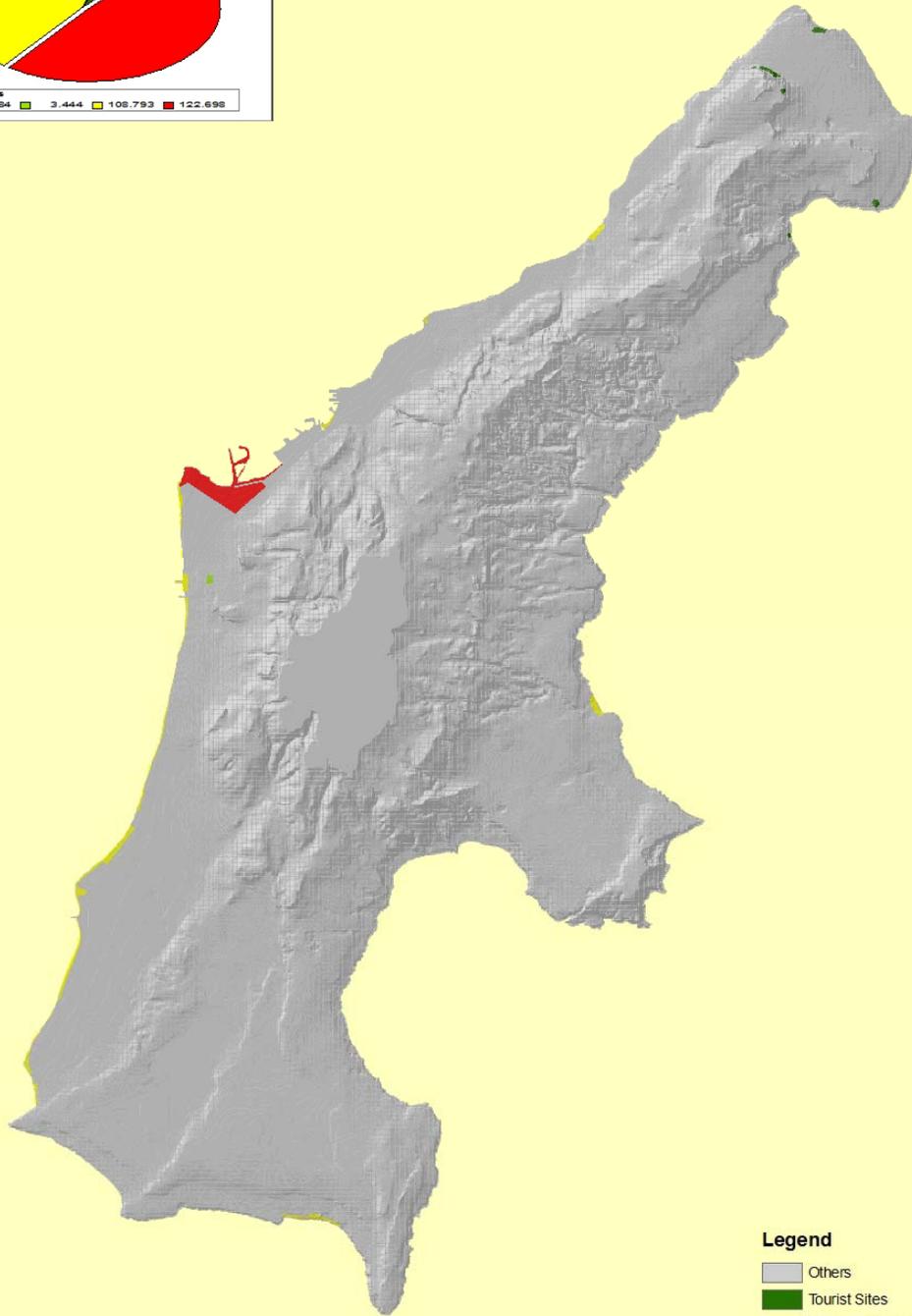
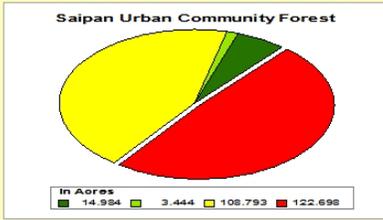


Legend

Rot_Hillshade Value

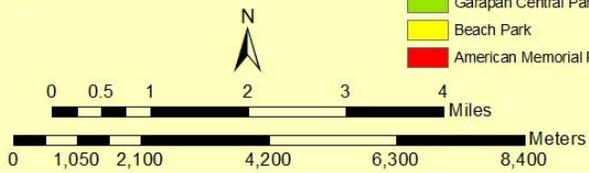
- High : 254
- Low : 0
- Others
- Talakhaya

MAP: 13-1
Saipan
Urban Community Forest

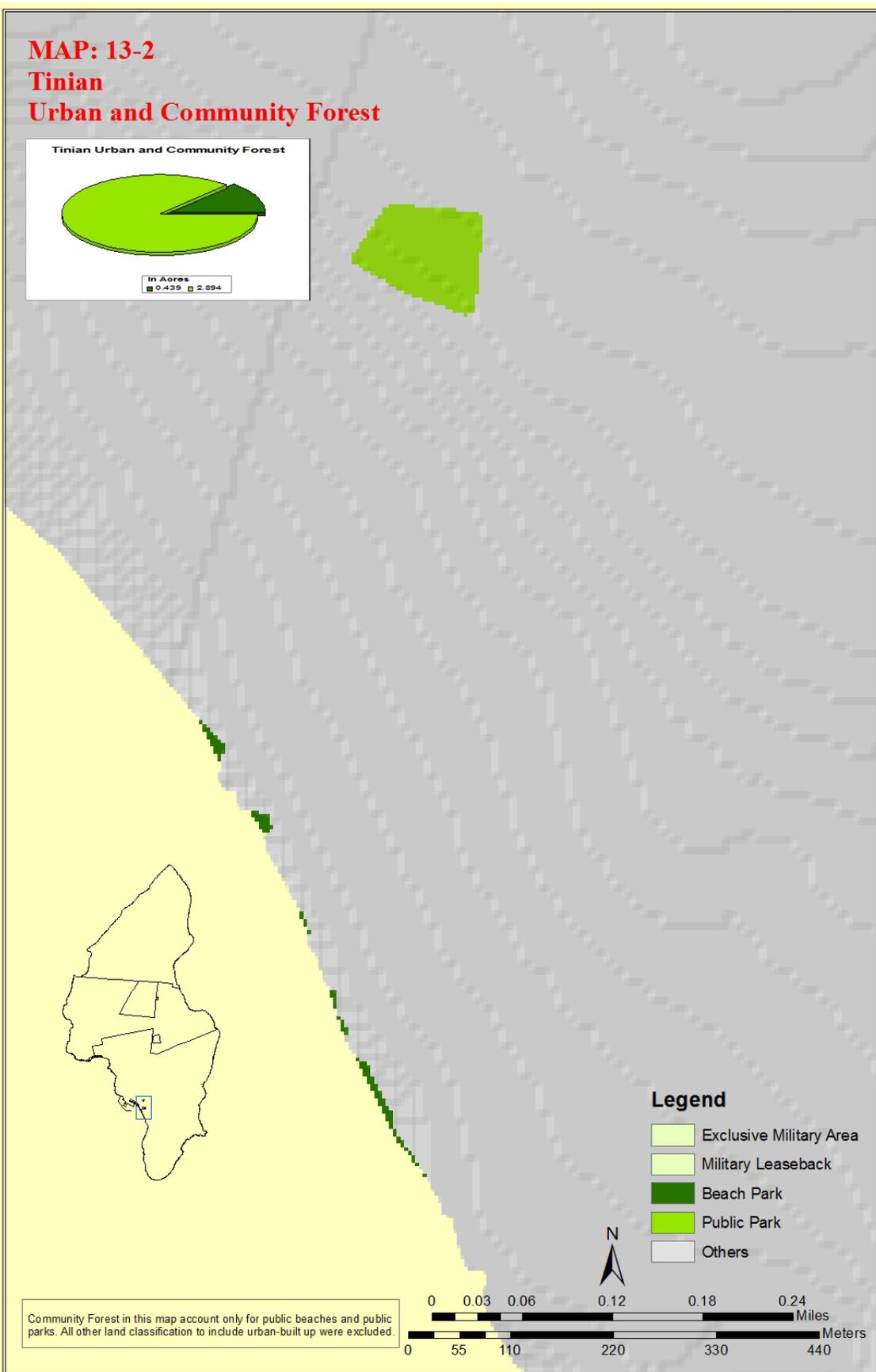
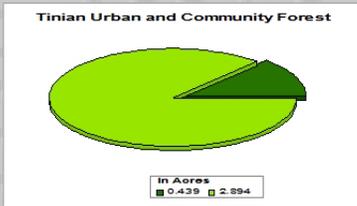


- Legend**
- Others
 - Tourist Sites
 - Garapan Central Park
 - Beach Park
 - American Memorial Park

Urban and Community Forest in this map account only for Tourist Sites, Public Beaches, Public and Memorial Parks, all other land classification were excluded in this map.

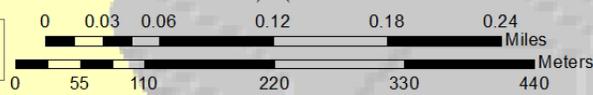


MAP: 13-2
Tinian
Urban and Community Forest

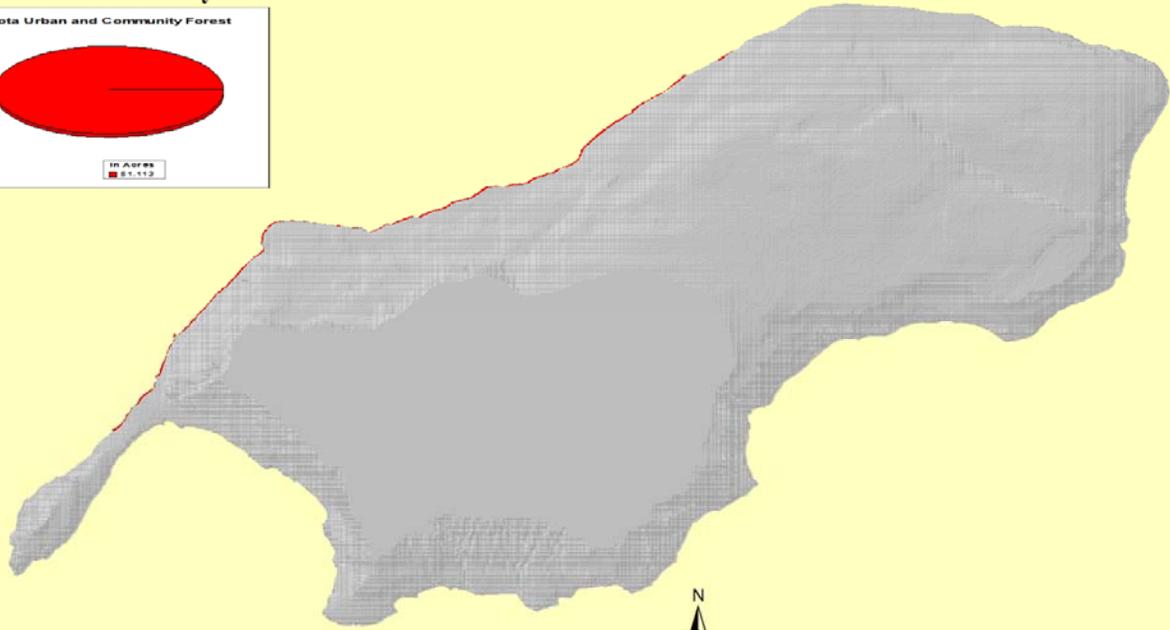
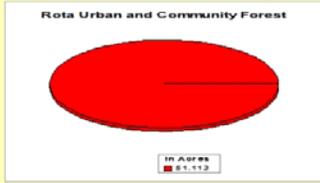


Community Forest in this map account only for public beaches and public parks. All other land classification to include urban-built up were excluded.

- Legend**
- Exclusive Military Area
 - Military Leaseback
 - Beach Park
 - Public Park
 - Others



MAP: 13-3
Rota
Urban and Community Forest



Urban and Community Forest in this map account only for Public Beaches and Public Parks, all other land classification were excluded in this map.

