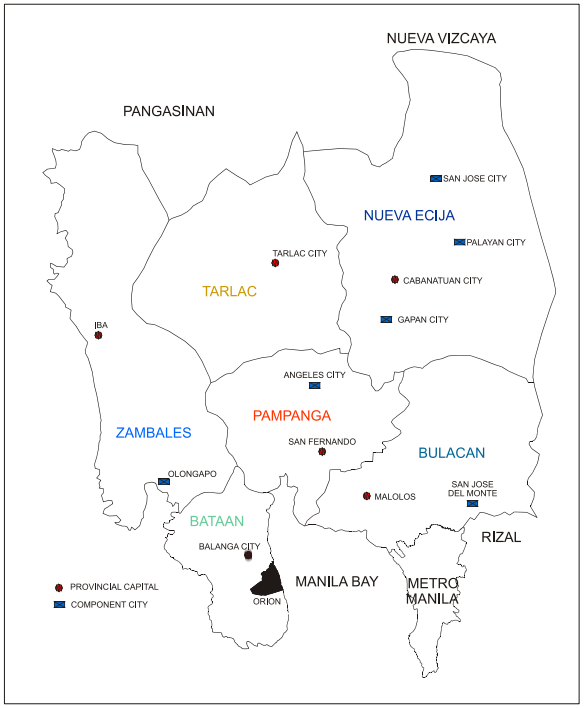
CHAPTER 2
ENVIRONMENTAL MANAGEMENT SECTOR

2.1 Geography

The municipality of Orion is located in the Province of Bataan, Central Luzon. Situated at the 120°00' – 120°37' longitude, 14° 40' – 14°56'02" latitude, Orion is bounded in the North by the Municipality of Pilar; Manila Bay in the East; Municipality of Limay in the South and Municipality of Bagac in the West. The total land are of Orion is 6,541 hectares or approximately 65.41 sq. kms.

Figure 2.1: Provinces of Central Luzon



The Municipality is approximately 132 km away from Manila by land and around 50 km across Manila Bay. It is about 8 kms. south of Balanga City, the provincial capital, and about 20 kms. north of Mariveles, the southernmost municipality in Bataan.

Figure 2.2: Municipalities of Bataan

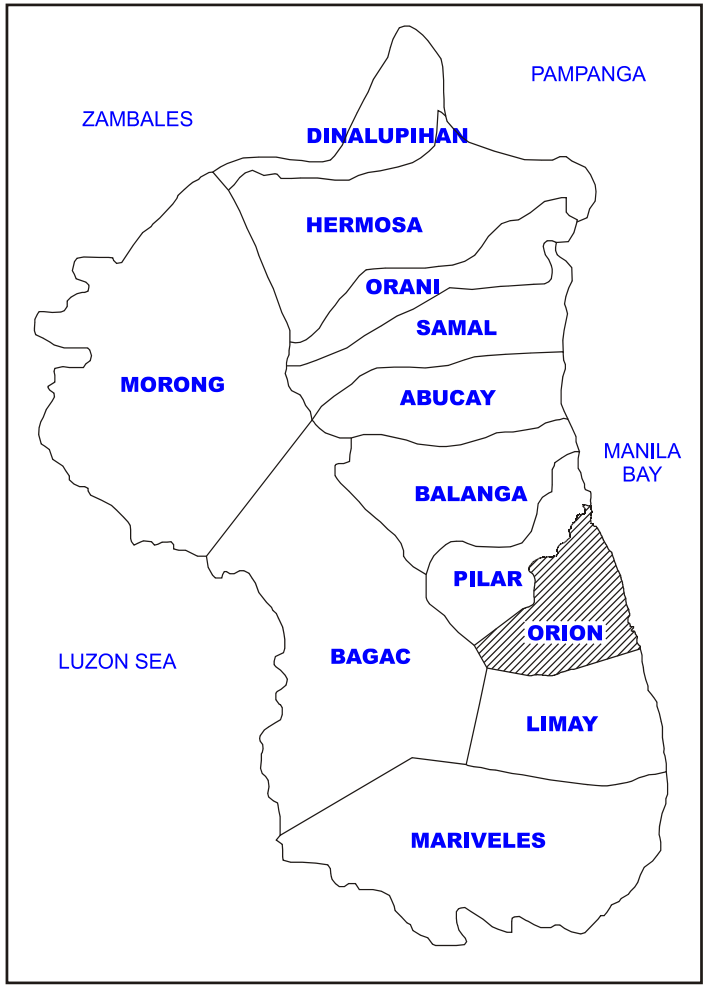
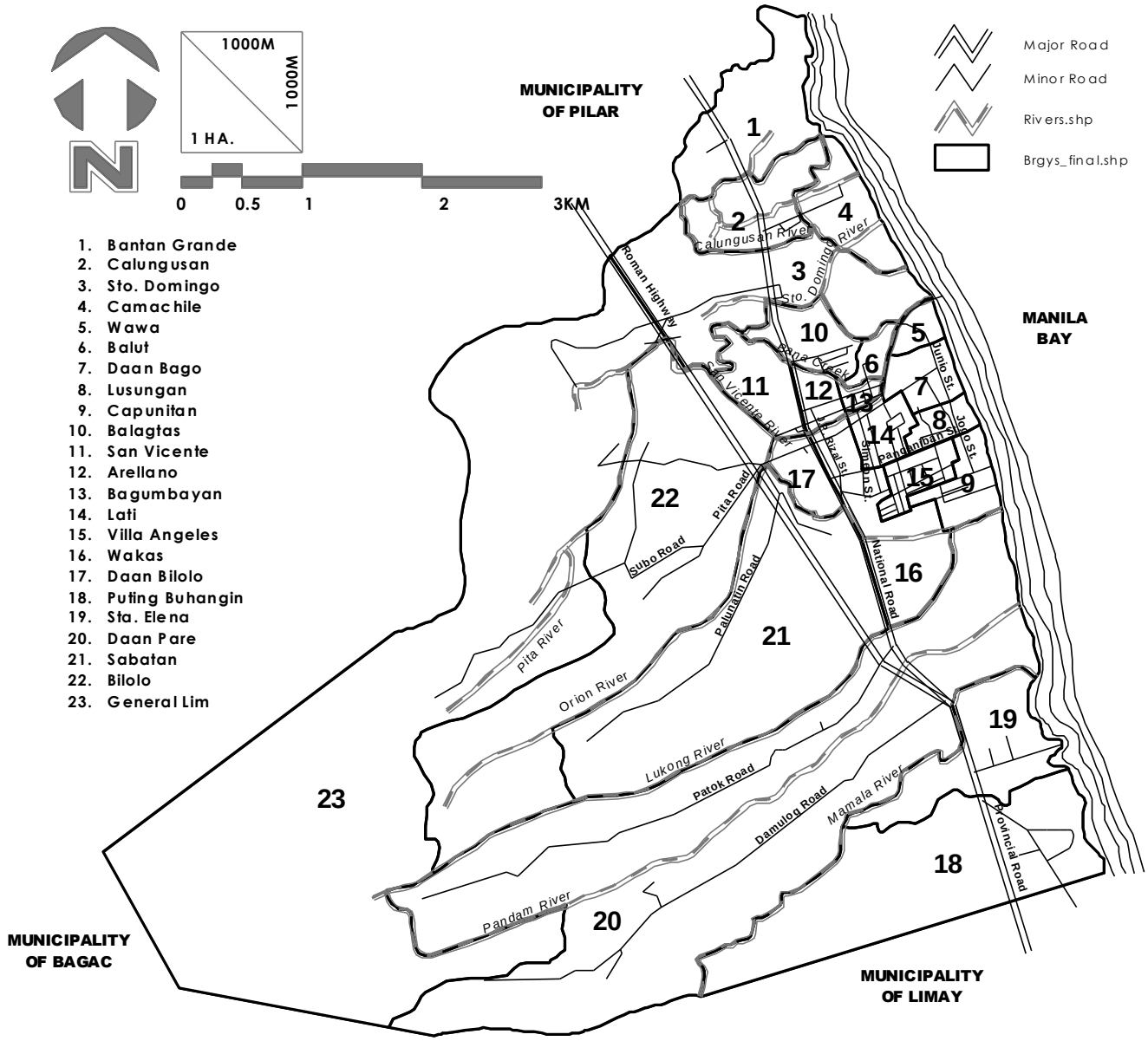


Figure 2.3: Barangay administrative boundaries of Orion



Orion is divided into 23 barangays, of which 12 are classified under "nearly urbanizing barangays" and 11 under rural barangays. In terms of land area, General Lim in the western part of the municipality is the biggest barangay, while Lusungan on the eastern part, along the coast, is the smallest barangay.

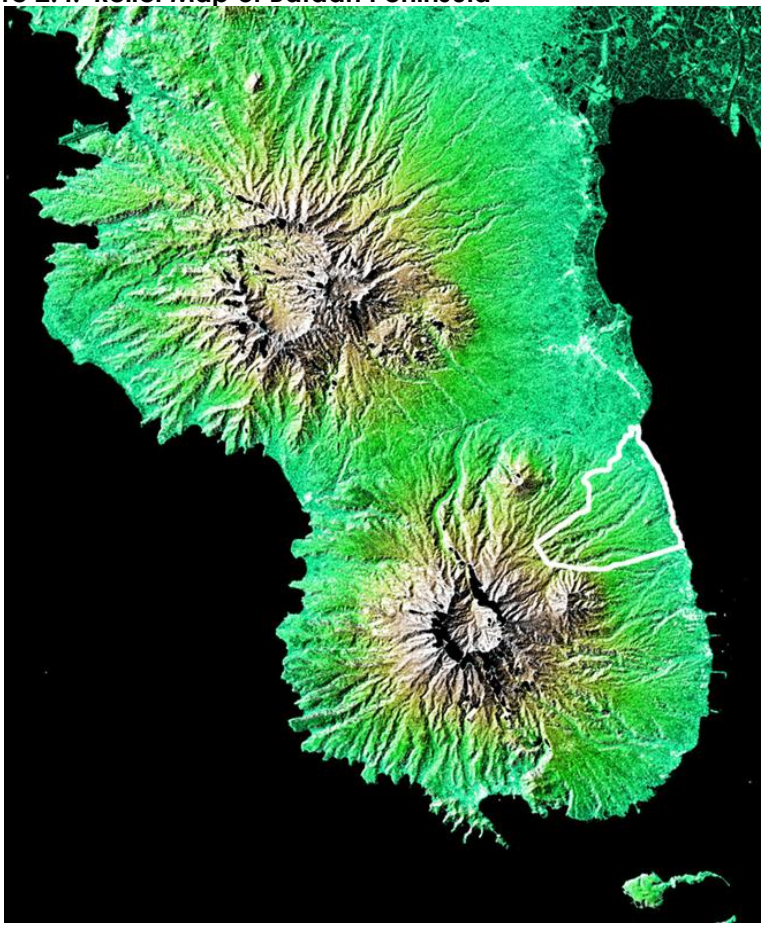
Table 2.1: Area Distribution of Orion by Barangay

Name of Barangay	Total Land Area (Has)
1. Arellano	3.5857
2. Bagumbayan	3.8804
3. Balagtas	35.6219
4. Balut	20.1489
5. Bantan	141.5209
6. Calungusan	124.3254
7. Camachile	64.2602
8. Daan Bago	8.3847
9. Daan Bilolo	44.0921
10. Capunitan	7.3775
11. Lati	5.4736
12. Lusungan	2.7996
13. Puting Buhangin	319.6859
14. San Vicente	76.9445
15. Sta. Elena	25.4358
16. Sto. Domingo	302.0403
17. Villa Angeles	8.3095
18. Wakas	14.2948
19. Wawa	7.0776
20. Bilolo	355.2252
21. Daan Pare	2,492.07
22. General Lim	1,734.68
23. Sabatan	343.7628
TOTAL	**6,541.00**

2.2 Topography & Drainage

The topography of the Municipality of Orion is generally mountainous with only 30% of total land area nearly level. The mountainous part is located mainly on the southwestern part while the northwestern part is considered lowland or nearly level. It is characterized by flat to moderate relief whose elevation ranges from 0 to 100 meters above mean sea level. The flat relief is situated on the northern portion while the moderate relief is located on the southern part.

Figure 2.4: Relief Map of Bataan Peninsula[1]



Source: http://photojournal.jpl.nasa.gov/catalog/PIA03353

[1] The image above was generated with data from the Shuttle Radar Topography Mission, which collected enough measurements to map 80 percent of Earth's landmass at this level of precision. It combines two types of Shuttle Radar Topography Mission data. The image brightness corresponds to the strength of the radar signal reflected from the ground, while colors show the elevation measurements. Colors range from blue at the lowest elevations to brown and white at the highest elevations.

Drainage

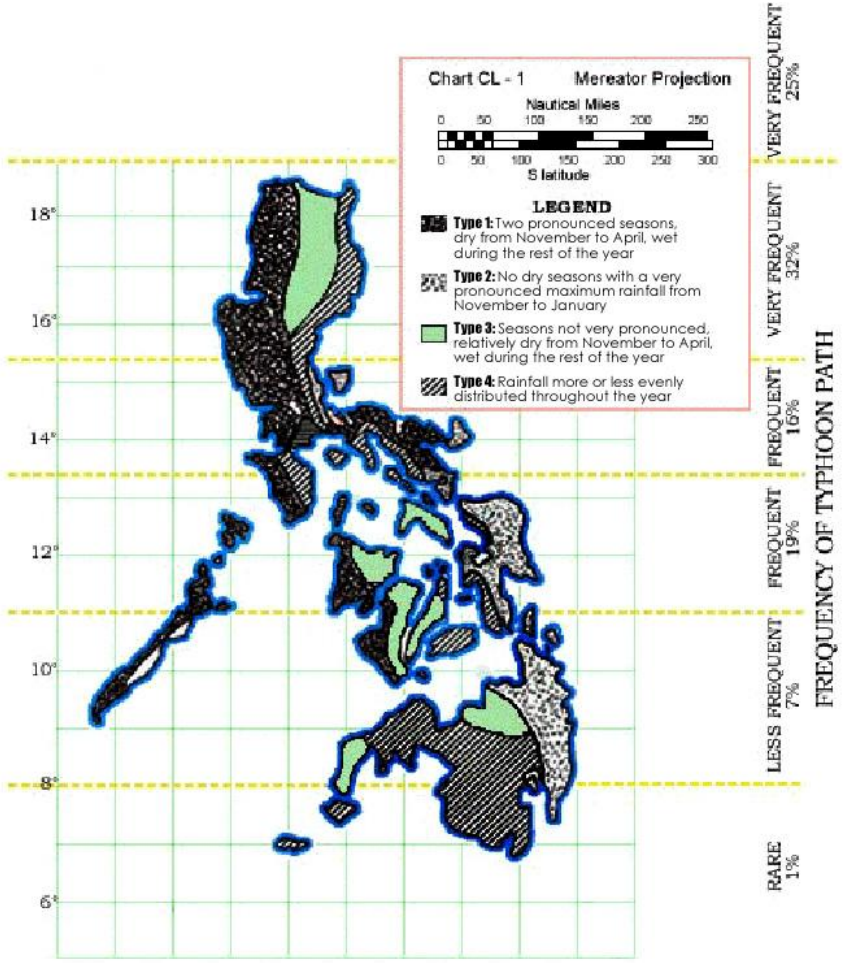
There are six (6) main drainages in the area. These are the Calungusan River, Sto. Domingo River, San Vicente River, Orion River, Lukong River, and Pandam River. All these rivers drain towards Manila Bay (See Figure 2.3). Smaller creeks branch out of these rivers, among which are Bana Creek and Tabon Creek.

Figure 2.5: Santo Domingo River

2.3 Climate

Orion has a Type1 climate with dry season from November to April and rainy season from May to October. The mean annual temperature is 25^{0}C and the mean annual rainfall is 228.72 mm.

Figure 2.6: Climate Map of the Philippines Based on Coronas Type of Classification



2.4 Geomorphology

The whole province of Bataan including the Municipality of Orion can be classified broadly into one volcanic terrain. Most of the highest elevations are considered parts of the collapsed caldera forming a ring-like structure within the suspected mouths of Mount

Figure 2.7: Aerial photograph of the Province of Bataan

Natib and Mariveles. Other high peaks are most likely the satellite vents of major volcanic craters presently occurring as plugs and dikes along the upper and mid-slopes of the volcano. Bordering these morpho-landforms are lava fields and flow plains with deep incision, steep cliffs, occasional gorges, and minor cascades.

Coastal areas are classified by typical marine land form such as beach ridges, swales, and foreshore sand bars.

2.5 General Geology

Basically, Bataan Peninsula is tectonically sitting directly on top of an active subduction zone which centers along the Manila Trench. It is believed that this zone was responsible for the Early Pliocene to Early Holocene period of volcanic activities giving rise to varied depositions of volcanic rocks in the whole Peninsula. This is likewise responsible for the young geologic setting of the area.

Hereunder are belief descriptions of the stratigraphy of the province derived mostly from a report entitled "The Geology of Natib-Mariveles Geothermal Prospect" (C.C. Panem, 1988).

Geologic Setting

2.5.1. Regional Geology

The protected area lies within the eastern flank of Bataan Peninsula which is made-up of two large volcanic edifice, the Mt. Natib on the north and the Mt. Mariveles on the south. These giant strato-volcanoes are made-up of alkaline shosonitic suites (C.C Panem, PNOC, 1988)

2.5.2. Local Geology

The geology of the surveyed area was based from the previous workers of the PNOC (1988). There are three (3) rock stratigraphic units exposed in the area. These are, the Quaternary Pyroclastics (QP,) Quaternary Plug (QP) and Quaternary Alluvium (Qal).

Quaternary Pyroclastics (QP)

The pyroclastic deposit occupies the rolling to hilly ground with infrequent deep incision in several sections of creeks and rivers. It is composed of volcanic breccia, tuff and tuff breccias and lahars. The volcanic breccia is slightly to moderately indurated and the clast is consists mainly of andesitic rocks while the lahars, tuff and tuff breccia are loosely cemented.

Quaternary Plug (QP)

The quarternary plug occurs as promontory hill located on the southern portion of the project area. It is made wholly of altic-andesites rock.

Quaternary Alluvium (Qal)

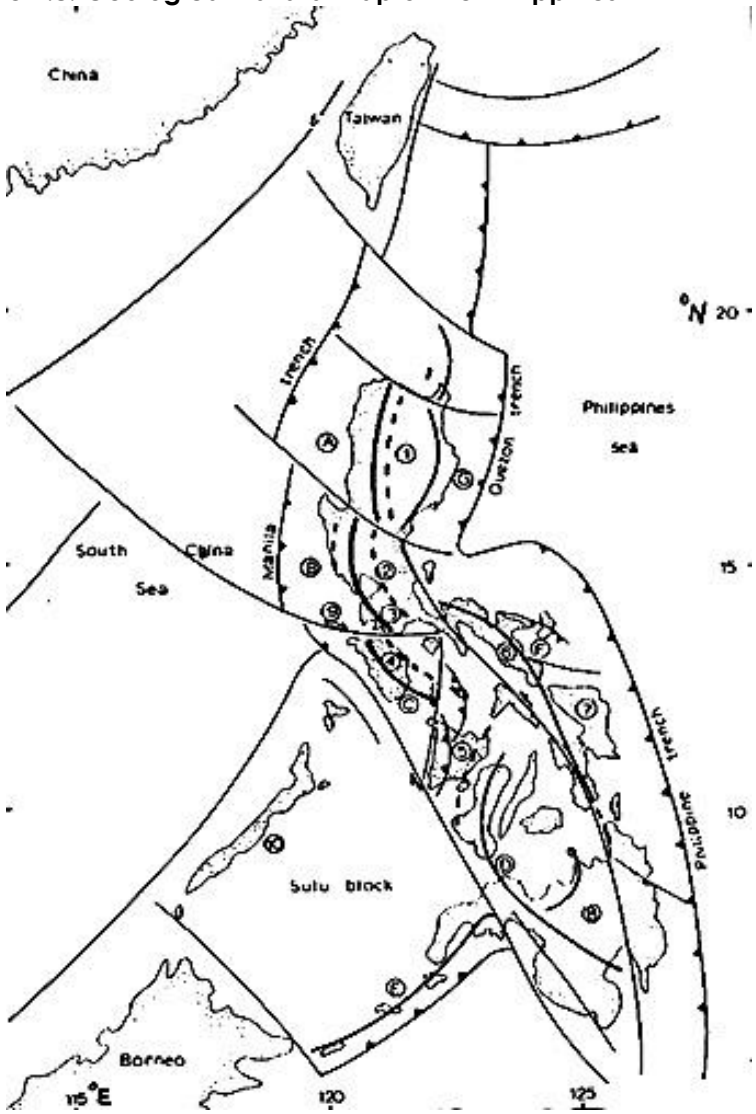
This unit occupied the low-lying areas which includes the beaches and plains. It consists mainly of unconsolidated materials of clay, slit, sand gravel with occasional boulder sizes. These deposits are derived from the weathering and erosion of older volcanic rocks that were later transported and deposited along streams channels, plains and river deltas.

2.6 Geologic Hazards

The Philippine archipelago forms part of the Circum-Pacific volcanic seismic belt. Geologically, it is characterized by tectonic mobility, wide-spread volcanism, and pervasive seismicity. The Philippines inherited their present geologic configuration from stresses associated with the confluence of two major subduction systems: the Manila trench-Bataan orogene in the west, and the Philippine-Quezon trench-Mayon orogene in the east.

Bataan falls under the geotectonic area where major fracture zones as indicated by the thin lines (as shown in Figure 1) and the orogenes as indicated by the full and broken lines. This makes Orion vulnerable to seismic activities coming directly from the Manila trench-Bataan orogene subduction as evidenced by the number of earthquakes felt and experienced from December 1677. Bataan has experienced eight seismic activities since then.

Figure 2.8: Geological hazard map of the Philippines



Source:

2.7 Land Resources

2.7.1. Land Classification

Orion has a total land area of 6,541 has. In terms of agricultural use, the 23 barangays are categorized into two groups: 1) Non-Agrarian Reform communities and 2) Agrarian Reform Communities (ARC). Table 2.4 on the next page shows the total land area of 19 barangays with non-ARC land at 1,215.2593 has or 18.6% and the 4 barangays with ARC land have a total land area of 5, 325.738 has or 81.42%.

The total agricultural land is 5,191.83 has or 79.38%. Timber and forest land area comprises 16.44%. Residential land area is 3.04%, commercial and institutional land area has .23% and .19% respectively.

Figure 2.9: Agricultural Lands in Barangay Sto. Domingo

2.7.2. Forest Land Use

Bataan has a total of 26,586 hectares of forest land area. According to the report given by the DENR, the First District has a total of 16,214 hectares of forest land while District 2 has a total of 10, 372 hectares. The Distribution of these forest land are seen on Table 1 below. Orion has a total of 860 hectares of forest land or just 3% of the total forest land area of the whole Bataan province.

Table 2.2: Bataan Province Forest Land

FOREST LAND	TOTAL AREA	FOREST LAND	TOTAL AREA
First District	**16,214**	**Second District**	**10,372**
Abucay	3,217	Balanga	2,366
Dinalupihan	3,396	Limay	5,548
Hermosa	5,917	Orion	860
Orani	2,232	Pilar	1,598
Samal	1,452		
Grand Total	**26,586**		

2.7.3. Integrated Social Forestry Project (ISF) – CARP

The DENR had targeted a total of 349.42 has. for coverage under the Non-land Transfer Program of CARP through the Integrated Social Forestry project (ISF). This program is to reforest the denuded mountains and at the same time to provide livelihood for upland farmers by requiring them to replant significant number of forest trees along with fruit-bearing trees and practice of Sloping Agricultural Land Technology (SALT). The land will be distributed to upland farmer through the awarding of Certificate of Stewardship Contracts (CSC) which means they will be 'steward" of the land instead of owners and will be subject to renewal every 25 years.

Table 2.3: DENR-ISF-CARP Accomplishment of Orion ARC, as of December 2001.

NAME OF BGY	TOTAL AREA	ACCOMPLISHMENT	%	NO. OF ARBS/CSC HOLDERS		
				TOTAL	MALE	FEMALE
Gen. Lim	304.4228	269.9228	89	109	78	31
Daan Pare	45	45	100	20	16	4
Total	**349.4228**	**314.9228**	**90**	**129**	**94**	**35**

Table 2.4: Land Classification and Distribution of Orion per Barangay (2004)

BARANGAY	TOTAL LAND AREA (HA)	TOTAL AGRI LAND (HA)	TIMBER/ FOREST LAND (HA)	RESIDENTIAL (HA)	COMM'L. (HA)	INSTITUTIONAL (HA)	ROADS/OPEN SPACE (HA)	TOTAL	TOTAL HOUSEHOLDS
Non-ARC Barangays									
Arellano	3.5857	-	-	3.2394	0.3463	-	-	714	150
Bagumbayan	3.8804	-	-	3.8804	-	-	-	1431	280
Balagtas	35.6219	16.2561	-	16.3476	1.4709	0.0723	1.475	1560	322
Balut	20.1489	19.0035	-	1.1454	-	-	-	1070	221
Bantan	141.5209	133.5514	-	6.8913	0.2386	0.5065	0.3331	1490	299
Calungusan	124.3254	114.958	-	7.9174	-	0.8	0.65	1156	237
Camachile	64.2602	53.7812	-	5.5936	-	0.3306	4.5548	1466	297
Daan Bago	8.3847	-	-	8.3847	-	-	-	1145	225
Daan Bilolo	44.0921	31.1134	-	8.515	0.4691	2.0061	1.9885	2484	500
Capunitan	7.3775	4.5166	-	2.3177	-	0.5432	-	3900	730
Lati	5.4736	-	-	5.4736	-	-	-	1533	296
Lusungan	2.7996	-	-	2.7996	-	-	-	1709	323
Puting Buhangin	319.6859	304.6321	-	13.7338	1.12	0.2	-	2217	442
San Vicente	76.9445	65.0736	-	4.3767	2.3148	5.1794	-	1281	254
Sta. Elena	25.4358	24.8639	-	0.5719	-	-	-	1128	231
Sto. Domingo	302.0403	277.4885	-	17.4704	2.1702	0.3842	4.527	3063	606
Villa Angeles	8.3095	-	-	8.3095	-	-	-	1605	320
Wakas	14.2948	9.2671	-	4.0947	0.8336	0.0994	-	950	195
Wawa	7.0776	-	-	5.4095	-	1	0.6681	1752	329
ARC Barangays									
Bilolo	755.2252	738.9461	-	11.5558	0.5	0.7233	3.5	3936	755
Daan Pare	1,492.07	1,280.93	185	11.1483	-	0.5	14.5	3593	732
General Lim	2,734.68	1,784.11	890.1376	45.4278	3.5	0.5	11	2301	475
Sabatan	343.7628	333.3438	-	4.5636	1.8554	-	4	2583	516

Table 2.5: Land Distribution under CARP 2003

BARANGAY	TOTAL LAND Area (Ha)	AGRIC'L Land (Ha)	CARP AREA (SCOPE)			AREA DIST'D/COVERED		BALANCE		NO. OF ARBS					
			LAD	LEASEHOLD	TOTAL	LAD	LEASEHOLD	LAD	Leasehold	ACTUAL	POTENTIAL			TOTAL	CROPS
Arellano	3.5857	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bagumbayan	3.8804	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Balagtas	35.6219	16.2561	9.9994	1.5	11.4994	9.9994	1.5	-	-	4	1	-	-	5	Riceland
Balut	20.1489	19.0035	-	11.8113	11.8113	-	11.8113	-	-	-	6	-	-	6	do
Bantan	141.5204	133.5514	15.5905	38.223	53.8135	15.5905	38.223	-	-	9	16	-	-	25	do
Bilolo	755.2252	738.9461	106.5895	81.4443	188.0338	98.9194	81.4443	7.6701	-	61	47	9	-	117	RL/FL
Calungusan	124.3254	114.758	48.2554	67.049	115.3044	48.2554	67.049	-	-	33	33	-	-	66	Riceland
Camachile	64.2602	53.7812	-	3	3	-	3	-	-	-	2	-	-	2	do
Capunitan	7.3775	4.5166	-	-	-	-	-	-	-	-	-	-	-	-	-
Daan Bago	8.3817	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Daan Bilolo	44.0921	31.1134	2.7515	9.1997	11.9112	2.7115	9.1997	-	-	3	7	-	-	10	Riceland
Daan Pare	1492.0739	1280.9256	501.2129	21.6047	522.8176	501.2129	21.6047	-	-	188	17	-	-	205	RL/FL
Gen. Lim	2734.6788	1784.1134	257.8277	7.7665	265.5942	288.9227	7.7665	28.905	-	178	5	16	-	199	RL/FL
Lati	5.4736	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lusungan	2.7996	-	-	-	-	-	-	-	-	-	-	-	-	-	-
P. Buhangin	319.6859	304.6321	6.5531	7.4096	13.9627	6.5531	7.4096	-	-	4	1	-	-	5	Fruitland
Sabatan	343.7628	333.3428	4.553	24.3116	28.8646	4.553	24.3116	-	-	4	20	-	-	24	FL/RL
San Vicente	76.9445	65.0736	6.262	47.0945	53.3565	6.262	47.0945	-	-	13	25	-	-	38	Riceland
Sto. Domingo	302.0403	277.4885	16.1383	148.2268	164.3651	15.6374	148.2268	0.5009	-	8	75	1	-	84	Riceland
Sta. Elena	**25.435**	**24.8639**	**-**	**1.8176**	**1.6176**	-	**1.0176**	-	-	-	7	-	-	**1**	Fruitland
Villa Angeles	8.3095	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Wakas	14.2948	9.2671	0.6862	2.1499	2.8356	0.6862	2.1494	-	-	7	1	-	-	8	Riceland
Wawa	7.0776	-	-	-	-	-	-	-	-	-	-	-	-	-	
TOTAL	**6,541.00**	**5,191.63**	**976.3795**	**472.6085**	**1448.7875**	**999.3035**	**471.808**	**37.076**	**-**	**512**	**263**	**26**	**-**	**795**	

2.7.4. Land Distribution under CARP

Table 2.5 shows that almost 28% of the total agricultural land of Orion is classified under the Comprehensive Agrarian Reform Program (CARP).

2.8 Aquatic and Marine Resources

2.8.1. Water Resources and Coastal Areas

Orion has natural water resources located mostly within the ARC areas that are also in turn the main water sources. Among the main tributaries include Tala River, Biloo River, Lucong River, Pandam River, Pita Rover and Balat River. The water provided by these tributaries are utilized for the purposes of irrigating vast stretches of rice fields and farm lands via the construction of small impounding structures.

Underground water is abundant and serves as the prevailing sources of domestic water and potable drinking water. Said water resources can be tapped through a communal water system and can serve 988 household. Other households that are not reached by the water system usually get their supply of potable drinking water from free-flows and artesian pumps.

2.8.2. Extent of Municipal Waters

The municipal waters boundaries of Orion are still to be delineated and certified by NAMRIA. Through actual survey, the length of Orion's shoreline is estimated to be 7.823 km.

2.8.3. Aquaculture

As of 2003, there are eight (8) registered fresh water operators in Orion. A total of 18 hectares or 18,000 sq. m are currently utilized for aqua culture.

Table 2.6: Fresh water marine culture for 2003

NAME OF OPERATOR	LOCATION	AREA
1. Pol Dela Rosa	Pol Resort Orion Highway, San Vicente	400 sq.m.
2. Federico Pascual	General Lim	3.0 has.
3. Miguel Angeles	San Vicente	400 sq.m.
4 .Bernardo Reyes	Bantan	5,000 sq.m.
5. Aida Tangonan	Daan Pare	3.0 has.
6. Ding Roman	Pulong Bato	5.0 has.
Boy Roque		
7. Ernesto Pizarro	Daan Bilolo	1.0 has.
8. Ernesto Gabriel	Pandam, Daan Pare	200 sq.m.
TOTAL		**18,000 sq.m**

Figure 2.10: Fishing ponds in Brgy. Daang Bago

Brackish water culture also occupies a great deal of land area in Orion. Fishponds are located mostly within three barangays: Bantan, Camachile and Capunitan. Table 2.7 shows the distribution and the annual production capacity of each fishpond.

Table 2.7: Brackish marine culture 2003

NAME OF OPERATOR	LOCATION OF FISHPOND	AREA IN HECTARAGE	CULTURE METHOD	SPECIES CULTURED	ANNUAL PROD.M.T
1. Joey Sioson	Bantan, Orion	6	Semi-Intensive	Bagus/	1.5-2.0
2. Salvador Lim	do	7	do	do	do
3. Fredo Vitangcol	do	4	do	do	do
4. Conrado Vitangcol	do	2	do	do	do
5. Mercedes Bermudo	do	2.0 FLA	do	do	do
Amelia Bermudo					
6. Primitiva Vitangcol	do	2.0 FLA	do	do	do
7. Remedios Uy	do	2.0 FLA	do	do	do
8. Primitivo Vitangcol	do	3	do	do	do
9. Celerina Pangilonan	Camachile, Orion	2	do	do	do
10 Natividad Jaco		2.6	do	do	do
11. Remedios Corpuz	do	12	do	do	do
12. Joey Sioson	do	14	do	do	do
13. Magdalena Acuna	do	12	do	do	do
14. Lucila Menardo	do	3.5	do	do	do
15. Remedios Rodriquez	do	10	do	do	do
16. Genarro Navarro	do	3.5	do	do	do
17. Amado Joco	do	3	do	do	do

(Table continued on next page)

Table 2.7: Brackish marine culture 2003 (con't.)

NAME OF OPERATOR	LOCATION OF FISHPOND	AREA IN HECTARAGE	CULTURE METHOD	SPECIES CULTURED	ANNUAL PROD.M.T
17. Carlito Lerma	do	18	do	do	do
18. Efren Rodriquez	Sto.Domingo	3	do	do	do
19. Norberto Regala	Sto.Domingo	5	do	do	do
20. Crispin Apostol	Sto.Domingo	2.5	do	do	do
21. Rogelio Lonzon	do	5	do	do	do
22. Ramon Villazor	Camachile, Orion	1	do	do	do
23. Arsenio Maige	do	9	do	do	do
24. Ofelia Guzman	do	3.5	do	do	do
25. Jose Rodriquez	do	13.0 FLA	do	do	do
26. Jose Bagtas	do	3	do	do	do
27. Cresencia Quezon	do	1	do	do	do
28. Terry Quicho	Capunitan	12	do	do	do
29. David Apolinario	do	3	do	do	do
30. Jose Hipon	do	3	do	do	do
TOTAL		**172.6**			

2.8.4. Commercial Fishing

Orion has a total of 909 fisherfolk engaged in commercial fishing. Among them, 520 have motorized boats and 76 non-motorized boats used in fishing. Table 2.8 on the opposite page below shows the distribution of these data.

Table 2.8: Number of Fisher folk with Motorized and Non-motorized boats

BARANGAY	NO. OF FISHERFOLK	NO. OF MOTORIZED BOAT	NO. OF NON-MOTORIZED BOAT
Capunitan	221	135	30
Lusungan	65	45	5
Daan Bago	53	37	0
Bagumbayan	84	35	0
Balut	40	20	3
Wawa/Pagasa	47	33	0
Camachile	130	90	10
Daan Pare	60	40	15
Sta. Elena	70	30	5
Putting Buhangin	99	39	8
Lati	40	16	O
TOTAL	**909**	**520**	**76**

Figure 2.11: Fishing boats docked along the coastline in Brgy. Lusungan

2.9 Ground Water Resources

All barangays have sufficient water resources. Potable water is provided by the Orion Water Company. The following 19 barangays are under the ORIWAD while only four remaining barangays have their own source of water. The 19 barangays under ORIWAD are barangays: Arellano, Bagumbayan, Balagtas, Balut, Bilolo, Camachile, Daan Bago, Daan Bilolo, Daan Pare, Capunitan, Lati, Lusungan, Puting Buhangin, Sabatan, Sto. Domingo, Villa Angeles, Wakas, and Wawa / Pag-asa. These barangays has an average monthly consumption of 63,835 cubic meter of water from January to September based on ORIWAD monthly billing reports.

Areas which are not covered by the services of ORIWAD are barangays Bantan, Calungusan, Lati, San Vicente, Gen. Lim (Kaput) and Sta. Elena.

2.10 Ecological Solid Waste Management

Orion is collecting an average of 3-4 tons of mixed garbage daily. Wastes collected come from the households, commercial, industrial establishments, farms and agricultural areas and institutional sources like hospitals, schools, churches and prisons.

The bulk of the waste collected comes from the domestic sources with 70% of the total volume. This is followed by wastes coming from the commercial and industrial sources with 25% and the rest from institutional sources.

Collection is done by the municipal government and only Barangay Gen. Lim is not collected by the three garbage trucks available.

In terms of composition of solid wastes, the averages for Orion are as follows:

Table 2.9: Composition of solid wastes

COMPONENT	% BY WEIGHT
Yard and field waste	33.5
Fines and inert	12.9
Wood	11.5
Food waste	11
Paper and Cardboard	10.2
Plastic and petroleum product	9.8
Textiles	4.1
Metals	3.3
Glass	1.9
Leather and rubber	1.8
	10
TOTAL	**0.0**

Figure 2.12: Garbage dump near the mouth of San Vicente River in Brgy. Wawa.

2.11 Land Use Pattern

2.11.1. Present Land Use (2000)

Looking at the Present Land Use Map of Orion (Figure 2.13), Orion's land is predominantly agricultural in nature. Barangays which have large tracts of agricultural land are the ARC barangays of Sabatan, Bilolo and Daan Pare. Although General Lim is also an ARC barangay, its land is mostly forestry in nature.

Fishing grounds, Orion's other main source of income, are clustered in the Orion northern coastline and riversides of barangays Bantan Grande, Calungusan, Camachile, and Sto.Domingo and in the southern coastline in barangays Daan Pare, Capunitan and Sta. Elena. Smaller fishing grounds can also be found along San Vicente River in barangays Wawa and Balut.

Orion's built up areas are mostly concentrated around the area of the Poblacion proper and along the central coast line. Other concentration of built-up areas can be found along the three major road corridors, the fishing grounds in Sta. Elena and the port in Puting Buhangin.

Additional residential areas, mostly subdivisions in nature, are already starting to mushroom away from the town core, in the northern barangays of Bantan Grande, Calungusan and Camachile. This may be a natural reaction to the already dense urban core.

As in any typical provincial setting, commercial establishments are mostly clustered around the Municipio. The junction of the National Road and Manrique Avenue serves as the central point of the commercial development, and then branches off in the four directions along the road. However, the main commercial center of Orion—the public market—is located a little further up north in the Barangay of Balagtas.

Except for the western part of the Municipality, institutional areas are generally dispersed all over the municipality. Industrial areas are also just scattered spots in Orion, as there is no common area where the industrial areas converge, nor is there a large industrial establishment.

There is no large park or public recreational area that can be found in Orion, although smaller parks and multi-purpose courts can be found in most barangays. The bigger parks or plazas can be found in the Municipio grounds in Barangay San Vicente and along the coast in Barangay Wawa, near the port.

2.11.2. Land Use Trend

Comparing the present land use with the land use of Orion during the 1950's (Figure 2.14), one can see the pattern of growth of the built-upareas. The urban core of Orion during the 1950's comprised of Barangays San Vicente, Arellano, Wakas, Bagumbayan and upper Wakas. Additional built-up areas can be found near the coast which included present-day barangays Wawa, Daan Bago and Lusungan. It is fair to assume from the map that these three barangays were actually just one barangay during those times. The port in Puting Buhangin was also not yet built so there was also no built up area in the southern part of the municipality.

From the map, one could also see that the fishing grounds already comprised a big part of the municipality's land. They are concentrated along the coasts to the north of the urban core, while not much fishing grounds can be found yet to the south. The area in between urban core and the coastline built-up area, which are the present-day barangays Lati and Villa Angeles, were also fishing grounds.

There was also not much roads within the urban core, as well as roads leading to the mountainous western part. Main access was the stretch of Manrique, Simion, Venegas, and Pits road via the National Road since Roman Highway was not yet built. Manrique Street was the only street connecting to the mountains, and even then, it was not continuous, and may be just a dirt road when it

reached the mountains, as can be seen from the dotted line in the map.

Figure 2.13: Present Land Use of Orion, Bataan

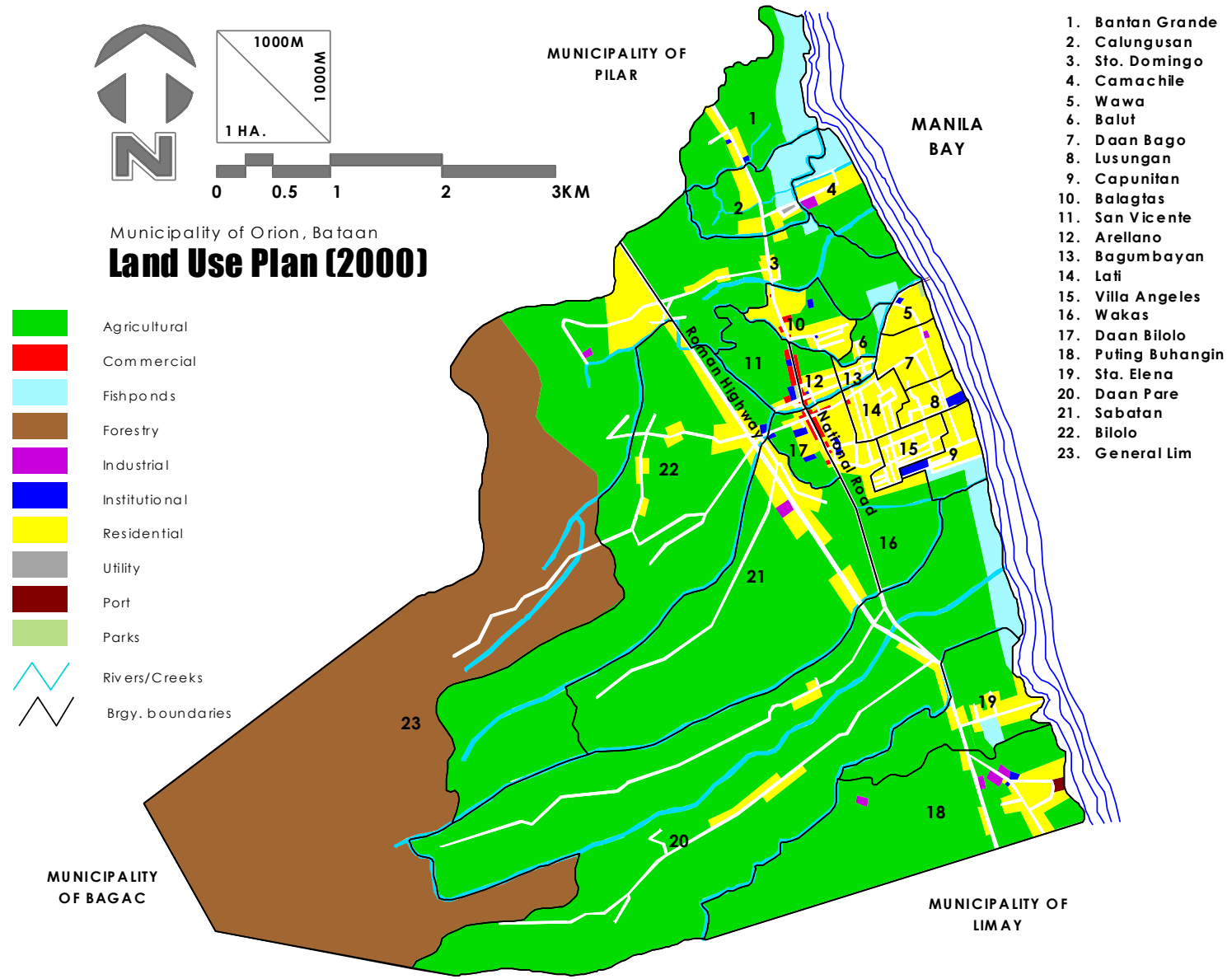
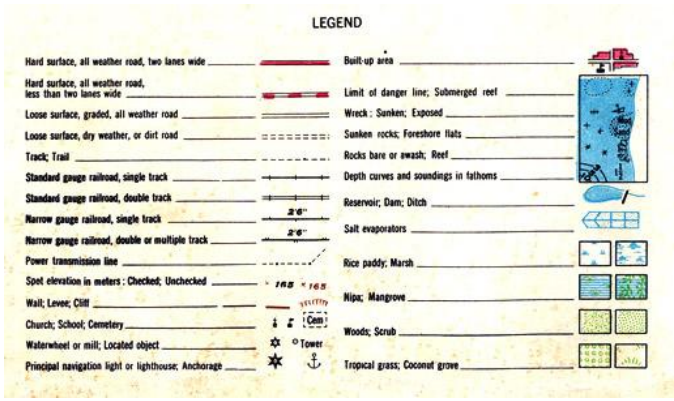


Figure 2.14: Land Use Map of Orion (1950's)



Source: NAMRIA