

CHAPTER 1:

INTRODUCTION

1.1 Purpose

The Municipality's vision relevant to solid waste management is geared towards "A systematic, comprehensive, effective, and sustainable solid waste management for a healthy and ecologically balanced community of Magallanes; through strict implementation of legal mandates and active stakeholders' participation".

It is in the light of this vision that this 10-Year Solid Waste Management Plan was crafted. This plan will be a guiding tool in realizing said vision and in addressing the following present key issues in the community; to wit:

1. Permanence of MENRO tasked to manage the implementation and monitoring of the entire SWM program;
2. Inactive MSWMB and BSWMC;
3. Establishment of 100% barangay MRFs and composting facilities;
4. Full and strict implementation of RA 9003 and two (2) related Municipal Ordinances;
5. Inadequate funds and insufficient tools, equipment and facilities;
6. Absence of market for recycled products;
7. Shortcoming in the monitoring, evaluation of, and reporting of the entire SWM program;
8. Intensification and sustainability of Information, Education and Communication (IEC) Campaign;
9. Passive response of waste generators to the call for self-regulation, reduction and diversion at source, and proper segregation, storage and disposal;
10. Safe closure and rehabilitation of existing controlled disposal facility, development of various alternative disposal facilities, and purchase of related equipment, establishment of a Municipal Ecological Solid Waste Management Park or Eco-Park with Residual Containment Area (RCA) and establishment of a Sanitary Landfill Facility.

The primary goal of the plan, therefore, is to provide a reference in the implementation of Ecological Solid Waste Management program consistent with the provisions of RA 9003 which aimed to ensure sustainability of SWM program through established and

equipped MENRO and active MSWMB and BSWMC; maintain Municipal MRF and establish 100% barangay MRFs and composting facilities; strengthen IEC drive, promote self-regulation of SWM laws and ordinances; encourage entrepreneurship of recyclables and compostable; venture on marketing linkages; achieve target diversion and reduction rates; improve monitoring, evaluation and reporting system; and work for the safe closure and rehabilitation of controlled disposal facility, development of Municipal Eco-park with alternative disposal facilities and establishment of a sanitary landfill facility .

1.2 Approach

In compliance with RA 9003 and with the commitment to realize its vision and goals, the Municipality of Magallanes initiated the reconstitution of Municipal Solid Waste Management Board (MSWMB) and creation of a Technical Working Group (TWG) on the formulation of 10-Year Solid Waste Management Plan through Executive Orders. The TWG presented all the activities and processes for the crafting of plan to the MSWM Board which the latter approved accordingly. Gathering of relevant data; specifically, the municipal profile from the Office of the MPDC and review of the current SWM conditions was then conducted by the TWG. A three (3)-day Waste Analysis and Characterization Study (WACS) was also done on May 26-28, 2016 to determine the present waste generation of the municipality that will serve as basis for projecting waste reduction and diversion strategies. WACS data is very significant in formulating plans and activities to address the problem of increasing waste generation brought by growing population.

The result of WACS conducted in 2016 revealed that most of the generators from households and non-households produces 35.83% by weight of biodegradable waste, 40.17% recyclables, 11.45% potential residual for diversion, 11.46% residuals and 1.09% special waste as total composition of waste generated by Magallanes. It also disclosed the current per capita generation of 0.37 kg/person/day, thus generating an estimated total of 14,142.78 kg/day. This waste statistics is an important consideration in coming up with appropriate measures vis-à-vis engineering design of various SWM facilities in order to comply with the 50% mandatory waste diversion during the first year of implementation.

Having all the gathered data and result of WACS, the MSWMB, TWG and other stakeholders convened for setting diversion and disposal targets, formulating plan strategy, planning SWM system and implementing strategy, discussing institutional aspects, social and environmental aspects, cost estimates and financial aspects, and plan implementation.

1.3 Acknowledgements

Finally, after all the meticulous works, this 10-Year Solid Waste Management Plan 2020-2029 of the Municipality of Magallanes was crafted and finalized. Thus, with a fulfilling heart, a sincerest gratitude is extended to the following:

- the National Solid Waste Management Commission, former Executive Director EMELITA C. AGUINALDO, OIC-Head PDTSS-SWMD MS. BELLY C. CABESO, and staffs for their technical expertise shared during the training and follow-up request,
- the PENRO; as well as the MENROs/TWGs of other municipalities of Sorsogon for their unselfish assistance during queries,
- the Honorable Municipal Mayor and Head of the Municipal Solid Waste Management Board, Augusto Manuel M. Ragragio for his constant encouragement and guidance,
- the rest of the members of the Municipal Solid Waste Management Board,
- the Offices of the Secretary to the Sangguniang Bayan, Municipal Planning and Development, Municipal Engineering, Municipal Budget, Municipal Treasury, and Local Business Permit and Licensing Officer for their provision of relevant data,
- the special task force for their significant role during the conduct of Waste Analysis and Characterization Study (WACS),
- the WACS cooperators from the sectors of household, institution, industrial, commercial establishment, and public market for their active participation,
- the 34 barangays of the municipality headed by their Punong Barangays for their remarkable inputs and unwavering support, and
- the entire populace of the municipality and the next generations for serving as an inspiration in this endeavor.

All of your contributions, indeed, are crucial in having “A systematic, comprehensive, effective, and sustainable solid waste management towards a healthy and ecologically balance community of Magallanes”.

-- MSWM Plan Technical Working Group --

CHAPTER 2:

MUNICIPAL

PROFILE

2.1 Location

The municipality of Magallanes lies on the southern part of Sorsogon Province or approximately located between 124° to 125° longitude and 12° to 13° latitude. Its physical configuration consists of one (1) big mass and two (2) islands namely, Bagatao Island and Tinacos Island.

It has a total land area of 10,945 square kilometers divided into thirty-four (34) barangays. Ten (10) barangays are considered within the Urban Area namely Central, Aguada Norte, Aguada Sur, Banacud, Bacolod, Binisitahan Norte, Binisitahan Sur, Cawit Extension, Cawit Proper and Pantalan. Barangays Aguada Norte and Bacolod are the largest and smallest urban barangays, respectively. Twenty-four (24) barangays are considered as Rural Areas. Barangay Siuton is the largest while Ginangra is the smallest among these rural barangays which consists of Anibong, Bacalon, Biga, Behia, Biton, Bulala, Busay, Caditaan, Cagbolo, Cagtalaba, Ginangra, Hubo, Incarizan, Lapinig, Magsaysay, Malbog, Pawik, Salvacion, Sta. Elena, Siuton, Tagas, Tula-Tula Norte and Tula-Tula Sur. Barangays Biga and Behia are situated in Bagatao Island.

The municipality has approximately 13,895 hectares or 93 % of alienable and disposable lands and about 1,114 hectares or 7 % of forest/preservation lands. These areas are consistent with the requirement of Republic Act 8435 or the Agriculture and Fishery Modernization Act (AFMA) of the Municipality's SAFDZ program.

Table 1. Land Area by Barangay

Barangay	Land Area (Square Kilometers)	Percent to Total
URBAN:		
Aguada Norte	293.0612	2.68
Aguada Sur	220.1544	2.01
Banacud	22.8819	0.21
Bacolod	2.7247	0.02
Binisitahan Norte	14.6014	0.13
Binisitahan Sur	6.3674	0.06
Cawit Extension	14.6607	0.13
Cawit Proper	8.1174	0.07
Pantalan	4.8072	0.04
Poblacion (Central)	5.0990	0.05

SUB TOTAL	592.4753	5.41
RURAL:		
Anibong	403.7991	3.69
Bacalon	595.0009	5.44
Biga	233.8146	2.14
Behia	244.1921	2.23
Biton	465.8671	4.26
Bulala	399.1132	3.65
Busay	385.1908	3.52
Caditaan	604.1688	5.52
Cagbolo	293.1066	2.68
Cagtalaba	348.8371	3.19
Ginangra	148.0979	1.35
Hubo	520.0318	4.75
Incarizan	391.5373	3.58
Lapinig	481.7956	4.40
Magsaysay	460.3658	4.21
Malbog	545.0670	4.98
Pawik	371.0495	3.39
Pili	509.9101	4.66
Salvacion	761.4465	6.96
Santa Elena	369.2814	3.37
Siuton	788.0384	7.20
Tagas	217.7270	1.99
Tula-Tula Norte	353.5194	3.23
Tula-Tula Sur	461.5588	4.22
SUB TOTAL	10,352.5168	94.59
TOTAL	10,944.9921	100.00

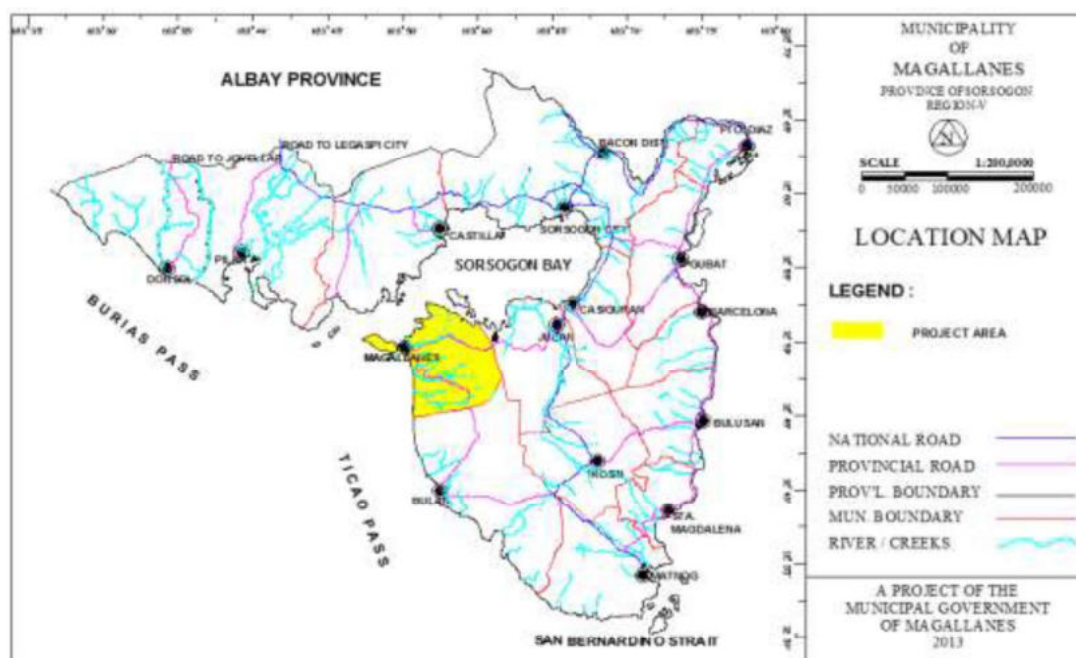
Source: Municipal Assessor's Office

Table 2. Land Classification

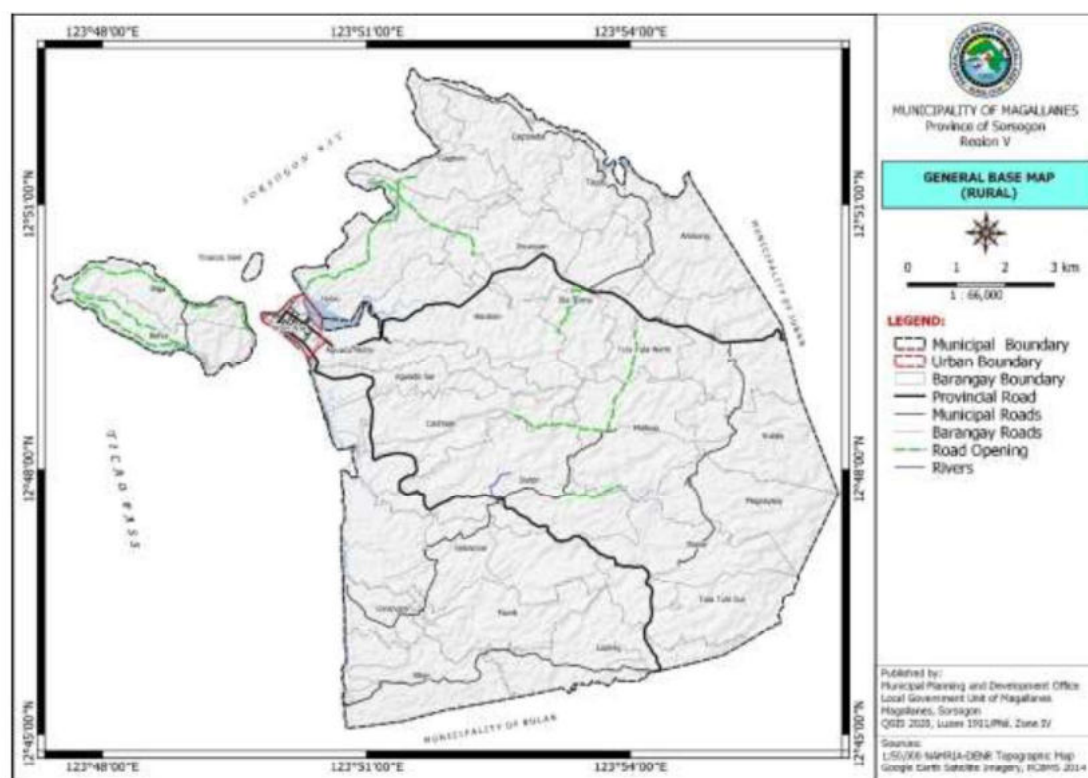
Land Classification	Approximate Land Area (Hectare)	Relative %
Alienable & Disposable	13,895	93%
Forest / Preservation	1,114	7%
TOTAL	15,009	100

Source: DENR LNB 2020

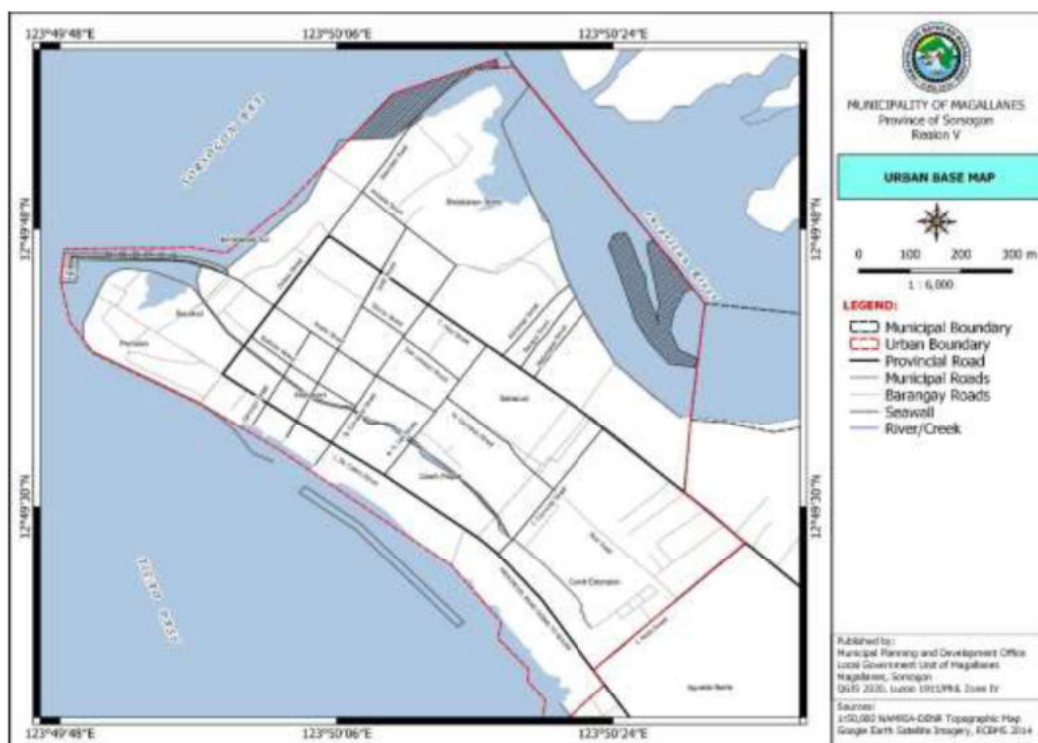
Map 1. Location Map



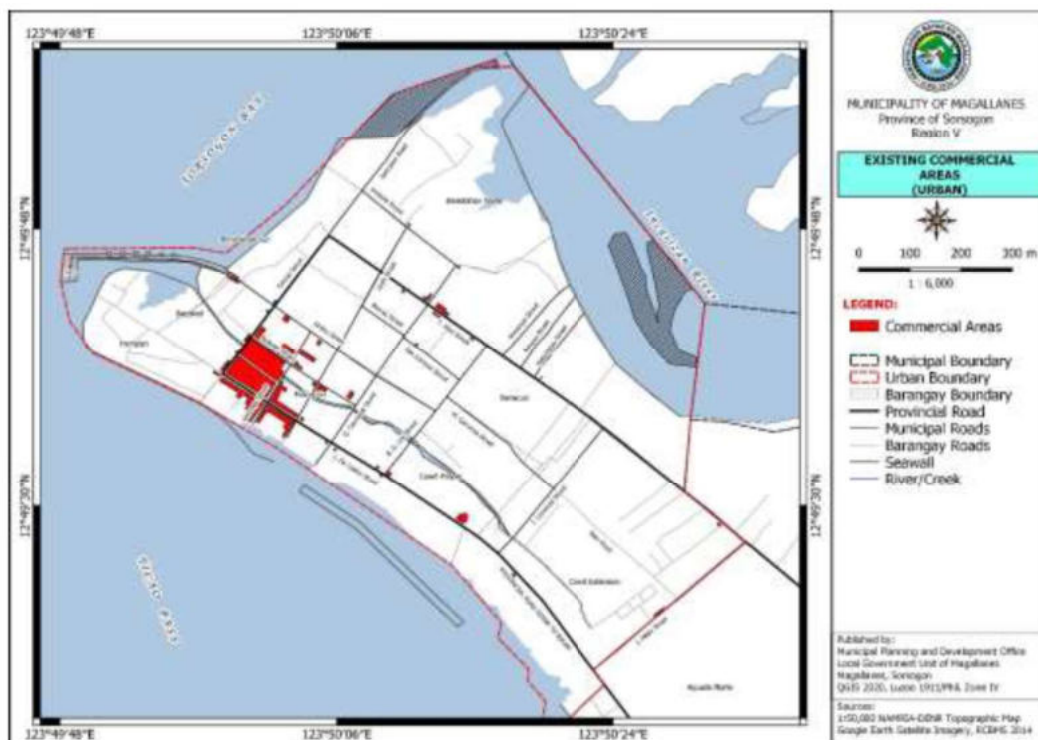
Map 2. General Base Map



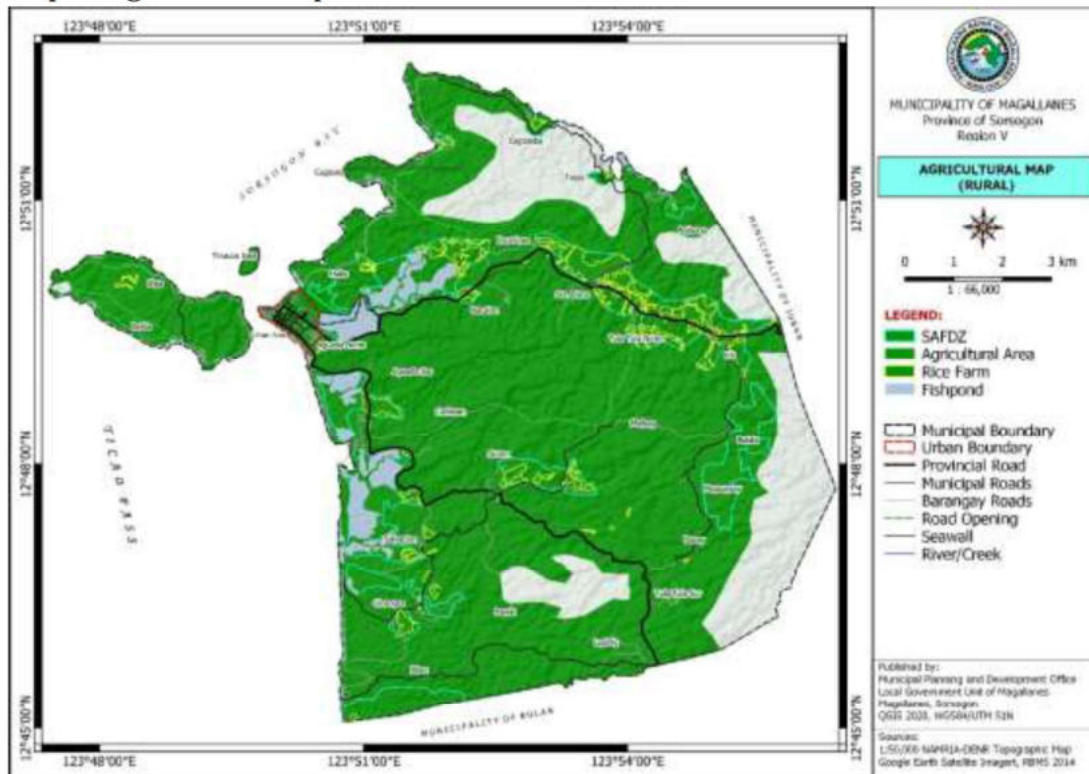
Map 3. Urban Base Map



Map 4. Existing Commercial Areas Map



Map. 5. Agricultural Map



2.2 History

The founding of Magallanes abounds with conflicting versions. One version says that it started with a Spanish Settlement somewhere at Gibalon while another version claims at Caditaan but within the provincial jurisdiction of Nueva Caceres. It later became part of Albay Province and was held in that place called Gibalon near the present barangay of Ginangra, celebrated by Fr. Alonzo Jimenez. It was here where the Jimenez-Orta Expedition was founded by Bicolanos from the Bicol Region belonging to a single province then, Nueva Caceres, though most elders of the population have their roots from Albay Province which also forms part thereof.

The formal political and administrative creation of Magallanes began from a SITIO known as PARINA derived from a local hardwood tree used in shipbuilding. When the shipbuilding industry made this place progressive, it became known as VISTA DE PARINA because of numerous visitors from other places. During this period, the Chaplain of Pueblo De Casiguran used to hold mass during visits. In 1852, a settler named Don Manuel de Castro from La Curuña Galicia, Spain requested the Bishop of Nueva Caceres, Msgr. Juan Grijaldo to create Visita de Parina into a BARRIO with a chaplain. Such request was granted with Rev. Fr. Fernando Ortiz as the first Chaplain who named this place as MAGALLANES after the famous sailor and discoverer, Fernando Magallanes. It however remained under the Chaplaincy of Pueblo de Casiguran headed by Rev. Fr. Agustin Aragon. Magallanes became a MUNICIPALITY on July 16, 1860 separated from Pueblo de Casiguran with said Don Manuel de Castro as the first appointed Gobernadorcillo. It was likewise proclaimed as separate Parish but made final only on January 01, 1864. Thus, the celebration of MAGALLANES FOUNDATION DAY and the PATRONAL TOWN FIESTA are held on the same day, July 16th.

2.3 Population

The Municipality of Magallanes has a total population of 37,038 and a total household of 7,786 with an average household size of 5 individuals based on 2015 Population Census of the National Statistics Office (NSO). Among urban barangays, the most populated is

Barangay Cawit Extension (1,727) and the least populated is Barangay Poblacion (Central) (648). On the other hand, Barangay Caditaan with a total population of 3,443 has the greatest number of individuals among rural barangays while Barangay Magsaysay with only 262 individuals has the least population. Since rural area is composed of 24 barangays, its total population (25,769) is higher compared to urban area (11,269). This indicates that in the municipality, though some barangays are far from the central business district migration, to urban barangays is not an option mainly because the livelihood of households mostly farmers and fishermen are present in their area. The presence of good transportation facilities and accessible road networks makes it easier also to reach the central business district.

The 2015 population of 37,038 is higher by 1,965 compared to the 2010 population of 35,073. Thus, as calculated in the 10-Year Population Projection, with a growth rate of 1.12%, the municipality will eventually have a total of 43,289 populations by year 2029. 30.42% of which or 13,170 will be from urban barangays and 69.58% or 30,119 will be from rural barangays.

Table 3. 10-Year Population Projection

		POPULATION										
BARANGAYS	NSO 2015 (Base Year)	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
URBAN BARANGAYS												
1. Aguada Norte	1,515	1,584	1,602	1,620	1,638	1,656	1,675	1,693	1,712	1,731	1,751	1,770
2. Aguada Sur	1,159	1,212	1,225	1,239	1,253	1,267	1,281	1,296	1,310	1,325	1,340	1,355
3. Banacud	1,240	1,296	1,311	1,326	1,341	1,356	1,371	1,386	1,402	1,418	1,434	1,450
4. Bacolod	1,027	1,074	1,086	1,098	1,110	1,123	1,135	1,148	1,161	1,174	1,187	1,200
5.Binisitahan Norte	917	959	970	980	991	1,002	1,014	1,025	1,037	1,049	1,060	1,072
6. Binisitahan Sur	682	713	721	729	737	746	754	762	771	780	788	797
7. Cawit Extension	1,727	1,806	1,826	1,846	1,867	1,888	1,909	1,930	1,952	1,974	1,996	2,018
8. Cawit Proper	1,184	1,238	1,252	1,266	1,280	1,294	1,309	1,323	1,338	1,353	1,368	1,383
9. Central	648	678	685	693	701	708	716	724	732	740	748	757
10. Pantalan	1,170	1,223	1,237	1,251	1,265	1,279	1,293	1,308	1,322	1,337	1,352	1,367
Sub Total	11,269	11,782	11,914	12,048	12,183	12,319	12,457	12,597	12,738	12,880	13,024	13,170
RURAL BARANGAYS												
11. Anibong	493	515	521	527	533	539	545	551	557	563	570	576
12. Bacalon	650	680	687	695	703	711	719	727	735	743	752	760
13. Behia	2,518	2,633	2,662	2,692	2,722	2,753	2,783	2,815	2,846	2,878	2,910	2,943
14. Biga	1,194	1,248	1,262	1,277	1,291	1,305	1,320	1,335	1,350	1,365	1,380	1,396
15. Biton	2,011	2,103	2,126	2,150	2,174	2,198	2,223	2,248	2,273	2,298	2,324	2,350
16. Bulala	610	638	645	652	659	667	674	682	690	698	706	713

17. Busay	604	632	639	646	653	660	668	675	683	691	698	706
18. Caditaaan	3,443	3,600	3,640	3,681	3,722	3,764	3,806	3,849	3,892	3,936	3,980	4,024
19. Cagbolo	1,120	1,171	1,184	1,197	1,211	1,224	1,238	1,252	1,266	1,280	1,295	1,309
20. Cagtalaba	557	582	589	595	602	609	616	623	630	637	644	651
21. Ginangra	781	817	826	835	844	854	863	873	883	893	903	913
22. Hubo	869	909	919	929	939	950	961	971	982	993	1,004	1,015
23. Incarizan	1,387	1,450	1,466	1,483	1,499	1,516	1,533	1,550	1,568	1,586	1,603	1,621
24. Lapinig	761	796	805	814	823	832	841	851	860	870	879	889
25. Magsaysay	262	274	277	280	283	286	290	293	296	299	303	306
26. Malbog	343	359	363	367	371	375	379	383	388	392	397	401
27. Pawik	638	667	675	682	690	697	705	713	721	729	737	745
28. Pili	1,371	1,433	1,450	1,466	1,482	1,499	1,516	1,533	1,550	1,567	1,585	1,603
29. Salvacion	1,044	1,092	1,104	1,116	1,129	1,141	1,154	1,167	1,180	1,193	1,207	1,220
30. Sta. Elena	1,144	1,196	1,210	1,223	1,237	1,251	1,265	1,279	1,293	1,307	1,322	1,337
31. Siuton	1,959	2,048	2,071	2,094	2,118	2,142	2,166	2,190	2,214	2,239	2,264	2,289
32. Tagas	483	505	511	516	522	528	534	540	546	552	558	565
33. Tula Tula Norte	911	953	963	974	985	996	1,007	1,018	1,030	1,042	1,053	1,065
34. Tula Tula Sur	616	644	651	659	666	673	681	689	696	704	712	720
Sub Total	25,769	26,943	27,245	27,550	27,858	28,170	28,486	28,805	29,128	29,455	29,785	30,119
GRAND TOTAL	37,038	38,725	39,159	39,598	40,041	40,490	40,943	41,402	41,866	42,335	42,809	43,289

2.4 Economic Profile/Land Use

Agriculture

The current economic structure of the municipality is basically that of agriculture and commerce and trade. Agricultural activities are focused on crop production, fishery and livestock production. However, the dominant agricultural activity and economic source of the municipality is fishery both for marine and inland fishing. There are 7,307 registered fisherfolks from 21 coastal barangays of the municipality and there are 1,290 farmers coming from 26 farming barangays.

Farming

Crop Production. Areas devoted to agricultural crop production comprises a total area of 75.892 hectares for rainfed and 230.09 hectares for irrigated with a total of 305.09. Major crops within these agricultural lands are rice, corn, coconut, banana and root crops. Of these major crops, coconut occupies about 86 % or is the dominant crop while rice farms comprise of 334.45 hectares located in 13 different barangays. There are

11.583 hectares of rice farms that are highly susceptible to flooding, 11.31 hectares are moderately susceptible while 203.985 hectares have low susceptibility. On the other hand, rice farms that are highly susceptible to landslide comprise of 0.07 hectares, 2.69 hectares are moderately susceptible and 14.08 hectares have low susceptibility. No rice farms are susceptible to storm surge.

Agriculture Facilities. Agriculture facilities available within the municipality are the rice mills owned by private individuals in Barangays Caditaan, Pili, Pawik, Siuton, Tula – Tula Norte and Banacud. There are also private threshers in Barangays Caditaan, Siuton, Bacalon and Pili. The Local Government Unit through the Office of Agriculture provided 25 hand tractors for farmers in Barangays Pili, Bacalon, Caditaan, Siuton, Pawik and Incarizan as well as multi – purpose drying pavement in Barangay Sta. Elena. There is also a diversion dam – an irrigation facility in Barangay Incarizan and shallow tube well – an irrigation equipment in Barangays Incarizan, Caditaan and Barangay Salvacion.

Livestock. There are some small-scale livestock farms operating within the municipality particularly goat and hog livestock produced in Barangays Sta. Elena and Pili occupying an area of 1.50 hectares. On the other hand, there are no farmers engaged in poultry production.

Fisheries

For fishery production, marine fishing and grounds are concentrated in Ticao Pass and part of Sorsogon Bay along coastal barangays of Anibong to Biton with an estimated area of 79.500 square kilometers. In 2012, the average volume of catch is estimated at 372,768 tons and was supplied to the local market. On the other hand, inland fishing in the municipality consists of bangus, prawns and tilapia raised in fish ponds. These fish ponds are located in Barangay Aguada Norte, Aguada Sur, Anibong, Bacalon, Caditaan, Ginangra, Hubo, Salvacion, Tagas and Behia with estimated area of 3.55 square kilometers and average production of 11.74 tons annually. There are 11.31 hectares of fishponds that are highly susceptible to flooding, 55.78 hectares are moderately susceptible while 224.42 hectares have low susceptibility. In terms of storm

surge, 1.13 hectares are highly susceptible, 19.47 hectares are moderately susceptible and 40.219 hectares have low susceptibility. No fishpond areas are susceptible to landslide.

Industry

Being an agricultural municipality, it is expected that most of the industries in Magallanes is agri-based. However, for the past years due to depleting natural resources and changes in the environment, farmers, fishermen and common residents had to develop other alternative source of livelihood and thus, non-agricultural commercial activities were adopted.

The existing commercial development or activities within the municipality can be classified under primary, secondary and tertiary economic activities.

Primary Economic Activities. In 2017, there are 66 establishments in the municipality engaged in primary economic activities, these includes copra and rice trading, fishing, lumber trading and meat trading. Six (6) of those establishment are newly operating; some were operating for a year while two (2) of those establishments operate for more 21 years already. The minimum capitalization is P 75,000.00 and the maximum is P 500,000.00 and their produce are marketed locally.

Secondary Economic Activities. There are only three (3) establishments classified under secondary economic activities and their businesses are concentrated on gas and water supply with a minimum capitalization of P 100,000.00 and a maximum of P 1,000,000.00.

Tertiary Economic Activities. Majority of commercial activities are classified under tertiary economic activities which includes wholesale and retail trade and other services. In Magallanes, there are 158 registered businesses classified under this category with a capitalization of P 25,000.00 up to P 500,000.00. Majority are operational for a year and the oldest business operated for 36 years.

Location. Commercial establishments are concentrated in Barangay Poblacion which is considered as the Central Business District of the municipality and some are located in adjacent urban barangays. At present, there is still no industrial establishment present in the locality.

Revenue. As shown in Figure 1, there is an increasing trend in revenues derived from various economic activities; wherein, tertiary economic activities contribute to the bulk of the revenue collected.

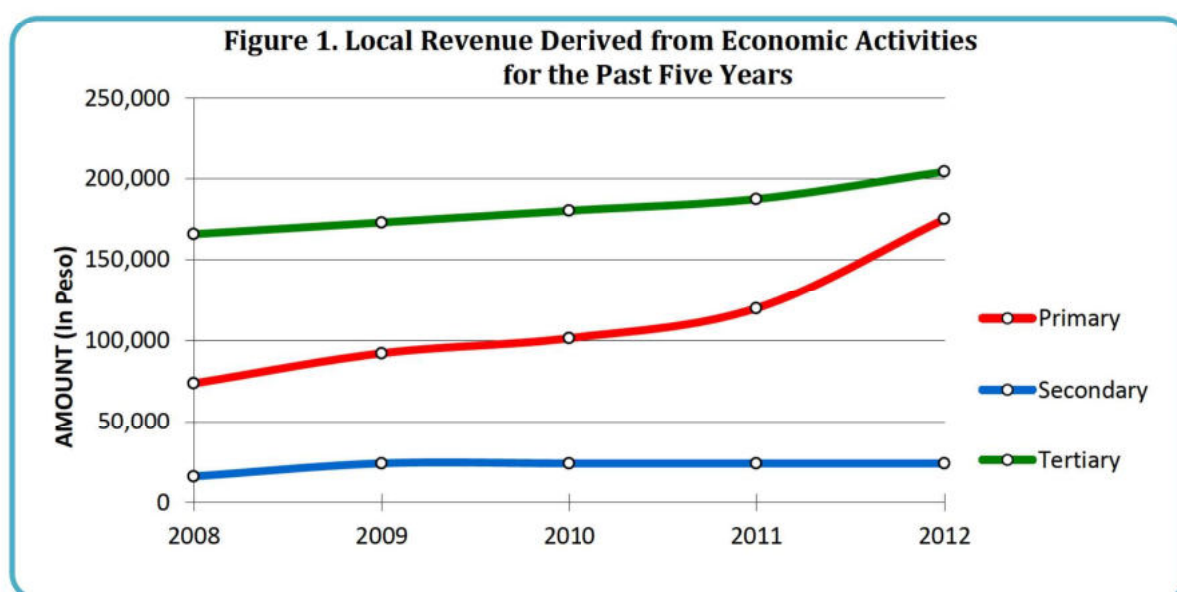


Table 4. List of Industries/Commercial Establishments in the Municipality

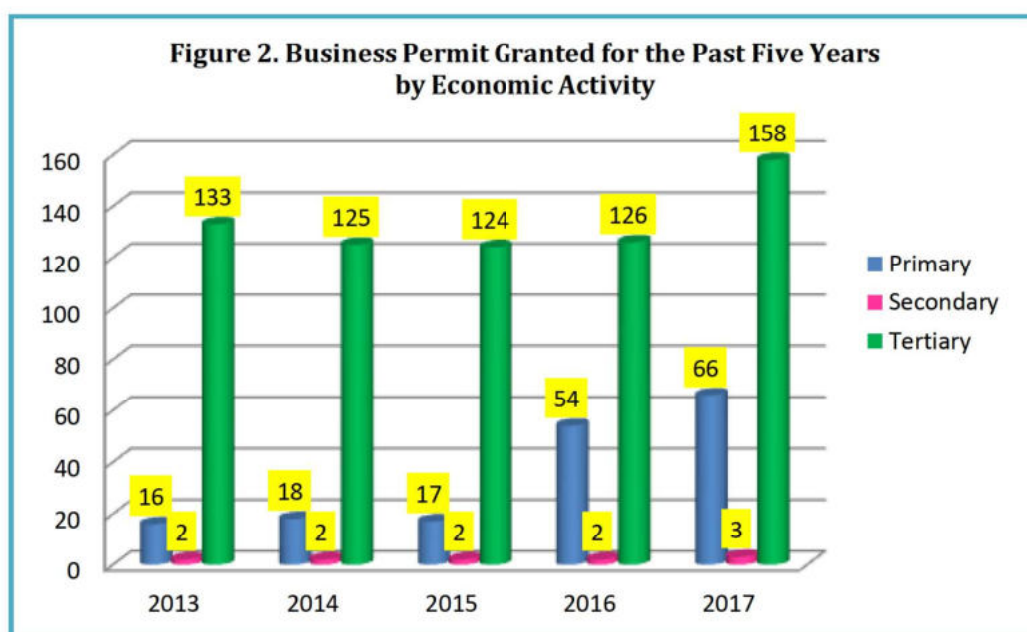
	ACTUAL NUMBER	REGISTERED
A. COMMERCIAL		
1. General Stores		
a. Sari-Sari Store	322	25
b. Groceries	19	10
c. Dry Goods	23	10
d. Chicken Stand	3	
e. Gen. Merchandise/Enterprise	9	7
f. Water Station	1	
g. Bakery/Dealer of Delicacies	10	5
h. Tailor Shop/UkayUkay/Avon	5	2
i. Hardware/Glass & Aluminum	5	1
j. CD & CP Accessories	7	5

k. Rice Retailer	22	
l. Pharmacy	4	2
2. Public Market	1	
3. Food Establishments		
a. Carinderia	9	7
b. Lugawan/Eatery/Refreshment/Gotohan/Lomi/LutongUlam	11	
c. Snack Stand/BBQ Stand/Isaw	10	
4. Recreation Center		
a. Billiard	2	
b. Videoke Bar	13	
c. Cockpit	1	
5. Other Services		
a. Repair/Welding/Motor/Vulcanizing Shop	8	2
b. Hotel/Lodging	4	
c. Lotto Outlet	1	1
d. Computer Shop	14	9
e. BSTV	1	1
f. Junk Shop	3	
g. Pawn Shop	1	1
h. Gasoline Station	2	2
i. Car Wash	1	
j. Funeral Parlor	5	2
k. Barber Shop & Beauty Parlor	6	3
l. Copra/Rice Dealer	31	10
m. Coco Lumber Dealer	3	2
n. Gravel and Sand	4	1
o. Rice Mill	3	2
p. Catering Services	2	2
q. Booking Office	2	1
r. Sound System Operator	15	1
s. Construction and Supply	3	1
B. AGRICULTURAL		
1. Agri Business	1	1
2. Fishpond Operator	18	1
3. Agri Products	18	
4. Fishing Supplies	5	1
5. Piggery	12	
6. Meat Shop	7	6
7. Poultry	6	
8. Poultry Supplies	5	3
9. Poultry Products	4	

Commerce and Trade

For the past five years, commercial activities in the municipality have grown. Based on the figure below, primary economic activities such as agriculture, fishing and forestry and tertiary economic activities like wholesale and retail trade and other services had an

increasing trend while secondary economic activities those of gas and water supply remain the same. Though Magallanes is basically farming and fishing community, few individuals engaged in primary activities due to higher capitalization and volume of product required and most of the time, products derived from farming and fishing are often sold by farmers and fishermen to businessmen in order to meet their daily sustenance.



Employment and Income

Employment Status. Based on the figure below, there are 8,880 employed individuals in the municipality comprising 98 percent of the working age population (15-65 years old) engaged in employment activities. And while there is good employment rate, 34 percent are underemployed making the income of the household still low; added to that is the two (2) percent unemployment rate.

Type of Occupation. As shown in Figure 4, 31% of the employed are skilled agricultural forestry and fishery workers, 30% are elementary occupations while 12% are service and sales workers.

Nature of Employment. In terms of the nature of employment, 37.18 percent are permanent, 53.44 percent are engaged in short term or seasonal employment and 9.38 percent have a day to day or weekly job employments.

Income Status. As shown in Figure 6, there are 5,111 households or 66% of the total numbers of households in the municipality are living below poverty threshold while 452 households indicate experienced in food shortage. Barangay Hubo has the highest proportion of households with income below poverty threshold which is 90% while Barangay Central has the lowest proportion which is only 45% of the total number of households. But in terms of magnitude, since Barangay Caditaan has the highest population, it has also the highest number of households with income below poverty threshold which is 527 while Barangay Magsaysay, being the smallest barangay has the least with only 43 households.

Figure 3. Employment Status, Year 2014

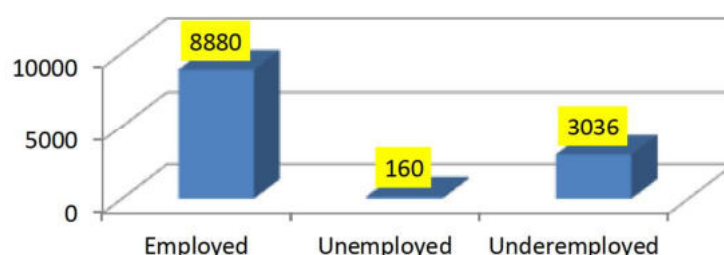
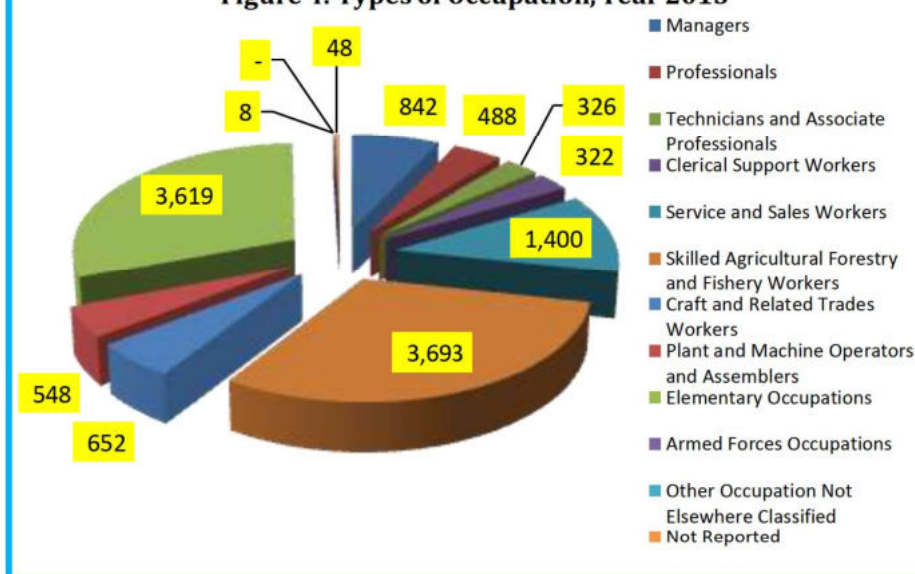
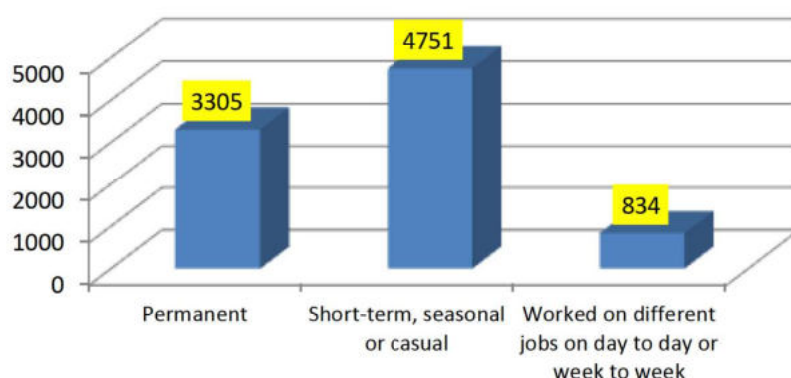
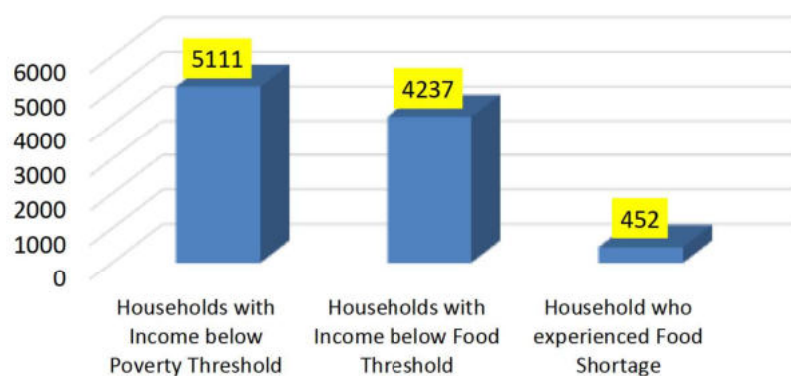


Figure 4. Types of Occupation, Year 2015



MAGALLANES 10-YEAR SOLID WASTE MANAGEMENT PLAN 2020-2029

Figure 5. Nature of Employment, Year 2014**Figure 6. Income Status, Year 2014**

Tourism

Natural Tourist Attraction. Magallanes had identified five (5) natural tourism destinations which includes Bucal-Bucalan Spring, Parola Beach Resort, Tinacos Islet, Tula-Tula Sur Falls and Malihao Spring. Bucal-Bucalan Spring located in Barangay Aguada Norte which was developed through PAMANA Project gathers most of the visitors especially during months of March to May. This is also the only government managed tourism site that generates revenue; which, in year 2012 amounted to 487,745.00 pesos.

Parola Beach Resort situated in Barangay Behia was also developed in 2012 under PAMANA Project and is accessible to the public for free until in 2014 when cottage fee of P 150.00 is being collected to the visitors. Tinacos Islet on the other hand is accessible

for free with at most 50 visitors in a year; this site needs more improvement to become more attractive to the tourist.

Tula-Tula Sur Falls in Barangay Tula-Tula Sur is also a government owned site managed by the Barangay Local Government Unit. This site is accessible for free through a tricycle or jeepney ride. Malihao Spring located in Barangay Bacalon is owned and managed by a private individual which collects affordable fees for entrance and cottage.

Religious Tourist Attraction. Among the tourist site in the municipality classified under religious tourist attraction are the San Lorenzo Ruiz Shrine situated inside the Catholic Church Compound in Barangay Binisitahan Sur and Sta. Lourdes Grotto found in Barangay Behia. San Lorenzo Ruiz is owned and managed by the Catholic Church which is often visited by its devotees in the month of September. On the other hand, Sta. Lourdes Grotto was also developed through PAMANA Project and is visited by its devotees during the feast of Our Lady of Lourdes in the month of February.

Historical Tourist Attraction. The only tourism site in Magallanes with historical roots is the Spanish Shipyard located in Barangay Behia. During the Spanish Period, this place is where the huge ships of the Spaniards were built. This is visited by up to 500 tourist often during summer breaks in the month of April to May.

Religious-Historico-Cultural Attraction. Gibalon Shrine located in Barangay Siuton has the only religious, historical and cultural roots. It is considered religious because it is where the First Mass in Luzon was held and its historical and cultural heritage became part of the lives of the people in Magallanes. This site is owned and managed by the government and is often visited in the month of October during Kasanggayahan Festival in the province of Sorsogon.

All tourism sites are accessible through various transport vehicles such as tricycle and jeepney for Bucal – Bucalan Spring, Tula – Tula Falls, Malihao Spring, Gibalon Shrine and San Lorenzo Shrine. Tourist attractions located in coastal areas such as Parola Beach Resort, Tinacos Islet, Sta. Lourdes Grotto and Spanish Shipyard are reachable through motorized boat. Though there is still no established regular trips going to the

abovementioned sites, there are lots of vehicles that can be rented or hired in a reasonable fare.

Transportation

Roads and Bridges. The present condition of transportation network in Magallanes for both internal and external linkages can be considered good enough. There are about 165.48 km. of roads that connect the municipality to neighboring towns and city. These include 24 km. national roads, 21 km. provincial roads, 57.11 km. municipal roads, and 53.54 km. barangay roads. Majority of these roads are made of concrete and are of fair condition. There are also roads for opening such as in Pawik to Biton, Malbog to Bulala, Magsaysay to Busay, Cagtalaba to Cagbolo and Tula-Tula Norte to Malbog. The municipality has also 19 bridges located in different barangays and majority of which are still in fair condition. In terms of environmental condition, most of the bridges are flood prone and some are prone to rainfall induced landslide.

National Road/Highway

Road that connects from one province to another province or major city.

Provincial Road

Road that connects from one municipality or component city.

Table 5. Provincial Roads

	DISTANCE
MAGALLANES – JUBAN ROAD	24.0 km
• Aguada Norte (from fisheries) to Bacalon	3.50 km
• Bacalon to Sta. Elena	3.50 km
• Sta. Elena to Tula-Tula Norte	1.0 km
• Tula-Tula Norte to Pili	2.0 km
MAGALLANES – BULAN ROAD	21.0 km
• Caditaan to Siuton	4.00 km
• Siuton to Busay	4.00 km
• Busay to Tula-Tula Sur	1.58 km
• Tula-Tula Sur to Lapinig	1.50 km

Municipal Road

Road that connects from the Poblacion to the barangay and to another barangay.

Table 6. Municipal Roads

	TOTAL LENGTH
MUNICIPAL ROAD	76.79 km
<ul style="list-style-type: none"> Central <ul style="list-style-type: none"> - C. Geñorga St. (0.336) - A. Judit St. (1.064) - D. Buitizon St. (0.497) - Market Road (0.178) - Portion of J. De Castro St. (0.513) 	2.58 km
<ul style="list-style-type: none"> Cawit Proper <ul style="list-style-type: none"> - J. De Castro St. (0.72) - G. Carrascal St. (0.438) - B. G. Lee St. (0.67) 	1.82 km
<ul style="list-style-type: none"> Cawit Extension <ul style="list-style-type: none"> - I. Carranza St. (0.68) - M. Carranza St. (1.33) - I. Mella St. (0.789) - Portion of J. De Castro St. (0.82) 	3.61 km
<ul style="list-style-type: none"> Binisitahan Norte <ul style="list-style-type: none"> - Antiado St. 	0.5068 km
<ul style="list-style-type: none"> Binisitahan Sur <ul style="list-style-type: none"> - T. Hizo St. (0.501) - N. Andes St. (0.79) - G. Orteza St. (0.622) - San Lorenzo Ruiz St. (0.441) - L. Borrás St. (0.232) 	2.58 km
<ul style="list-style-type: none"> Banacud <ul style="list-style-type: none"> - V. G. Lee St. (0.150) - Alimango St. (0.445) - Bangus St. (0.416) - Malunggay St. (0.373) - Sampaloc St. (0.064) - San Lorenzo St. (0.280) 	1.72km
<ul style="list-style-type: none"> Siuton – Salvacion Road 	4.017 km
<ul style="list-style-type: none"> Salvacion – Pawik Road 	2.277 km
<ul style="list-style-type: none"> Pawik – Ginangra Road 	1.513 km
<ul style="list-style-type: none"> Pawik – Biton Road (For Road Opening) 	0.280 km
<ul style="list-style-type: none"> Lapinig – Biton Road 	10.810 km

• Caditaan – Malbog Road	5.0 km
• Siuton – Malbog Road	5.685 km
• Malbog – Bulala (For Road Opening)	0.354 km
• Bulala – Magsaysay Road	2.221 km
• Magsaysay – Busay Road (For Road Opening)	0.170 km
• Sta. Elena – Anibong Road	7.057 km
• Anibong – Tagas Road	
• Tagas – Cagtalaba Road	17.10 km
• Cagtalaba – Cagbolo Road	
• Cagbolo – Hubo Road	
• Tula-Tula Norte – Malbog Road (For Road Opening)	0.292 km
• Pili – Bulala Road	2.906 km
• Behia – Biga Circumferential Road	4.30 km

Barangay Road

Roads within the barangay that connects from one purok to another purok.

Table 7. Barangay Roads

	TOTAL LENGTH
BARANGAY ROAD	47.26 km
• Aguada Norte - Aguada Norte Access Road - Dipon St.	0.255 km
• Aguada Sur - Aguada Sur Access Road - Bucalbucalan St. - Telegrapo Road	1.266 km
• Anibong - Anibong – Looc Road	1.284 km
• Bacalon - Ragragio St. - Mella St.	0.712 km
• Bacolod	0.458 km
• Banacud	1.510 km
• Behia - Sta. Lourdes St.	4.186 km

<ul style="list-style-type: none"> - Behia – Lighthouse Road - Brigada St. - Burton St. - Campillos St. - Hunat St. - Lubiano St. 	
<ul style="list-style-type: none"> • Biga <ul style="list-style-type: none"> - Biga Access Road - Biga School Road - Lighthouse Road 	1.061 km
<ul style="list-style-type: none"> • Binisitahan Norte 	0.504 km
<ul style="list-style-type: none"> • Binisitahan Sur 	0.248 km
<ul style="list-style-type: none"> • Biton <ul style="list-style-type: none"> - Bangus St. - Salmon St. - Talisay St. - Lapu – Lapu St. 	1.689 km
<ul style="list-style-type: none"> • Bulala <ul style="list-style-type: none"> - Tambulilid Road 	0.531 km
<ul style="list-style-type: none"> • Busay 	1.425 km
<ul style="list-style-type: none"> • Caditaan <ul style="list-style-type: none"> - F. Adino St. - BagongLipunan St. - G. Carrascal St. - J. Deona St. - A. Esmer St. - C. Geñorga St. - Real St. - Telegrapo St. - Claro Villa St. 	3.842
<ul style="list-style-type: none"> • Cagbolo <ul style="list-style-type: none"> - N. Bon St. - Gonza St. - Hermida St. 	0.795
<ul style="list-style-type: none"> • Cagtalaba <ul style="list-style-type: none"> - Biriran St. - Santol St. - Lanka St. - Sampaloc St. 	0.735 km
<ul style="list-style-type: none"> • Cawit Extension 	1.637 km
<ul style="list-style-type: none"> • Cawit Proper 	0.146 km
<ul style="list-style-type: none"> • Central 	0.077 km

<ul style="list-style-type: none"> Ginangra <ul style="list-style-type: none"> - Ginangra Barangay Road - GinangraCaloscoc Road 	2.909 km
<ul style="list-style-type: none"> Hubo <ul style="list-style-type: none"> - Hubo – Looc Road - Hubo – Balagting Road 	0.588 km
<ul style="list-style-type: none"> Incarizan <ul style="list-style-type: none"> - Incarizan Barangay Road 	0.839
<ul style="list-style-type: none"> Lapinig <ul style="list-style-type: none"> - S. Escote Road - Lapinig School Road 	4.015 km
<ul style="list-style-type: none"> Magsaysay 	0.393 km
<ul style="list-style-type: none"> Malbog 	0.705 km
<ul style="list-style-type: none"> Pantalan 	1.775 km
<ul style="list-style-type: none"> Pawik <ul style="list-style-type: none"> - P. Ginto St. - Goloso St. - A. Hicom St. - R. Magsaysay St. - P. Hicom St. - D. Manere St. - E. Mella St. - New Society Avenue - C. Recto St. - J. Rizal St. 	0.984 km
<ul style="list-style-type: none"> Pili 	0.580
<ul style="list-style-type: none"> Salvacion <ul style="list-style-type: none"> - Aguilar St. - Geñorga St. - Hapao St. - Horario St. - Lavin St. - Salvacion – Bayawas Road 	0.891
<ul style="list-style-type: none"> Siuton <ul style="list-style-type: none"> - Blas Lola St. - Eduardo Hisita St. - Inocentes Coronado St. - Mariano Grutas St. 	0.411 km
<ul style="list-style-type: none"> Sta. Elena 	0.512 km
<ul style="list-style-type: none"> Tagas <ul style="list-style-type: none"> - Períña St. 	1.832 km
<ul style="list-style-type: none"> Tula-Tula Norte 	1.030 km

- Tula – Tula Norte St.	
<ul style="list-style-type: none"> Tula-Tula Sur - Tula – Tula Access Road - Tula – Tula School Road 	1.326 km
<ul style="list-style-type: none"> Dumalwa Road (Road to WWS) 	1.037 km
<ul style="list-style-type: none"> Salvacion – Bayawas 	4.869 km
<ul style="list-style-type: none"> Sta. Elena - Marabical 	0.209 km

Table 8. Inventory of Roads by System Classification & Type of Pavement, Year 2017

ROADS BY SYSTEM CLASSIFICATION	ENVIRONMENTAL CONDITION	TOTAL LENGTH (km)
National (Aguada Norte-Bacalon- Sta. Elena-Tula-Tula Norte-Pili-Juban)	Along Incarizan – Sta. Elena – Tula- Tula Norte – Pili is flood prone	24.0
Provincial (Caditaan-Siuton- Busay-Tula-Tula Sur- Lapinig-Bulan)		21.0
City/Municipal		57.11
Barangay Road (Interior Roads)		53.54
Footpath/Pathway		9.83

Table 9. Inventory of Bridges by Location, Type, Capacity and Condition, Year 2017

BRIDGE NAME	LOCATION BARANGAY	ENVIRONMENTAL CONDITION	YEAR CONSTRU CTED	TYPE	ROAD CAPACITY (TONS)	*PHYSICAL CONDITION
Sagpan Bridge	Siuton	PF		Concrete		Poor
Siuton Bridge 1	Siuton	PF		Concrete		Fair
Sagpan Bridge 2	Siuton	PF		Concrete		Fair
Malbog Bridge	Malbog		2012	Concrete		Fair
Busay Bridge	Busay	PF		Concrete		Poor
Tula-Tula Sur Bridge	Tula-Tula Sur			Concrete		Fair
Pang-Pang Bridge	Caditaan	Prone to Storm Surge		Concrete		Fair
Caditaan Bridge	Caditaan	PF		Concrete		Fair
Binalyuhan Bridge	Caditaan	PF		Concrete		Fair
Cawit Proper	Cawit Proper	PF		Concrete		Poor

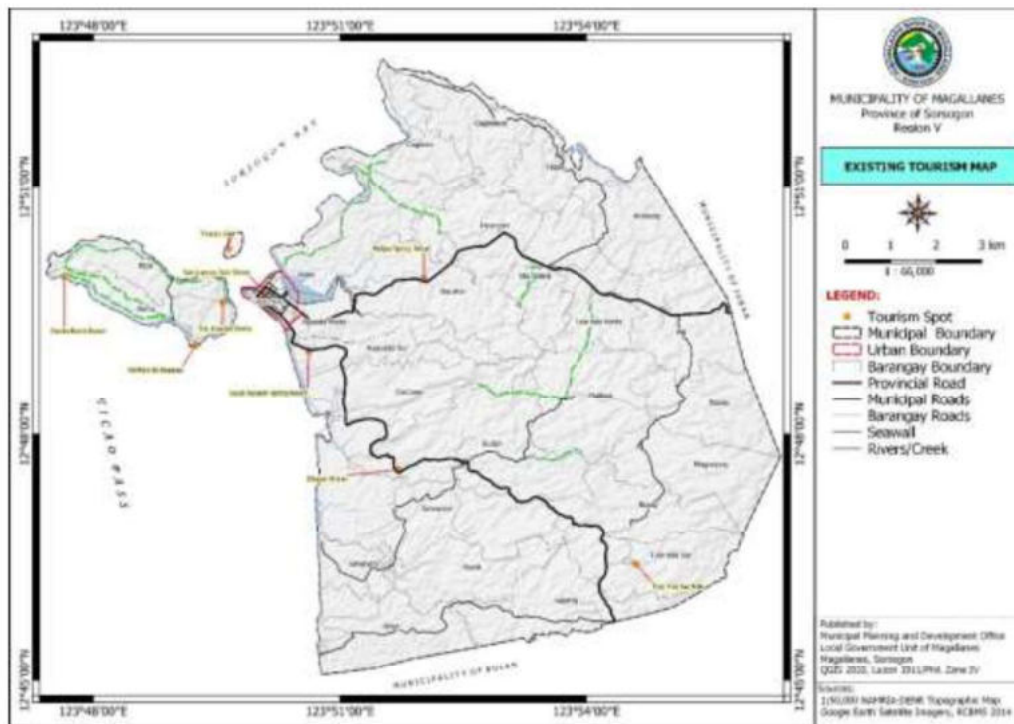
Bridge 1						
Cawit Proper Bridge 2	Cawit Proper	PF		Concrete		Poor
Bacolod Bridge 1	Bacolod			Concrete		Fair
Bacolod Bridge 2	Bacolod			Concrete		Fair
Bacalon Bridge	Bacalon			Concrete		Fair
Incarizan Bridge (foot bridge)	Sitio Dumalwa, Incarizan	PF/RILP		Concrete		Fair
Sta. Elena Bridge	Sta. Elena	PF		Concrete		Fair
Tula-Tula Norte Bridge	Tula-Tula Norte			Concrete		Fair
Pili Bridge	Pili			Concrete		Fair
Magsaysay Bridge	Magsaysay			Concrete		Fair

Public Land Transportation. Commuters in the locality are being served by three (3) buses with route from Magallanes to Metro Manila provided by two (2) private bus operators namely Elavil and Goldline Bus Transportation. There are also 28 jeepneys and 148 tricycles provided by local operators.

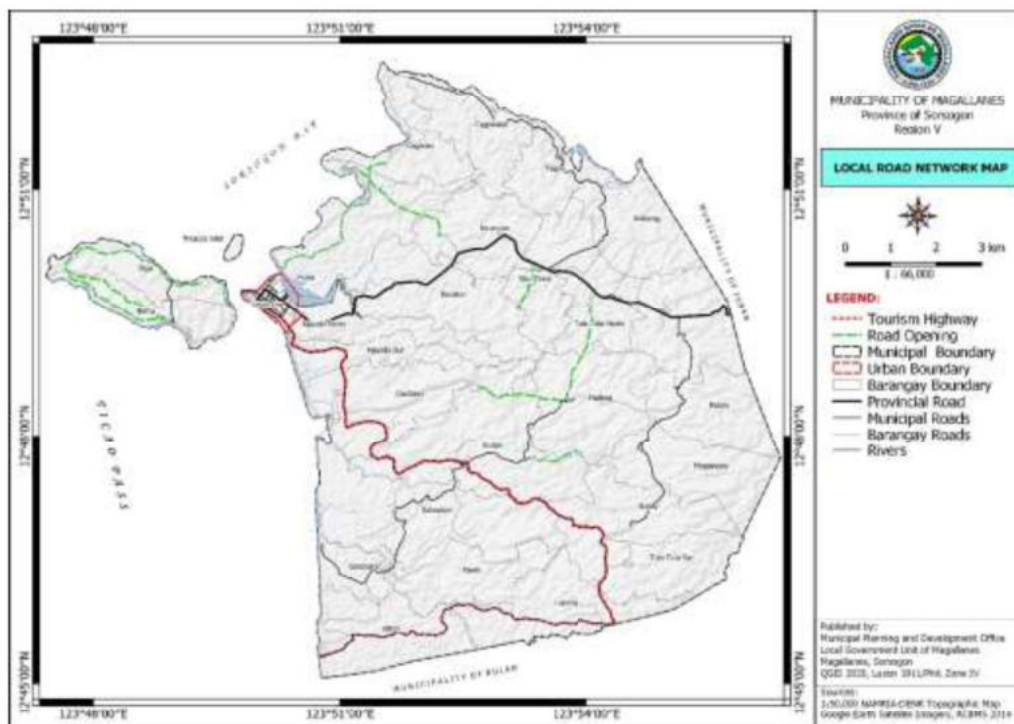
The municipality has a jeepney terminal with facilities such as comfort rooms located in Barangay Banacud and is under continuous improvement.

Meanwhile, of the thirty-four (34) barangays, ten (10) barangays are considered within the URBAN AREA namely Aguada Norte, Aguada Sur, Banacud, Bacolod, Binisitahan Norte, Binisitahan Sur, Cawit Extension, Cawit Proper, Central and Pantalan. Twenty-four (24) remaining barangays are deemed within the RURAL AREA, consisting barangay Anibong, Bacalon, Biga, Behia, Biton, Bulala, Busay, Caditaan, Cagbolo, Cagtalaba, Ginangra, Hubo, Incarizan, Lapinig, Magsaysay, Malbog, Pawik, Pili, Salvacion, Sta. Elena, Siuton, Tagas, Tula Tula Norte, and Tula Tula Sur.

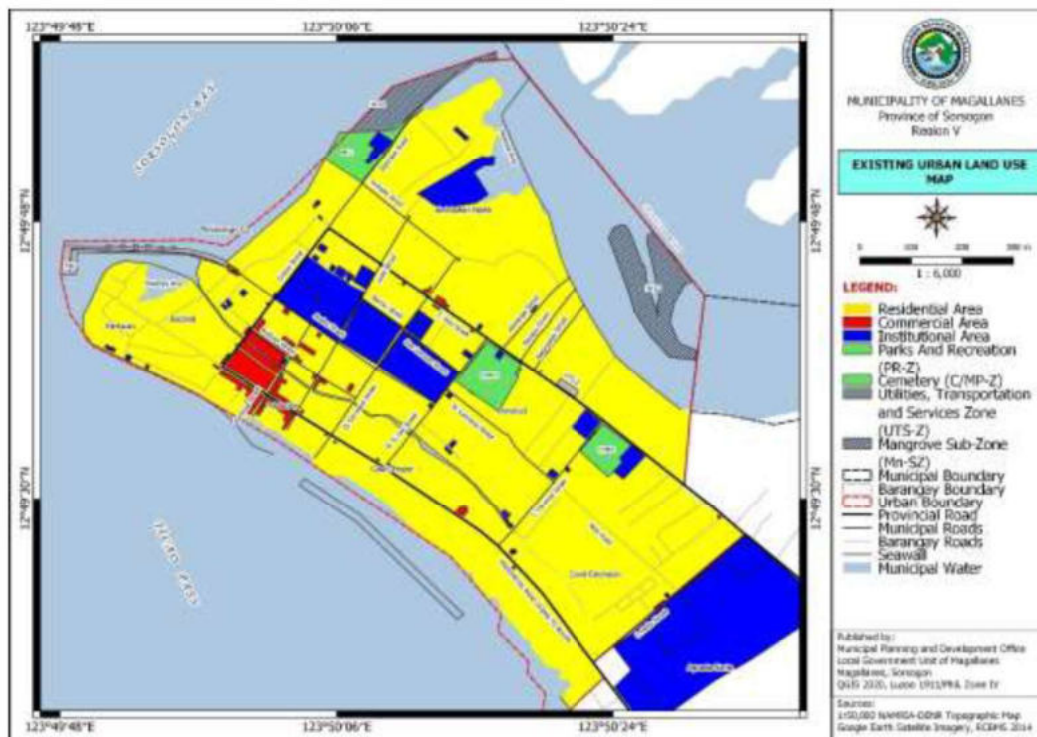
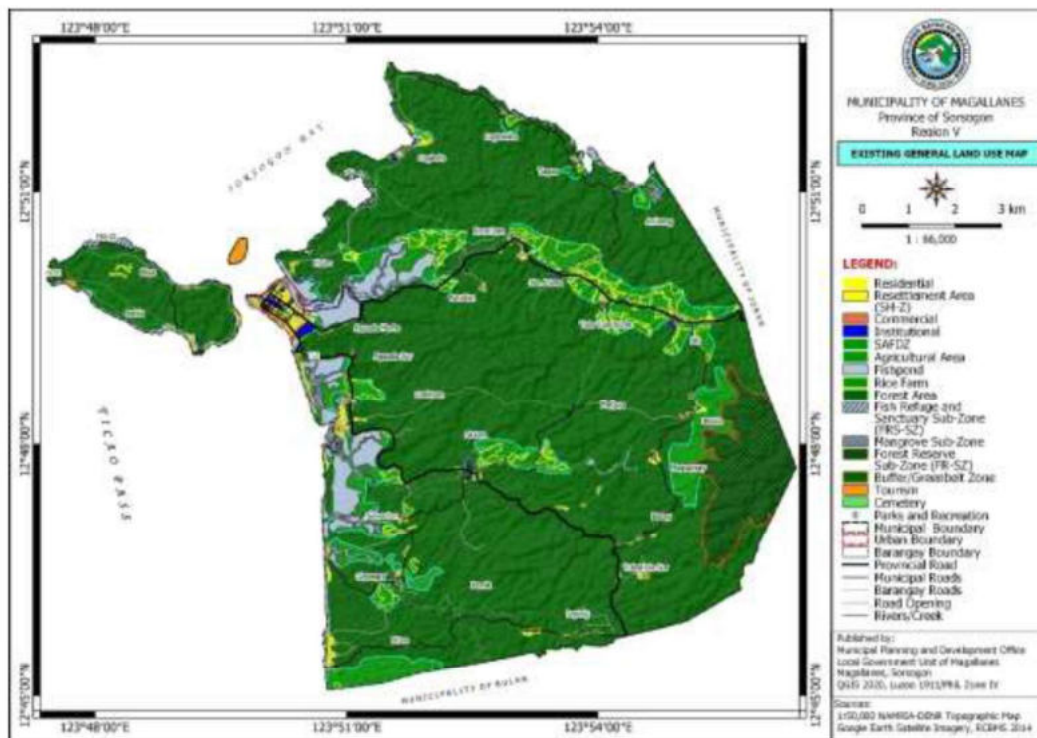
Map 6. Existing Tourism Area Map



Map 7. Local Road Network Map



Map 8. Existing General Land Use Map



2.5 Physical Characteristics

Climate. Most parts of Magallanes are classified as having Type IV Climate based from the updated climate map of the Philippines (1951-2010) wherein rainfall is more or less evenly distributed throughout the year. This type resembles Type II since it has no dry season.

Temperature. The average monthly temperature in the locality ranges from 25.3 °C to 28.3°C. The months of April to October has temperature that ranges from 27.1°C to 28.3°C while the months of November to March has temperature that ranges from 25.3° to 26.9°C. Other weather systems that may affect the temperature of the locality is the northeast monsoon, southwest monsoon, intertropical convergence zone, tail-end of cold front, tropical cyclones, easterlies, high pressure are, ridge of high-pressure area, low pressure area and through of low-pressure area.

Topography. The topographic landscape of Magallanes is dominated by rolling to moderate terrains (18-30% slopes) and level to nearly level terrains (0-3% slopes). These terrains are interspersed with mixtures of gentle slopes up to steep slopes.

Soil Fertility. The soils found in the municipality are classified into the following: (1) Macabari Sandy Loam; (2) Casiguran Clay Loam; and (3) Obay Clay Loam. Macabari sandy loam are found in level to nearly level areas and are for good tillage, fertilizer application and irrigation production. Casiguran clay loam are common in gentle slope to undulating areas and are suitable for terraced crops, cover cropping, good tillage, root crops, coconuts, abaca and other unirrigated crops. Obay clay loam are prominent in undulating to steep areas and best for coconuts, abaca, upland rice, corn, root crops, fruit trees and other crops. These soil types make agriculture, the primary industry of the people in Magallanes.

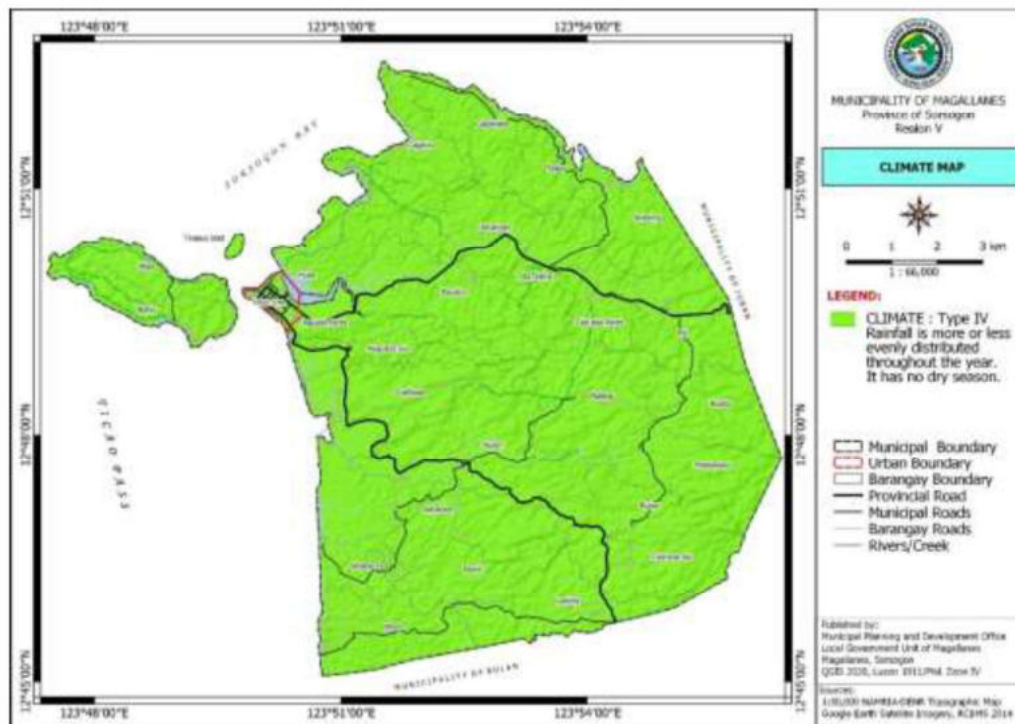
Geologic Characteristics. The geologic characteristics of the underlying rock formations for most part of the municipality is characterized by the following: (1) Terrace Gravel and Alluvial Deposits; (2) Andesite Flow Intercalated with Agglomerate and (3) Andesite flows with Interbedded Conglomerate. The most dominant geologic rock formation is Andesite

Flow Intercalated with Agglomerate Terrace Gravel and Alluvial Deposits are common in areas along plains and coast lines.

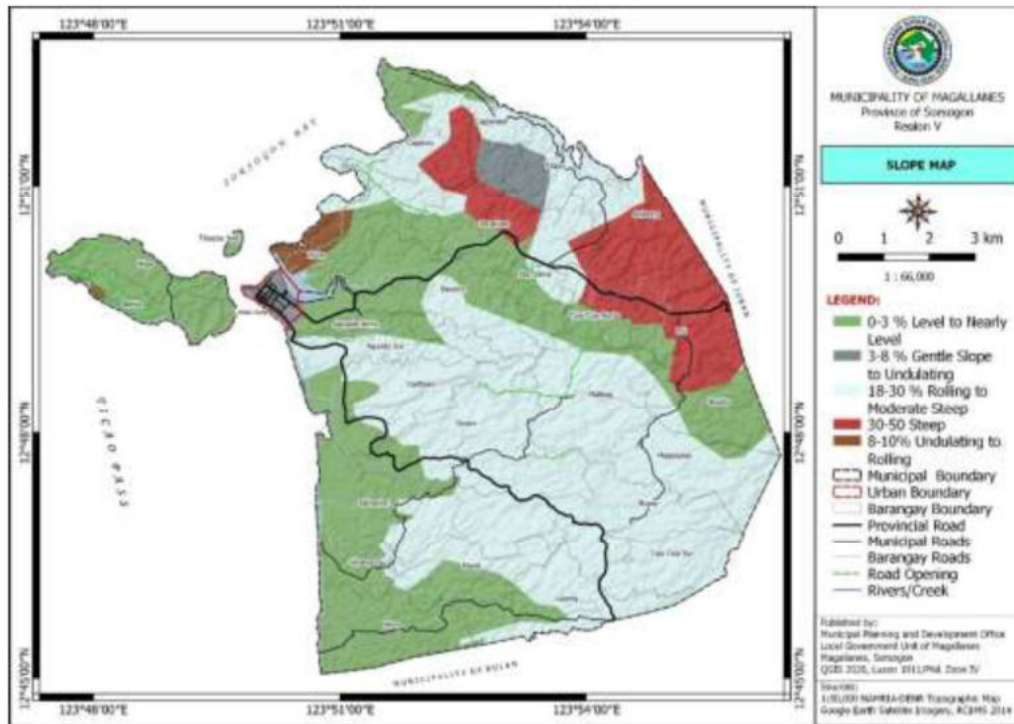
Minerals. The common mineral found in Magallanes is a non-metallic mineral known as Perlite. This can be found in the eastern part of the municipality. This mineral is commonly used as lightweight aggregates in concrete mix for abrasion and similar uses and also used advantageously to improve the poor structure of clay soils on which vegetables are grown.

Surface Drainage. Magallanes has adequate natural drainage system. Its major rivers and creeks tributaries meander towards Ticao Pass and Sorsogon Bay. Most noted among its natural tributaries are Incarizan River, Siuton River, Gibalon River, Giladi River and Caditaan River.

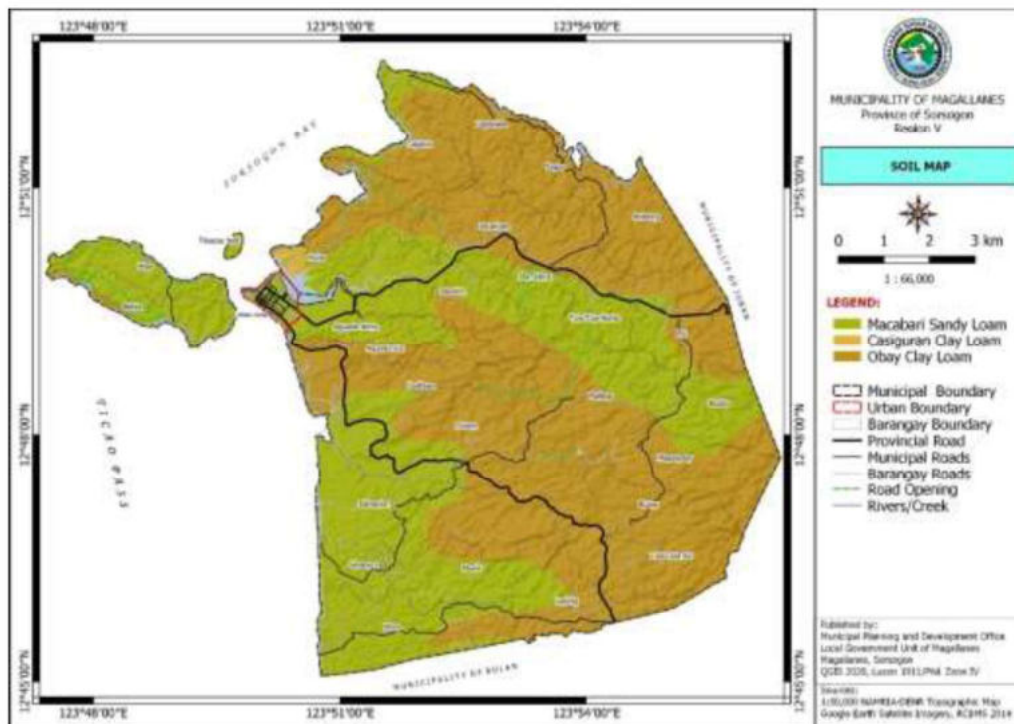
Map 9. Climate Map



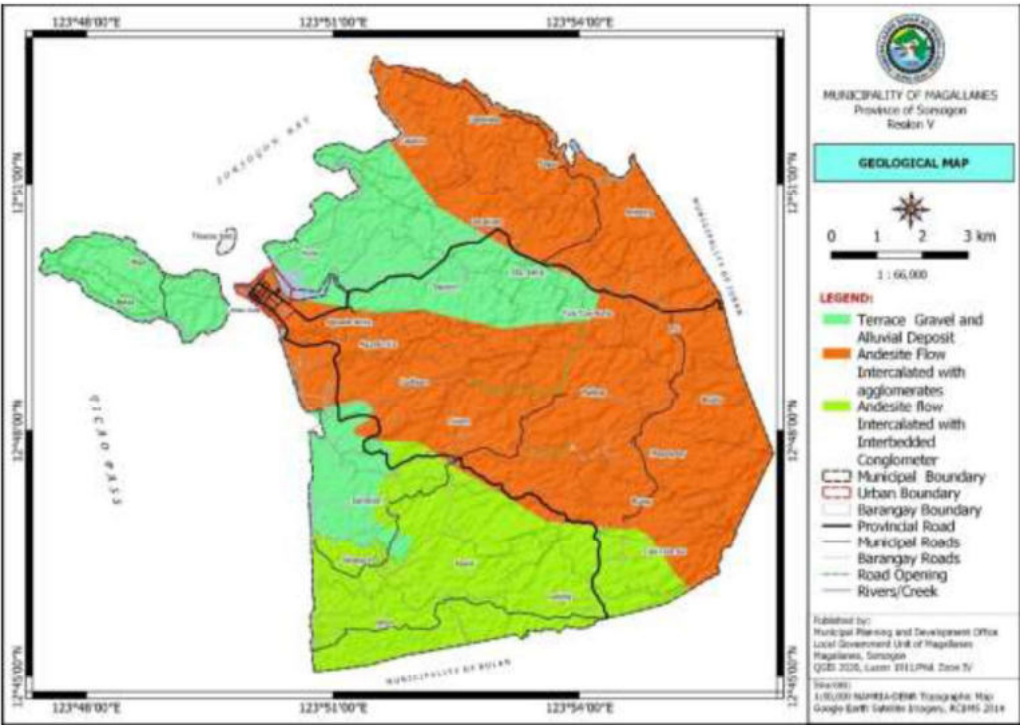
Map 10. Slope Map



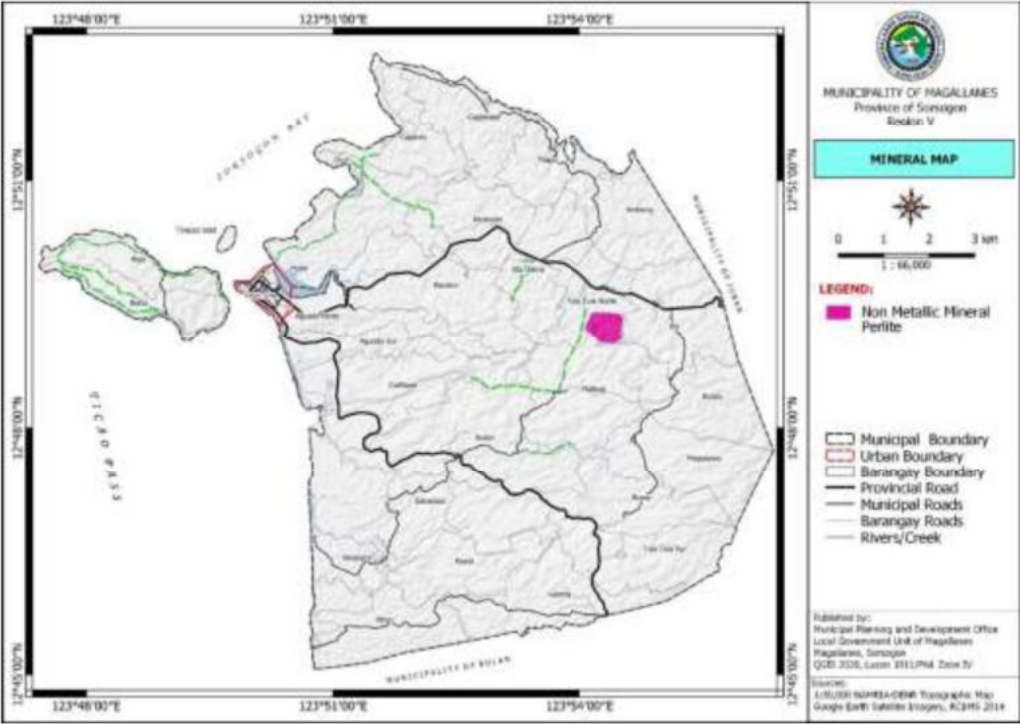
Map 11. Soil Map



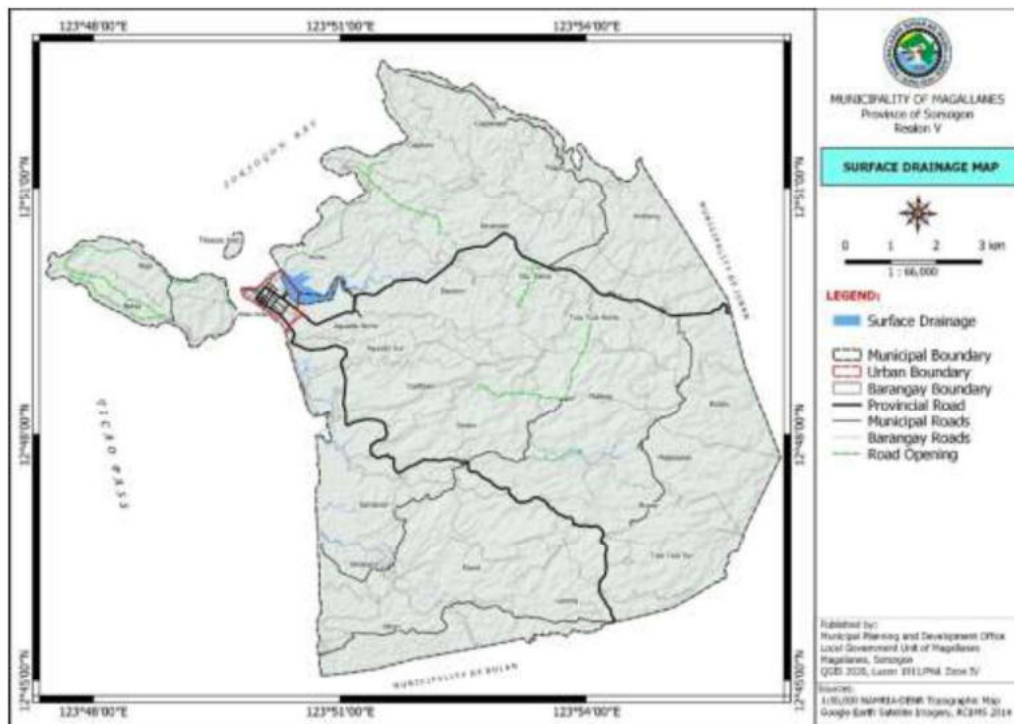
Map 12. Geological Map



Map 13. Mineral Map



Map 14. Surface Drainage Map

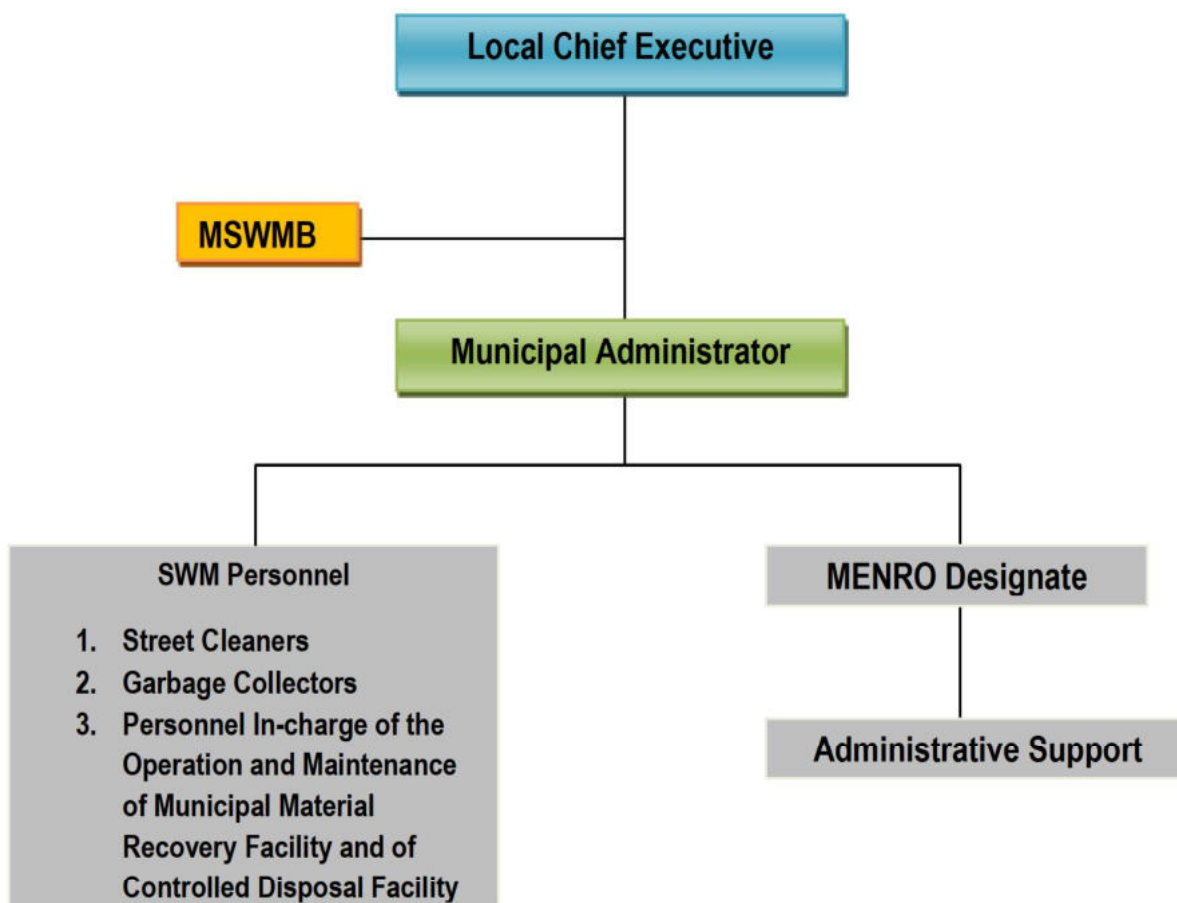


CHAPTER 3:

CURRENT SOLID WASTE MANAGEMENT CONDITIONS

3.1 Institutional Arrangements

Figure 7. Organizational Structure on the SWM Implementation



The Designated Municipal Environment and Natural Resources Officer (MENRO) who works under the Municipal Administrator's Office is tasked to be the Focal Person on the over-all implementation, monitoring, and evaluation of solid waste management in the municipality; specifically the aspect of collection, processing, and disposal of wastes from the households of 10 service barangays of Aguada Norte, Aguada Sur, Banacud, Bacolod, Binisitahan Norte, Binisitahan Sur, Cawit Extension, Cawit Proper, Central, and Pantalan; as well as from institutions, commercial establishments and public market in poblacion area. He maintains and manages the operation of the Residual Containment Area (RCA) and the Material Recovery Facility located at Sitio Canamucan, Barangay Aguada Sur. He is also into IEC program at times which aims to encourage source reduction through reuse, recycle and composting; proper segregation; and disposal.

Functional Statement:

The MENRO shall take charge of the Municipal Environment and Natural Resources Office and shall perform the function under Section 17 of the Republic Act 7160 otherwise known as the Local Government Code of 1991.

Objectives:

To manage, conserve, preserve and protect the environment and natural resources of the Municipality.

Specific Objectives:

1. Formulate measures for the consideration of the Sanggunian and provide technical assistance and support to the Local Chief Executive in carrying out measures to ensure the delivery of basic services and provision of adequate facilities relative to environment and natural resources.
2. Develop plans and strategies for environment and natural resources programs and projects and implement them upon approval thereof by the Mayor.
3. Establish, maintain, protect and preserve communal forest, watershed, tree parks, mangroves, greenbelt and similar forest projects and commercial forest, like industrial tree farm and agro-forestry projects.
4. Provide extension services to the beneficiaries of forest development projects and render assistance to the natural resources of forest conservation and utilization activities consistent with ecological balance.
5. Promote small scale mining and utilization of mineral resources particularly mining of gold.
6. Coordinate with government agencies and NGOs in the implementation of measures to prevent and control land, air and water pollution with the assistance of the DENR.
7. Be in the frontline of the delivery of services concerning the environment and natural resources, particularly in the renewal and rehabilitation of the environment during and in the aftermath of manmade and natural calamities and disasters.
8. Recommend to the Sanggunian and advise the Local Chief Executive on all matters relative to the protection, conservation, maximum utilization, application

of appropriate technology and other matters related to the environment and natural resources.

Moreover, for recycling aspect, there are three (3) privately owned junk shops in the municipality which buy cartons, plastics, bottles, iron, galvanized iron, aluminum cans, magnetic wire, etc. While business owners who are among the various waste streams are oriented by the MENRO-Designate/SWM Focal Person on solid waste management prior to issuance of license to operate annually.

Table 10. List of Junkshop Owners

NAMES OF JUNKSHOP OWNERS	ADDRESS	CAPITAL	ESTIMATE DAILY INCOME
1. Rolly Merciales	Cawit Extension, Magallanes, Sorsogon		400.00-450.00
2. Reynan Bitara	Cawit Extension, Magallanes, Sorsogon		350.00-400.00
3. Restituto Bon	Cawit Proper, Magallanes, Sorsogon		800.00-850.00

In year 2007-2009, Barangay Solid Waste Management Committee of 34 barangays was organized and been mobilized at barangay level for the implementation of RA 9003. They were the complementary body of MSWMB at the grassroots which ensure proper solid waste management in their respective jurisdiction. During that time as well, youth for environment organizations in all public schools had been active partners of the Local Government Unit (LGU) in the conduct of IECs and implementation of RA 9003. However, this endeavor was not maintained due to underlying reasons.

Though stated in the Municipal Ordinance No. 02-2006 under Article VI Section 10 and 11 that the Office of the Local Chief Executive (LCE) is empowered to organize other support mechanisms which shall involve, among others, the Office of the Municipal Administrator, the Local PNP Force, the Municipal Agriculture Office, the Municipal Health Officer, the Municipal Engineer, the Environment & Natural Resources Officer, the Municipal Planning & Development Officer, the Barangay Councils, and the different public schools within the municipality; and deputize civilian volunteer groups that shall be tasked to monitor, assist in the collection and/or disposal and lawfully enforce the SWMP, so far, the LCE has not yet resorted to this.

3.2 Inventory of Equipment and Staff

Shown in the tables below are the inventory of existing equipment and the list of SWM personnel.

Table 11. Inventory of Equipment and Tools

UNIT	EQUIPMENT	MODEL	AVE. CAPACITY	PRESENT CONDITION
2 unit	Garbage Truck	2010	4 cu. m.	Good
1 unit	Shredder Machine			
6 pcs.	Shovel			
2 pcs.	Rake			
2 pcs.	Hoe			
4 pcs.	Bolo			

The available equipment and tools being utilized in solid waste management are limited to garbage truck, shredder machine, shovel, rake, hoe and bolo. The 2-unit Garbage Truck which has 4 cu. m. capacity is being utilized in the collection of solid wastes from 10 service barangays. It has 1 to 2 trips early in the morning and 1 trip late in the afternoon.

Table 12. List of Solid Waste Management Personnel

NAME	EMPLOYMENT STATUS	DUTIES/RESPONSIBILITIES	OFFICE ASSIGNMENT
1. Robert Hodrial	Permanent (MENRO Designate & SWM Focal Person)	Supervise & monitor the implementation of Solid Waste Management	Office of the Municipal Administrator
2. Arnulfo Malto	Permanent	Cleaners – LGU Compound	
3. Leo Madrid	Casual		
4. Adonis Malto	Casual		
5. Lily Perdigon	Casual	Street Cleaners	
6. Tidea Escobal	Casual		
7. Lucy Desacula	Casual		
8. Sandy Ambie	Permanent		
9. Emilio Lagadia	Casual		
10. Meljo Labalan	Casual		
11. Augusto Dolorica	Casual		
12. Arnulfo Hizola	Permanent		
13. Peter Hamor	Permanent		
14. Alfie Llado	Casual		
15. Rafael Marana	Casual		
16. Albert Topacio	Casual	Cleaners – Public Market	
17. Nazer Buban	Casual		
18. Generoso Dreco	Casual		
19. Marlon Lucenario	Casual		

20. Alejandro Clete	Casual		
21. Salvador Lasala	Casual		
22. Emil Andes	Casual		
23. Domingo Loreno	Casual		
24. Charles Strange	Casual		
25. Sincero Antonio	Permanent		
26. Santiago Gogolin	Casual		
27. Edwin Ana	Casual	Cleaner – Public Terminal	
28. Ildefonso Bon Jr.	Casual	Cleaners – Slaughterhouse	
29. Michael Arancillo	Casual		
30. Rudyvic Hicap	Casual	Garbage Truck Driver	
31. Oscar Romano	Casual		
32. Allan Armada	Casual	Garbage Collectors within 10 service barangays	
33. Bryan Clete	Casual		
34. Reymund Besido	Casual		
35. Dichoso Hizo III	Casual		
36. German Bon Jr.	Casual		
37. Christopher Navas	Casual		
38. Rolando Politano	Casual	Operation and Maintenance of Municipal Material Recovery and Residual Containment Area	
39. Leo Carillo	Casual		
40. Ruben Malle Jr.	Casual		
41. Jeffrey Marmol	Casual		
42. Dave Hicap	Casual		
43. Gregorio Grajo	Casual		

Currently, there are forty-three (43) personnel working directly in solid waste management, headed by MENRO-Designate and SWM Focal Person, Robert Hodrial. They consist of twenty-eight (28) cleaners, one (2) garbage truck driver, seven (7) garbage collectors, and six (6) personnel assigned in the operation and maintenance of Municipal Recovery Facility (MRF) and Residual Containment Area (RCA).

These personnel, upon their appointments, were given basic orientation on RA 9003 and other related regulations and have attended an actual demonstration on proper waste characterization and segregation, processing, and disposal. Measures to safeguard their health had been discussed as well; such as proper handling of wastes, and utilizing protective gears like masks and gloves.

3.3 Source Reduction

Re-use, recycling, and composting are the three waste reduction strategies at source which are mandated by the Municipal Government through Municipal Ordinance No. 02-2006. However, only a number of households and other generators practice such interventions. Based from 2014 Rapid Community Based Monitoring System (RCBMS) Survey, only 846 households (6%) practice recycling and 2,278 households (15%) do composting.

Indeed, there are very few households practicing backyard composting. Some do not have area for composting; while some households in 10 service barangays rely all their wastes to the collectors. They deposit even the biodegradable wastes to the garbage truck. Several of those few who practice backyard composting; nevertheless, could be observed with some flaws; such as incorporating plastics and other non-biodegradable wastes in the compost pit, and non-covering/topping of pit with soil which exposes the wastes to flies.

Another limitation with regards to waste reduction is the absence of market for recycled products, thus those few individuals who process wastes into something useful such as decorations out of plastic wrappers was discouraged. At present, the option of households for their recyclable wastes is to sell it to junkshops.

3.4 Collection

Given the small volume of solid wastes generation in the municipality, there is no private hauler being utilized in its collection. The present collection system of solid wastes is solely been managed by the municipal government; servicing the 10 barangays in town proper which include Aguada Norte, Aguada Sur, Bacolod, Banacud, Binisitahan Norte, Binisitahan Sur, Cawit Extension, Cawit Proper, Poblacion, and Pantalan; as well as all institutions, commercial establishments, and the public market thereat.

The municipal government through its SWM personnel utilizes 2-unit garbage truck (4 cu. m.) with scheduled trips among the 10 service barangays. Except for barangay

Poblacion where public market and most commercial establishments are located, each barangay has two scheduled days of collection in a week (Table 13). In the morning, garbage truck has 1-2 collection trips among the scheduled barangays; while late in the afternoon, it collects solid wastes from public market and commercial establishments in barangay Poblacion.

Table 13. Schedule of Solid Wastes Collection in the 10 Service Barangays

DAYS	TIME	BARANGAY	NUMBER OF TRIPS	VEHICLE USED
MONDAY	AM	Banacud Bini Norte Bini Sur	1-2 trips	2-unit Garbage Truck, 2010 model, 4 cu.m. capacity, in good condition
	PM	Poblacion	1 trip	
TUESDAY	AM	Bacolod Pantalan	1-2 trips	
	PM	Poblacion	1 trip	
WEDNESDAY	AM	Aguada Norte Aguada Sur Cawit Ex. Cawit Proper	1-2 trips	
	PM	Poblacion	1 trip	
THURSDAY	AM	Banacud Bini Norte Bini Sur	1-2 trips	
	PM	Poblacion	1 trip	
FRIDAY	AM	Bacolod Pantalan	1-2 trips	
	PM	Poblacion	1 trip	
SATURDAY	AM	Aguada Norte Aguada Sur Cawit Ex. Cawit Proper	1-2 trips	
	PM	Poblacion	1 trip	
SUNDAY	AM	Poblacion	1 trip	
	PM	Poblacion	1 trip	

As been arranged, there are identified strategic pick-up locations in every service barangay wherefore those households in the interior part of the barangays are advised to bring their garbage in their nearest pick-up location. And though there is a "no segregation, no collection" policy, still, some households do not mind dumping off their non-segregated wastes in the truck and collectors are not that strict with the said policy. Likewise, since there are 2 units garbage truck to be utilized, biodegradable and non-biodegradable wastes are collected separately from sources/pick up locations.

Some of the households in 10 service barangays; however, are not making use of the collection service. Based from the result of CBMS Census 2014, 444 households (19 %) still burn their garbage, 339 households (14 %) dump to closed pit, 172 households (7 %) dump to open pit, and 127 households (5 %) throw their garbage in river or sea.

Moreover, the other twenty-four (24) barangays which are in the southern and northern part of the municipality; some are coastal, upland, interior barangays, are not currently receiving collection service. Supposedly, Barangay Solid Waste Management Committee (BSMC) of each non-service barangays will be responsible for its own solid waste management; however, at present, some BSWMC are non-functional and not implementing programs on solid waste management. As such, some of the households in the 24 non-service barangays are accounted for different improper waste management practices as revealed by the data in CBMS 2014: 3,969 households (73 %) burn garbage, 937 households (17 %) dump to closed pit, 1,170 (22 %) dumps to open pit, and 1,031 (19 %) throw in river or sea.

3.5 Transfer

Given the small volume of solid wastes generated in the municipality which is still manageable, transfer of solid wastes is not yet perceived necessary.

3.6 Processing Facilities

With regards to processing of solid wastes, the facilities being relied to by the municipality are shown in the table below which are limited to Municipal MRF, Barangay MRFs, privately-owned junk shops, and biodegradable chamber for composting. The established BMRFs in each of the 34 barangays during 2007-2009, however are not maintained. At present, 16 out of 34 barangays have BMRFs, five (5) of which are functional and 11 needs improvement while 18 barangays are yet to construct their own BMRFs. The LGU will provide 10 units of BMRFs from 2020 to 2022 to augment the needed BMRFs.

Table 14. List of Municipal Processing Facilities

UNIT	CAPACITY	FACILITY	TYPES OF MATERIALS ACCEPTED	LOCATION
1		Municipal Material Recovery Facility (MRF)	Reusable and recyclable	Canamucan, Aguada Sur
19		Barangay Material Recovery Facility (BMRF)	Reusable and recyclable	Barangays of Aguada Norte, Bacalon, Bacolod, Banacud, Behia, Binisitahan Norte, Binisitahan Sur, Caditaan, Cagbolo, Cagtalaba, Cawit Extension, Cawit Proper, Magsaysay, Pantalan, Pili, Poblacion, Tagas, Tula-Tula Norte, Tula-Tula Sur
4		Junk Shops	Recyclable (cartons, plastics, bottles, iron, galvanized iron, aluminum cans, magnetic wire, etc.)	2 in Cawit Extension, 1 in Cawit Proper & 1 in Pantalan
1	3,127 sq. m.	Biodegradable Chamber for Composting	Biodegradable	Sitio Canamucan, Aguada Sur

Given that despite the “no segregation, no collection” policy, still some generators dump off their non-segregated wastes, SWM personnel assigned in the waste facility in Sitio Canamucan, Aguada Sur still segregate collected wastes. All recovered reusable and recyclable materials are stored in the municipal material recovery facility and sold out to privately-owned junk shops when already in bulk; while biodegradable wastes are subject for composting.

The Municipal Material Recovery Facility located in Sitio Canamucan, Aguada Sur serves as storage of the reusable and recyclable materials retrieved from collected solid wastes of households, institutions and establishments in 10 service barangays. Meanwhile, traditional composting is done in the 3,127 sq. m. biodegradable chamber in Sitio Canamucan.

3.7 Disposal Facilities

Last December 18, 2006, upon inspection of the Department of Environment and Natural Resources (DENR), various recommendations were given to the Local Government Unit regarding its open dumpsite. Thus, in coordination with the Environmental Management

MAGALLANES 10-YEAR SOLID WASTE MANAGEMENT PLAN 2020-2029

Bureau (EMB) the site was further been evaluated and categorized as a Controlled Disposal Facility, based on the collective disposable residual wastes which is less than or equal to 15 TPD. It was then ordered the preparation of a safe closure and rehabilitation plan for the existing open dumpsite as mandated by R.A. 9003. As such, from 2007 to 2009, several components of the closure, rehabilitation and development of an eco-park were initiated which include site clearing, site grading and stabilization based on the topographic survey. Perimeter earth-fill dike with 6" gravel surface around the disposal site was also constructed to prevent stray animals from entering and to divert rainwater run-off; while service road is provided to ensure possible loading and unloading of wastes and soil cover.

However, in 2018 several IECS on R.A. 9003 and ordinances have been conducted in 10 service barangays and schools. Various improvements have been implemented in controlled waste disposal facility such as construction of earth dike, line canal and service road.

At present, a temporary residual containment area (TRCA) is being utilized by the local government for residual management located in Sitio Canamucan, Barangay Aguada Sur. The TRCA is accepting all types of residual plastics from 11 service barangays with a capacity of 700 cubic meter.

Table 15. Solid Waste Disposal Facilities

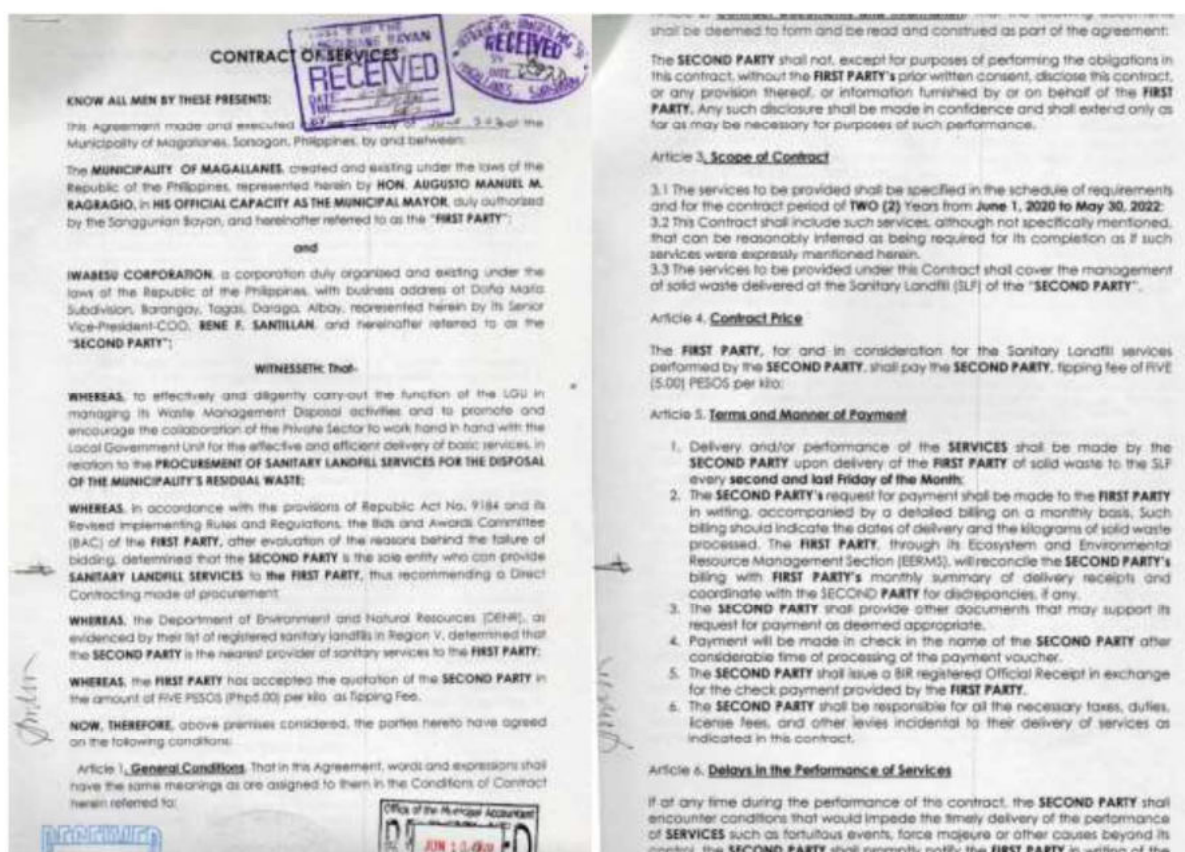
UNIT	AREA	FACILITY		LOCATION	OWNERSHIP	TYPE OF MATERIALS ACCEPTED	SOURCE OF MATERIALS
1	2.3011 has.	Municipal Controlled Disposal Facility		Sitio Canamucan, Aguada Sur	Government Owned	Residual & Special Wastes	11 Service Barangays, Institutions, Industrial, Commercial Establishments & Public Market in Town Proper
		Residual Chamber (1,764 sq.m.)	Improvised Special Containment Receptacles				

All residual, potential residuals and special wastes from the 11 service barangays as well as from institutions, industrial, commercial establishments and public market are being brought to the said TRCA wherein residual wastes are temporarily contained. The said TRCA is divided into different compartments for residuals, potential residuals and special

wastes. It has a perimeter fence and there are municipal personnel working every day in the facility, thus there are only minimal scavengers or waste pickers entering its premises.

The TRCA has a capacity of 700 cubic meter which can accommodate waste generation for a period of 1 yr. However, containment capacity of the TRCA does not reach its maximum since a weekly hauling of the residual waste is done for disposal to a private sanitary landfill located in Daraga, Albay.

The LGU had a contract with IWA BESU Corporation, a private sanitary landfill operator, in June 2020 through Contract of Services as shown below including the billing invoice and pictures of delivery of solid wastes.



fact of the delay, its likely duration and its cause. The **FIRST PARTY** shall likewise inform the **SECOND PARTY** in writing, of any changes in schedule of delivery/engagement of services due to circumstances beyond the control of the **FIRST PARTY**.

Article 7. Contract Termination

8.1 In the event that any of the permit/licenses required from the **SECOND PARTY** by existing laws in pursuit of the conduct of its business were canceled and/or revoked by concerned government agency(ies), the **FIRST PARTY** shall terminate the contract with the **SECOND PARTY**.

8.2 If within the period of the contract, the capacity of the **SECOND PARTY** to accommodate solid waste or engage in Sanitary Landfill services have been maximized, the **SECOND PARTY** shall immediately inform the **FIRST PARTY** in writing, to facilitate the termination of the contract.

8.3 If at any time during the performance of this contract that may result to the perpetual prevention of the **SECOND PARTY** from the delivery of Sanitary Landfill services herein engaged, to the **FIRST PARTY**, the **SECOND PARTY** shall immediately inform the **FIRST PARTY** in writing, to facilitate the termination of the contract.

Article 9. Settlement of Disputes

9.1 Any dispute or disagreement of any kind that may arise between the **FIRST PARTY** and the **SECOND PARTY** in connection with or arising from this contract shall be resolved amicably by both parties through mutual consultation.

9.2 If after thirty (30) days, the parties failed to resolve the dispute or disagreement by mutual consultation, either the **FIRST PARTY** or the **SECOND PARTY** may give notice to the other party of its intention to commence arbitration, as hereinafter provided, as to the matter in dispute. No arbitration in respect of this matter may be commenced unless such notice is given.

9.3 Any given dispute or difference in respect of which a notice of intention to commence arbitration has been given in accordance with this contract shall be settled by arbitration. Arbitration may be commenced prior to or after delivery of the **SERVICES** under this contract.

9.4 The dispute shall be resolved in accordance with the provisions of Republic Act 9285, otherwise known as the "Alternative Dispute Resolution Act of 2004."

9.5 Notwithstanding any reference to arbitration herein, the parties shall continue to perform their respective obligations under the Contract unless they otherwise agree; and the **FIRST PARTY** shall pay the **SECOND PARTY** any monies due to the **SECOND PARTY**.

Article 10. Assignment of Rights

The **SECOND PARTY** shall not assign his rights or obligations under this Contract, in whole or in part, except with prior written consent of the **FIRST PARTY**.

Article 11. Contract Amendment

Subject to applicable laws, no variation in or modification of the terms of this Contract shall be made except by written amendment signed by the parties.

Article 12. General Provision

12.2 The **SECOND PARTY** hereby warrants that it has not given nor promised to give any material favour/ consideration to any official or employee of the **FIRST PARTY** to secure the Contract. Any violation of this warranty shall be a sufficient ground for the **FIRST PARTY** to revoke or cancel this contract without need of judicial intervention.

12.3 This Contract is executed and delivered in five (5) copies each of which shall be deemed an original.

IN WITNESS WHEREOF, the parties hereto hereunto affixed their respective signatures this 21st day of June, 2020.

"FIRST PARTY"
MUNICIPAL GOVERNMENT OF MAGALLANES
By: [Signature]
HON. AUGUSTO MANUEL M. RAGRAGIO
Municipal Mayor

"SECOND PARTY"
IWABESU CORPORATION
By: [Signature]
RENE F. SANTILLAN
Senior Vice-President-COO

Signed in the presence of:
[Signature] [Signature]

ACKNOWLEDGEMENT

BEFORE ME, this 21st day of June, 2020, a Notary Public for and in the Province of Sanagan, personally appeared the above-named person, with their competent proof of identities indicated opposite their respective names as follows:

Name	I.D. No.	Date/Place Issued
1. AUGUSTO MANUEL M. RAGRAGIO	824-87-096467	April 11, 2022
2. RENE F. SANTILLAN	37174815	11-11-2014 DPA Manila

All of whom I have identified through competent evidence of identity and who represented to me that their respective signatures on the foregoing instrument were voluntarily affixed by them for the purposes stated in the instrument and who declared that they have executed the foregoing instrument as their free and voluntary act and deed.

This instrument consist of only **FIVE (5)** pages, including this page in which this acknowledgement is written, duly signed by the parties and his instrumental witnesses on each and every page hereof.

WITNESS MY HAND AND SEAL this JUN 02 2020 at Sanagan City
Philippines.

Doc No. 139
Page No. 29
Book No. 6
Series of 2020

NOTARY PUBLIC

[Signature]
NOTARY PUBLIC
JUN 02 2020
NOTARY NO. 76561-1/1/2020
HOLE 3-000 2254

750-0433

 **IWABESU CORPORATION**
2100 Kapiolani Pkwy, Suite 1000, Honolulu, HI 96815
Tel: (808) 591-1111 Fax: (808) 591-1112 Email: iwabesu@iwabesu.com

01 - 8 Magallanes -002-2020
Aug. 7, 2020

BILLING INVOICE

Mayor Augusto Manuel M. Magragio
Municipal Mayor of Magallanes
Magallanes, Sorongin City

This is to bill the Local Government Unit of Magallanes, Sorongin City the amount of **ONE HUNDRED SIXTY SIX THOUSAND ONE HUNDRED PESOS (P 166,100.00)** as tipping fee for the delivery of solid wastes which was accepted at the IWA BESU Sanitary Landfill covering the period of July 9, 2020 to July 31, 2020 with a total accumulated weight of 33,220 kilos.

For your reference, and appropriate action.

Thank you.

Very truly yours,


MARITES M. NAVERA
Billing and Collection Officer
Iwa Besu Corporation


Noted by
RENE S. SANTELLAN
SUF-Client Operations Officer
Iwa Besu Corporation



IWA BESU CORPORATION
SUMMARY OF DELIVERIES
MUNICIPALITY OF MAGALLANES
JULY 2020

 **IWABESU
CORPORATION**
P 111, Alameda Street, Suite 1000, San Francisco, CA 94103, USA
Tel: (415) 774-1111 / Fax: (415) 774-1112 / Email: info@iwabesu.com
Web: www.iwabesu.com

SI - # Magallanes-005-3020
Sept. 6, 2020

BILLING INVOICE

Mayor Augusto Manuel M. Ragnio
Municipal Mayor of Magallanes
Magallanes, Sorsogon City

This is to bill the Local Government Unit of Magallanes, Sorsogon City the amount of **SIXTY NINE THOUSAND NINE HUNDRED PESOS (P 69,900.00)** as tipping fee for the delivery of solid wastes which was accepted at the RWA BESU Sanitary Landfill covering the period of August 6, 2020 to August 31, 2020 with a total accumulated weight of 13,982 kilos.

For your reference and appropriate action.

Thank you.

Very truly yours,

MARITES M. NAVERA
Billing and Collection Officer
Iwa Besu Corporation

Noted by:

RENE F. SANTILLAN
SVP-Chief Operations Officer
Iwa Besu Corporation.

[illegible]

160


11 Avenue Mexico, Santa Anita Subdivision, District of Bin, P.O.
2000000000 / 0000000000 / 0000000000 / 0000000000 / 0000000000
Email Address: info@iwabesu.com

Bi - # Magalanes -004-2020
October 13, 2020

BILLING INVOICE

Mayor Augusto Manuel M. Nagregio
Municipal Mayor of Magalanes
Magalanes, Sorsogon City

This is to bill the Local Government Unit of Magalanes, Sorsogon City the amount of **SEVENTY ONE THOUSAND SIX HUNDRED FIFTY PESOS (P 71,650.00)** as tipping fee for the delivery of solid wastes which was accepted at the IWA BESU Sanitary Landfill covering the period of September 2, 2020 to September 25, 2020 with a total accumulated weight of 34,330 kilos.

For your reference and appropriate action.

Thank you.

Very truly yours,


NAARITES M. NAVERA
Billing and Collection Officer
Iwa Besu Corporation

Noted by: 

RENE F. SANTELLAN
SVP-Chief Operations Officer
Iwa Besu Corporation

IWA BSU CORPORATION
SUMMARY OF DELIVERIES
MUNICIPALITY OF MAGALLANES
SEPTEMBER 2020

DATE	DR #	QUANTITY [KLS]	AMOUNT	REMARKS
9/2/2020		1820	9,300.00	
9/4/2020		1130	5,550.00	
9/6/2020		2280	11,400.00	
9/10/2020		1530	7,650.00	
9/16/2020		2130	10,650.00	
9/19/2020		1440	7,200.00	
9/23/2020		2430	12,150.00	
9/25/2020		1590	7,950.00	
TOTAL		14,880.00	71,650.00	

Prepared by :

MARITES M. NAVERA
Billing and Collection Officer
Iwa Besu Corporation

Noted by :

RENE F. SANTELLAN
SVF-Chief Operations Officer
Iwa Besu Corporation

**IWABESU
CORPORATION**
1000 Avenue Westley, Suite 2000, Indianapolis, Illinois 46204, USA
Tel: +1-317-251-1000 / Fax: +1-317-251-1001 / Email: iwabesu@iwabesu.com
Web: www.iwabesu.com

to : # Magallanes -005-2020
November 5, 2020

BILLING INVOICE

Mayer Augusto Manuel M. Ragraghe
Municipal Mayor of Magallanes
Magallanes, Surigao City

This is to bill the Local Government Unit of Magallanes, Surigao City the amount of **FIFTY NINE THOUSAND TWO HUNDRED FIFTY PESOS (P 59,250.00)** as typing fee for the delivery of solid wastes which was accepted at the IWA-BESU Sanitary Landfill covering the period of October 6, 2020 to October 28, 2020 with a total accumulated weight of 15,850 kilos.

For your reference and appropriate action,

Thank you.

Very truly yours,

MARIETE M. RAVERA
Billing and Collection Officer
Iwa Besu Corporation


Noted by:
RENE F. SANTILLAN
Toll-Free Operations Officer
Iwa Besu Corporation

[illegible]


A 12-60000 Heats, Utility Service Subscribers, Storage, Office, Supply
and Maintenance, and Operations, with City, State, and Federal, and International
Trade Relations info@iwabesu.com

80 - # Magallanes-006-2020
December 7, 2020

BILLING INVOICE

Mayor Augusto Manuel M. Ragnagio
Municipal Mayor of Magallanes
Magallanes, Sorsogon City

This is to bill the Local Government Unit of Magallanes, Sorsogon City the amount of **SEVENTY NINE THOUSAND SEVEN HUNDRED FIFTY PESOS (P 79,750.00)** as typing fee for the delivery of solid wastes which was accepted at the IWA BESU Sanitary Landfill covering the period of November 4, 2020 to November 28, 2020 with a total accumulated weight of 15,950 kilos.

For your reference and appropriate action.

Thank you.

Very truly yours,

MARITES M. NAVERA
Billing and Collection Officer
Iwa Besu Corporation

Noted by 
RENE F. SANTELLAN
SVP-Chief Operations Officer
Iwa Besu Corporation

 **IWABESU CORPORATION**
P.O. Box 10000, New Batac Station, Tuguegarao, Ilocos Norte
9100 Philippines • Tel: (0985) 240-1100 • Fax: (0985) 240-1101
Email: info@iwabesu.com

SI - 8 Magallanes 007-2020
January 7, 2021

BILLING INVOICE

Meyer Augusto Manuel M. Regorio
Municipal Mayor of Magallanes
Magallanes, Sorsogon City

This is to bill the Local Government Unit of Magallanes, Sorsogon City the amount of **₱87,148.00** (EIGHT THOUSAND SIX HUNDRED PESOS (P 86,600.00)) as tipping fee for the delivery of solid wastes which was accepted at the IWA-BESU Sanitary Landfill covering the period of December 1, 2020 to December 31, 2020 with a total accumulated weight of 11,720 kilos.

For your reference and appropriate action.

Thank you.

Very truly yours,


MARITES M. NAVERA
Billing and Collection Officer
Iwa-Besu Corporation

Noted by:


RENE P. SANTILLAN
Self-Check Operations Officer
Iwa-Besu Corporation

IWA BESU CORPORATION
B-1, Avenue Street, Dula Mula Subdivision, Oranga, Alcala, Pinar,
MOCTIQUEN / 9817085421 / 9817112001 / 9817112002 / 9817112003
Email address: billings@iwabesu.com

BI - 8 Magallanes -001-2021
February 3, 2021

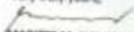
BILLING INVOICE


Mayor Augusto Manuel M. Ragrabo
Municipal Mayor of Magallanes
Magallanes, Sorsogon City

This is to bill the Local Government Unit of Magallanes, Sorsogon City the amount of **ONE HUNDRED TWENTY FOUR THOUSAND SIX HUNDRED PESOS (P 124,600.00)** as tipping fee for the delivery of solid wastes which were accepted at the IWA BESU Sanitary Landfill covering the period of January 5, 2021 to January 28, 2021 with a total accumulated weight of 24,920 kilos.

For your reference and appropriate action.

Thank you.

Very truly yours,

MARITES M. NAVERA
Billing and Collection Officer
Iwa Besu Corporation

Noted by:

RENE F. SANTILLAN
SVP-Chief Operations Officer
Iwa Besu Corporation

LA BESU CORPORATION
SUMMARY OF DELIVERIES
MUNICIPALITY OF MAGALLANES
JANUARY 5 - 28, 2021

DATE	QUANTITY (KLS)	AMOUNT	REMARKS
1/5/2021	2000	10,000.00	
1/6/2021	5010	25,250.00	
1/8/2021	5290	26,450.00	
1/9/2021	1730	8,650.00	
1/14/2021	1880	9,400.00	
1/20/2021	1790	8,950.00	
1/22/2021	2280	11,400.00	
1/27/2021	1620	8,100.00	
1/28/2021	8290	41,400.00	
TOTAL	24,920	124,600.00	

Prepared by :

MARITES M. NAVERA
Billing and Collection Officer
Iwa Besu Corporation

Noted by :

RENE S. SANTILLAN
SVP-Chief Operations Officer
Iwa Besu Corporation

 **IWA BESU CORPORATION**
P.O. Service Street, Santa Maria Subdivision, Sanjo, Iloilo, Philippines
0921-7443444 / 0921-7443444 / 0921-7443444 / 0921-7443444 / 0921-7443444
Email: lawbesu@iwa-besu.com

Sr. - # Magallanes -002-2021
March 3, 2021

BILLING INVOICE

Mayor Augusto Manuel M. Regorio
Municipal Mayor of Magallanes
Magallanes, Sorsogon City

This is to bill the Local Government Unit of Magallanes, Sorsogon City the amount of **ONE HUNDRED TWENTY SIX THOUSAND EIGHT HUNDRED PESOS (P 126,800.00)** as tipping fee for the delivery of solid wastes which was accepted at the IWA BESU Sanitary Landfill covering the period of February 2, 2021 to February 27, 2021, with a total accumulated weight of 25,380 kilos.

For your reference and appropriate action.

Thank you

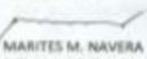
Very truly yours,


MARITES M. NAVERA
Billing and Collection Officer
Iwa Besu Corporation


RENE P. MANTILLAN
SVP- Chief Operations Officer
Iwa Besu Corporation

IWA RESU CORPORATION
SUMMARY OF DELIVERIES
MUNICIPALITY OF MAGALLANES
FEBRUARY 2 - 27, 2021

DATE	QUANTITY (KLS)	AMOUNT	REMARKS
2/2/2021	2980	14,900.00	
2/3/2021	2720	13,600.00	
2/4/2021	3320	16,600.00	
2/9/2021	3520	17,600.00	
2/13/2021	3850	19,250.00	
2/15/2021	1520	7,600.00	
2/18/2021	1670	8,350.00	
2/23/2021	3980	19,900.00	
2/27/2021	1850	9,250.00	
T O T A L	25,960	129,800.00	

Prepared by : _____

MARITES M. NAVERA
Billing and Collection Officer
Iwa Resu Corporation

Noted by : _____

RENE F. SANTILLAN
SVP-Chief Operations Officer
Iwa Resu Corporation

**IWABESU
CORPORATION**
2115 Avenue Marconi, Suite 1000, Mississauga, Ontario, M5S 1A5, CANADA
Tel: (905) 874-1111 / Fax: (905) 874-1112 / Email: info@iwabesu.com / www.iwabesu.com
Email: Sales@iwabesu.com

Re - # Magallanes-009-2021
April 12, 2021

BILLING INVOICE

Meyer Augusto Manuel M. Regaspio
Municipal Mayor of Magallanes
Magallanes, Sorsogon City

This is to bill the Local Government Unit of Magallanes, Sorsogon City the amount of **NINETY EIGHT THOUSAND THREE HUNDRED FIFTY PESOS (P 98,350.00)** as typing fee for the delivery of solid wastes which was accepted at the (MA 8032) Sanitary Landfill covering the period of March 4, 2021 to March 30, 2021 with a total accumulated weight of 29,670 kilos.

For your reference and appropriate action,

Thank you.



Very truly yours,


MARITES M. NIVERA
Billing and Collection Officer
Iwa Besu Corporation


Noted by:

RENE F. SANTILLAN
JVP-Coord Operations Officer
Iwa Besu Corporation

IWA BESU CORPORATION
SUMMARY OF DELIVERIES
MUNICIPALITY OF MAGALLANES
MARCH 4 - 30, 2021

DATE	QUANTITY (KLS)	AMOUNT	REMARKS
3/4/2021	1540	7,700.00	
5/5/2021	5880	29,400.00	
5/9/2021	1370	7,850.00	
5/13/2021	2010	10,050.00	
5/17/2021	1340	6,700.00	
5/18/2021	1580	7,900.00	
5/20/2021	1800	9,000.00	
5/27/2021	1910	9,550.00	
5/30/2021	1640	8,200.00	
T O T A L	19,670	98,350.00	

Prepared by : _____

MARITES M. NAVERA
 Billing and Collection Officer
 Iwa Besu Corporation

Noted by : _____

RENE F. MANTILLAN
 SVP-Chief Operations Officer
 Iwa Besu Corporation

**IWA BESU
CORPORATION**
2727 Avenida General Emilio Aguinaldo, Cebu City, 6000 Cebu, Philippines
P.O. Box 10000, Cebu City, 6000 Cebu, Philippines
Email: info@iwabesu.com

BI - 9 Magallanes-004-2021
May 5, 2021

BILLING INVOICE

Mayer Augusto Manuel M. Ragnio
Municipal Mayor of Magallanes
Magallanes, Sorsogon City

This is to bill the Local Government Unit of Magallanes, Sorsogon City the amount of **FIFTY FOUR THOUSAND THREE HUNDRED FIFTY PESOS (P 54,350.00)** as tipping fee for the delivery of solid wastes which was accepted at the IWA BESU Sanitary Landfill covering the period of April 7, 2021 to April 27, 2021 with a total accumulated weight of 50,870 kilos.

For your reference and appropriate action.

Thank you.

Very truly yours,


MARITES M. NAVERA
Billing and Collection Officer
Iwa Besu Corporation


RENE P. SANTELLAN
SVP-Chief Operations Officer
Iwa Besu Corporation

[illegible]


412 Avenue Street, Davao Marine Subdivision, Davao, Mindanao
0942 7440000 / 0942 7712222 / 0942 7712222 / 0942 7712222
Email: info@iwabesu.com

BI - 9 Magalanes-004-2021
May 5, 2021

BILLING INVOICE

Mayor Augusto Manuel M. Bagrao
Municipal Mayor of Magalanes
Magalanes, Sorsogon City

This is to bill the Local Government Unit of Magalanes, Sorsogon City the amount of **FIFTY SIX THOUSAND FIVE HUNDRED PESOS (P 56,500.00)** in tipping fee for the delivery of solid wastes which was assigned at the IWA BESU Sanitary Landfill covering the period of May 7, 2021 to May 27, 2021 with a total accumulated weight of 11,300 kilos.

For your reference and appropriate action.

Thank you.

Very truly yours,

MARITES M. NAVERA
Billing and Collection Officer
Iwa Besu Corporation

Noted by:

RENE F. SANTILLAN
SVP-Chief Operations Officer
Iwa Besu Corporation

Republic of the Philippines
MUNICIPALITY OF MAGALANES
 Province of Sarangani

MONTHLY SUMMARY OF RESIDUAL WASTE DELIVERED
 For the Month ended May 31, 2021

Delivery Control No.	Date Delivered	Gross Weight (kg)	Tare (kg)	Net Weight (kg)	Cost per Kilo (per Cof)	Amount (Php)
2021-00302	05/07/2021	4,850	1,100	3,750	5.00	8,750.00
2021-00303	05/11/2021	4,580	1,110	3,470	5.00	7,100.00
2021-00304	05/14/2021	3,600	3,080	2,520	5.00	12,600.00
2021-00305	05/18/2021	4,750	1,100	3,650	5.00	8,250.00
2021-00306	05/27/2021	9,150	1,190	3,960	5.00	19,800.00
TOTAL				11,900		58,500.00

This is to certify that per monitoring of the Ecosystem and Environmental Resource Management Section (EERMS) of the Municipality of Magalanes, the residual waste delivered to INWARESU for the period herein indicated has an equivalent value of **Fifty Six Thousand Five Hundred Pesos Only (P 56,500.00)**.

The same amount was reconciled* with the billing of and payable to INWARESU for the period covered.

Certified Correct:



ROBERT M. MORRAL
 WERMS Designate

Noted:

AGUSTO MANUEL M. BAGRAGIO
 Municipal Mayor

* Attached is the certified billing from INWARESU
 (2 copies ONAC, 1 copy AO, 1 copy DE)

IWA BESU CORPORATION
 615 Avenue Robert, P.O. Box 1000, Longue Pointe, Quebec, Canada H9L 1Y1
 Tel: (514) 771-1111 / Fax: (514) 771-1112 / Email: info@iwabesu.com / Web: www.iwabesu.com

SI - # Magallanes-008-2021
 September 10, 2021

BILLING INVOICE

Mayor Augusto Manuel M. Ragnio
 Municipal Mayor of Magallanes
 Magallanes, Surigao City

This is to bill the Local Government Unit of Magallanes, Surigao City the amount of **ONE HUNDRED THIRTY THREE THOUSAND EIGHT HUNDRED PESOS (P 133,800.00)** as tipping fee for the delivery of solid wastes which was accepted at the IWA BESU Sanitary Landfill covering the period of August 11, 2021 to August 30, 2021 with a total accumulated weight of **26,760 kilos**.

For your reference and appropriate action.

Thank you.

Very truly yours,

MARITES M. NAVERRA
 Billing and Collection Officer
 Iwa Besu Corporation

Noted by:
RENE F. SANTILLAN
 SVP-Chief Operations Officer
 Iwa Besu Corporation

IWA BESU CORPORATION
 SUMMARY OF DELIVERIES
 MUNICIPALITY OF MAGALLANES
 AUGUST 11-30, 2021

DATE	QUANTITY (KLS)	AMOUNT	REMARKS
8/11/2021	3490	7,450.00	
8/13/2021	5350	26,750.00	
8/16/2021	4890	34,400.00	
8/17/2021	1650	8,250.00	
8/19/2021	5680	28,400.00	
8/24/2021	3590	7,950.00	
8/30/2021	6120	30,600.00	

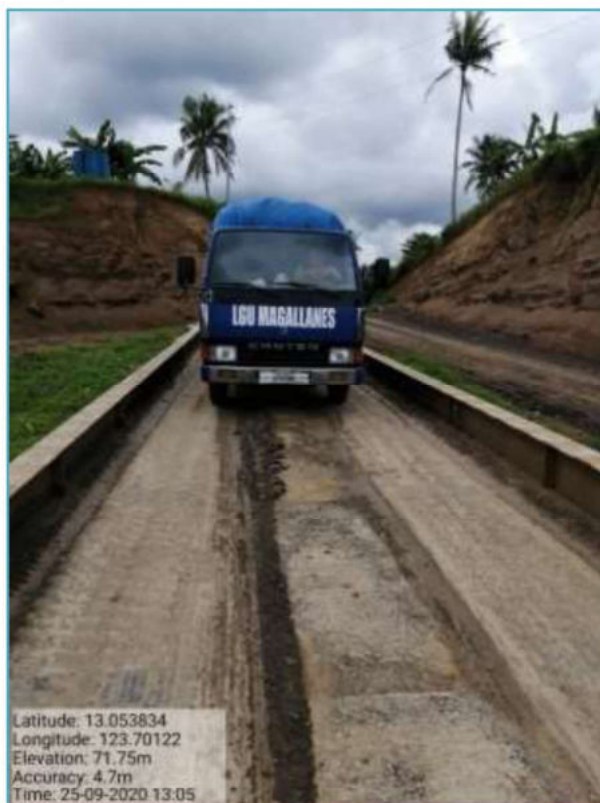
TOTAL	26,760	133,800.00
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Prepared by:

MARITES M. NAVERRA
 Billing and Collection Officer
 Iwa Besu Corporation

Noted by:

RENE F. SANTILLAN
 SVP-Chief Operations Officer
 Iwa Besu Corporation







3.8 Special Wastes

Based from 2016 Actual WACS, about 1.09% (154.33 kg/day) of special wastes is generated by 10 service barangays. These wastes, without treatment done are deposited into RCA.

3.8.1 Health Care, Toxic and Hazardous Wastes

The Magallanes Medicare Hospital (MMH), a district hospital in the municipality, and the Rural Health Unit (RHU) have their own health care, toxic and hazardous wastes management system and facilities within their respective jurisdiction. This is in accordance with the provisions of the Department of Health. Distinctive health care, toxic and hazardous waste management system and facilities of MMH and RHU are further been discussed and shown in their Waste Management Policy provided in the succeeding sheets.



Republic of the Philippines
MAGALLANES MEDICARE HOSPITAL
 Aguada Norte, Magallanes, Sorsogon
<http://magallanesmedicare.weebly.com>

WASTE MANAGEMENT POLICY

1.0 INTRODUCTION

- 1.1 This Waste Management Policy has been produced in support of the Magallanes Medicare Hospital's Waste Management Plan and Environment Strategy.
- 1.2 The policy aims to manage waste which ensures that the segregation, handling, transportation, treatment and disposal of waste are properly handled so as to minimize the risks to the health and safety of patients, staffs, the public and the environment.
- 1.3 The Hospital is committed to the implementation of an effective waste management program that meets all the regulatory requirements placed upon it.

2.0 LEGAL BASIS

- 2.1 Republic Act No. 4226 "Hospital Licensure Act"
 The Hospital Licensure Act requires the Licensure of all hospitals in the country and mandates the DOH to provide guidelines for hospital technical standards as to personnel, equipment, and physical facilities.
- 2.2 In these times of heightened environment consciousness, addressing the issue of proper health care waste disposal is of paramount concern not only for environmentalists or other members of health sector but for the whole society as well, most especially for the agencies involved in the regulation of this very vital element. The Republic Act No. 9003 or the "Ecological Solid Waste Management Act, 2000", Mandates the segregation of solid wastes at the source including households and institutions by using a separate container for each type of waste from all sources.
- 2.3 Thus, in order to widely disseminate the proper use of existing technology and knowledge in this particular concern, DOH Department Circular No. 156-C, series of 1993 "Provides guidelines on hospital waste management" and the revised DOH Manual on Healthcare Waste Management Third Edition was conceived and produced.

- 2.4 Republic Act No. 6969
 “An Act to Control Toxic Substances and Hazardous and Nuclear Wastes of 1990.” The law and its implementing rules and regulations classify infectious, pathological, and pharmaceutical wastes as hazardous that require proper treatment and disposal. It requires the registration of waste generators, waste transporters, and operators of toxic and hazardous waste treatment facilities with the EMB.
- 2.5 Municipal Ordinance 02-2006
 An Ordinance implementing the municipal comprehensive solid waste management system for the municipality of Magallanes, Sorsogon.

3.0 POLICY STATEMENT

- 3.1 This Policy outlines the systems of work that will:
- Enable the Magallanes Medicare Hospital and its individuals to ensure that all wastes are treated and disposed of correctly, without endangering human health and without using processes or methods which could harm the environment;
 - Ensure that person handling, producing, packaging, transporting and or disposing of the Hospital waste, exercise care to avoid injury or risk of harm to themselves or others, including the general public.

4.0 OBJECTIVES

- 4.1 Waste Minimization
- 4.2 Risk Minimization
- 4.3 Maximize Recycling
- 4.4 Ensure staffs are aware and compliant with waste management policy and procedures.

5.0 WASTE DEFINITION AND CLASSIFICATION

- 5.1 “**Healthcare Waste**” (HCW) includes all the solid and liquid wastes generated as a result of any of the following:
- Diagnosis, treatment or immunization of human beings;
 - Research pertaining to the above activities;
 - Production or testing of biological; and
 - Other activities performed by HCF

5.1.1 Non-infectious Waste (General Waste):

Waste that has not been in contact with communicable or infectious agents, hazardous chemicals or radioactive substances, and does not pose a hazard.

5.1.2 Infectious Waste:

All waste suspected to contain pathogens (or their toxins) in sufficient concentration to cause diseases to a potential host.

5.1.3 Sharp Waste:

Items that can cause cuts or puncture wounds.

5.1.4 Pathological Waste:

Refers to tissue sections and body material derived from biopsies or surgical procedures that are then examined in the laboratory.

5.1.5 Pharmaceutical Waste:

Refers to expired, spilt and contaminated pharmaceutical products, drugs and vaccines. Also refers to discarded items used in handling pharmaceuticals.

5.1.6 Chemical Waste:

Discarded chemicals (solid, liquid, or gaseous) generated during disinfecting and sterilizing procedures. Chemical wastes also include wastes with high content of heavy metals and their derivatives.

6.0 IDENTIFICATION, DESCRIPTION AND STORAGE OF SEGREGATED WASTE

- 6.1 The producer of waste products must define, identify and store wastes correctly and prevent unauthorized access or accidental release while awaiting collection.
- 6.2 It is the Hospital's policy to use coloured plastic bags and safety containers for certain waste and to store these and other wastes safely at the point of production while they await collection from designated waste hold/storage areas.
- 6.3 The tagging and removal of waste bags from bins to waste hold/storage areas is the responsibility of the utility staff. Sharp containers must be identified, treated, sealed and delivered to sharp vault on-site storage by the utility staff. In laboratory areas it is the responsibility of laboratory staff to deliver all hazardous waste to the Material Recovery Facility (MRF) of the Hospital.

7.0 COLLECTION OF WASTE FOR TRANSPORT

- 7.1 Waste will be collected from temporary healthcare waste storage area (HCWSA) at regular intervals in accordance with the Magallanes Municipal Garbage Service.

- 7.2 Waste must be segregated in accordance with the requirements of the legislation such that description on RA 9003 Eco Solid Waste Management Act of 2000 accurately reflects the waste load for transport.

8.0 TREATMENT AND DISPOSAL OF WASTE

- 8.1 All **non-infectious biodegradable wet waste** should be collected and disposed on-site using basic composting practice. Compost pit should be monitored and maintained. Other non-infectious wet waste that could not be considered as biodegradable should be packed and disposed thru the Municipal dump site tagging waste bag as “residual”.
- 8.2 All **non-infectious dry waste** should be classified in the HCWSA and disposed according to usual recycling practice.
- 8.3 Other waste that cannot be classified as biodegradable, recyclable or having no commercial value shall be tagged as **residual waste**. All residual waste shall be packed and stored in the temporary holding area (HCWSA) for the scheduled collection of the Municipal Garbage Service subject to the provisions on the Municipal ordinance on Solid Waste Management of Magallanes.
- 8.4 All **infectious waste** shall be treated on site using chlorine. It should be packed in a yellow bag and stored temporarily in the HCWSA for the scheduled collection of the Municipal Garbage Service subject to the provisions of the Municipal ordinance on Solid Waste Management of Magallanes.
- 8.5 All **pathological waste including blood** shall undergo treatment using available method and shall be stored in the septic vault/placenta pit.
- 8.6 All **infectious sharp waste** shall be placed in a puncture-proof container treated with chlorine and to be stored in the sharp vault on-site storage.
- 8.7 All **non-infectious sharp waste** shall be placed in the puncture-proof container and disposed thru the Municipal dump site tagging waste container as “non-infectious sharps”.
- 8.8 All **pharmaceutical waste** shall be encapsulated on-site and should be stored in the Hospital MRF. Disposal of these wastes in the Municipal dump site shall be considered if granted by the management of the Municipal Garbage Service or the DOH.
- 8.9 All **chemical waste** used in the laboratory shall be disposed thru the sink of the HCF waste water septic tank. Such waste water shall be subjected to treatment in accordance with the waste water treatment procedure if already available. Busted bulbs and other instruments containing mercury and heavy metals shall be placed in a hard-case sealed container and to be stored temporarily in the Hospital MRF until further instruction on the availability of disposal site.

9.0 WASTE MANAGEMENT ACCIDENTS AND INCIDENTS

- 9.1 The Hospital employees must follow the current procedures as required. Given the risks associated with the handling of waste, any accidents/injuries involving waste must be reported immediately in accordance with the Hospital procedures for the reporting of accidents and untoward incidents.
- 9.2 All spillages of waste must be cleaned without delay. Waste spillages should not be left unattended or unsecured. Where spillages occur in the ward or laboratory it is the responsibility of persons working in that area to clean up the spillage.

10.0 RESPONSIBILITIES

- 10.1 The Waste management Committee are ultimately responsible for ensuring that waste is managed in accordance with legislative requirements.
- 10.1 The Waste Management Chairman is responsible for ensuring that the dedicated waste management members and the services provided by these members meet the requirements of the policy and are compliant with the legislation.
- 10.2 It is the responsibility of all staff to adhere to the legislation, to the policy, and to the Hospital's Operational Procedures of Waste Management.
- 10.3 All Hospital staff has a duty to comply with the legislation relating with the segregation, storage, transport, treatment and disposal of the wastes generated by the Hospital.

11.0 IMPLEMENTATION

- 11.1 The Policy shall be implemented throughout the Magallanes Medicare Hospital from date of issue where adaptations are required to comply with changes from previous policy then allocation of resources.

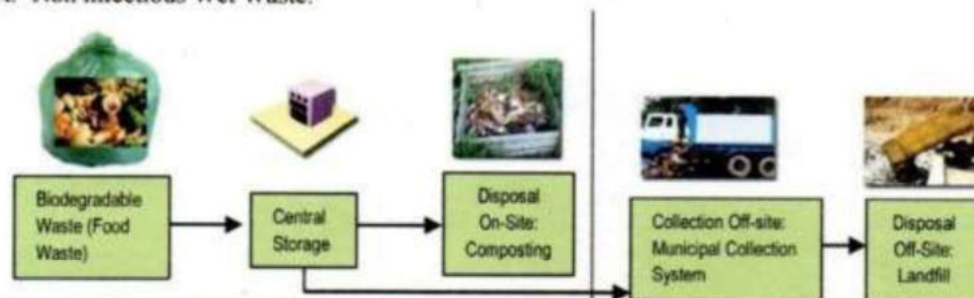
See Annexes
Rev. 2016

Annex: 1-A

WASTE DISPOSAL PRACTICE Non-infectious Wastes

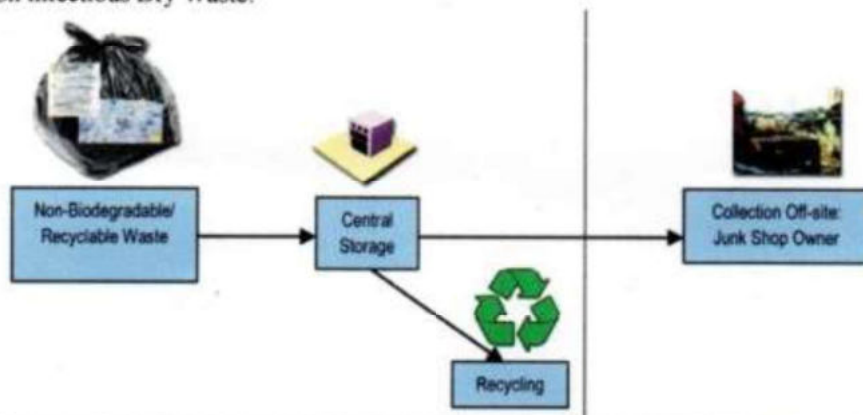


A. Non infectious Wet Waste:



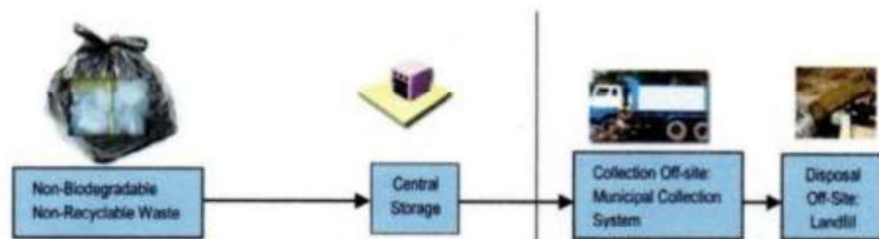
All non-infectious biodegradable wet waste should be collected and dispose on-site using basic composting practice. Compost pit should be monitored and maintained. Other non-infectious wet waste that could not be considered as biodegradable should be packed and dispose thru the municipal dump site tagging waste bag as residual.

B. Non infectious Dry Waste:



All non infectious dry waste should be collected from black waste bin and classify in the waste storage area and dispose according to usual recycling practice.

C. Residual Waste:



Other waste that cannot be classified as biodegradable, recyclable or having no commercial value shall be tagged as residual waste. All residual waste shall be packed, stored in the temporary holding area for the scheduled collection of the Municipal Garbage Service subject to the provisions on the municipal ordinance on solid waste management of Magallanes.

MAGALLANES 10-YEAR SOLID WASTE MANAGEMENT PLAN 2020-2029

Annex: 1-B

WASTE DISPOSAL PRACTICE**Infectious Wastes****INFECTIOUS, PATHOLOGICAL AND INFECTIOUS SHARP WASTE**

All infectious waste except pathological and sharp waste shall be treated on site using chlorine. It should be packed in a yellow bag and store temporarily in the garbage storage for the scheduled collection of the Municipal Garbage Service subject to the provisions of the municipal ordinance on solid waste management of Magallanes.

Pathological waste including blood shall undergo treatment using available method and shall be stored in the Septic Vault/Placenta Pit.

Infectious sharp waste shall likewise be placed in a punctured free container, treated with chlorine and to be stored in the sharp vault on-site storage.

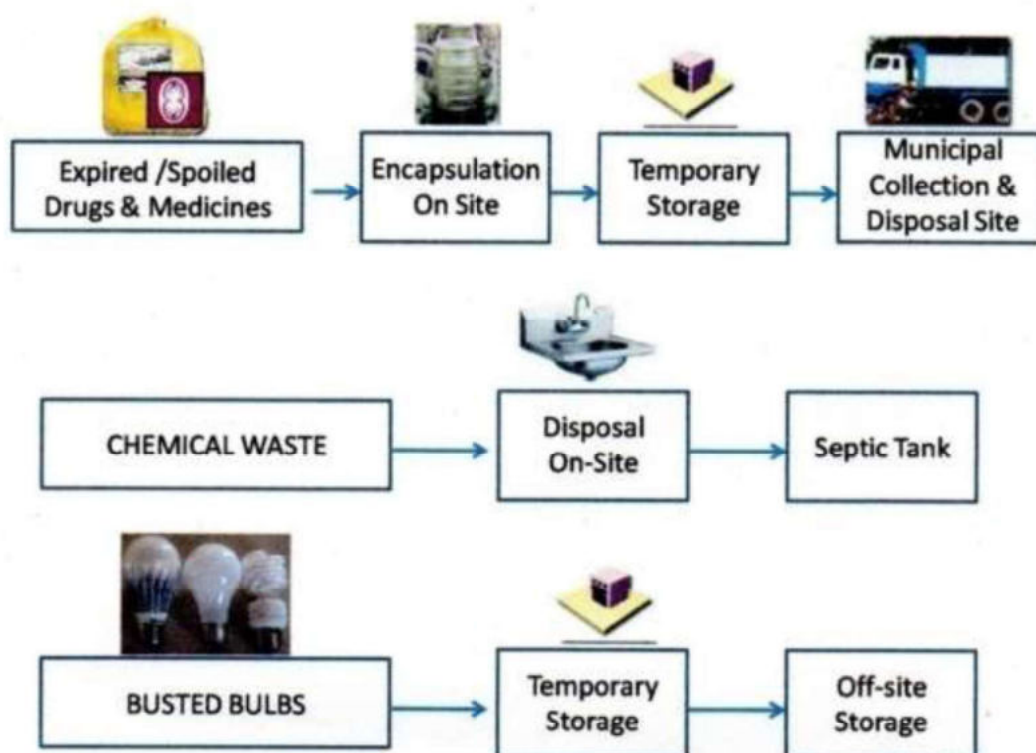
Other non infectious glass shall be place in the punctured free container and dispose thru the municipal dump site tagging waste container as non infectious sharp.

Syringe plunger used in extraction of blood shall be considered infectious and should be disposed as infectious waste.

Annex: 1-C



WASTE DISPOSAL PRACTICE Hazardous Waste



All expired and spoiled drugs and medicines shall be encapsulated on-site and should be stored in the temporary storage area. Disposal of this waste in the municipal dump site shall be considered if granted by the management of the Municipal Garbage Service or the DOH.

Chemical waste used in the laboratory shall be disposed thru the sink of the HCF waste water septic tank. Such waste water shall be subject to treatment in accordance with the waste water treatment procedure if already available.

Busted lamp and fluorescent bulb shall be placed in the hard case sealed container and to be stored temporary in the hospital MRF until further instruction on the availability of disposal site or facility.

All other instrument containing mercury and heavy metal shall likewise be stored in the temporary storage area maintaining in its leak free container or original packaging.



Republic of the Philippines
Province of Sorsogon
MUNICIPALITY OF MAGALLANES



MAGALLANES BIRTHING FACILITY

WASTE MANAGEMENT POLICY

1. All MHO and Birthing Facility staff must follow the waste segregation protocol/scheme.
2. All patients and family members must be oriented before admission on the proper ways of disposing their own waste. Patients must be oriented of the waste segregation protocol. They should be taught by the Birthing Facility staff to properly segregate their waste.
3. Personnel must wear appropriate protective equipment in handling waste materials.
4. Daily collection of waste should be done by institutional worker.
5. Pre-treatment before disposal of waste must be practice.
6. Segregation, color coding, proper labelling must be practiced as well.
7. Proper storage of busted bulbs in a wood box with proper signage and must be placed in a well-ventilated room.
8. Regular monitoring on mercury vapor with emergency response equipment.
9. All staff must be informed about the toxicity of mercury and other hazardous chemicals.
10. Pollution control officer must conduct a periodic inspection to ensure the proper segregation and proper disposal of waste.
11. Report immediately to Municipal Health Officer any accident and report as well to DENR.
12. There must be a monthly meeting for an effective health care waste management.
13. Must submit a quarterly report of self-monitoring (SMR) to DENR.
14. Must have appropriate budget for waste management.



Republic of the Philippines
Province of Sorsogon
MUNICIPALITY OF MAGALLANES



MAGALLANES BIRTHING FACILITY

MHO WASTE SEGREGATION MANAGEMENT PROCESS FLOW

COLORED BAGS FOR WASTE

GREEN:	Biodegradable / Non-infectious/Dry
BLACK:	Non-Biodegradable/Non-infectious/Wet
YELLOW:	Infectious/Pathological
RED:	Sharps Container





Republic of the Philippines
Province of Sorsogon
MUNICIPALITY OF MAGALLANES



MAGALLANES BIRTHING FACILITY

PEST AND VERMIN CONTROL

Pests can be controlled by practicing good hygiene in the following ways:

- Put all rubbish into the bin.
- Wrap all food scraps tightly in paper before putting them in the bin.
- Keep all the benches, cupboards and floors clean and free of food scraps.
- Keep food in containers with tight-fitting lids.
- Use the toilet properly. Make sure that all urine and feces goes into the pedestal pan and that the toilet is flushed after use. Toilet paper is the only kind of paper that should be flushed down the toilet.
- Make sure the toilet is clean and the cistern works correctly.
- Make sure that all septic tanks and leach drains are well sealed.
- Make sure that the community rubbish tip is operated correctly with the rubbish being buried regularly.

There is little point to having a pesticide program to control domestic pests if the relevant hygiene factors are not addressed as well. The pests will soon return if good hygiene is not maintained.



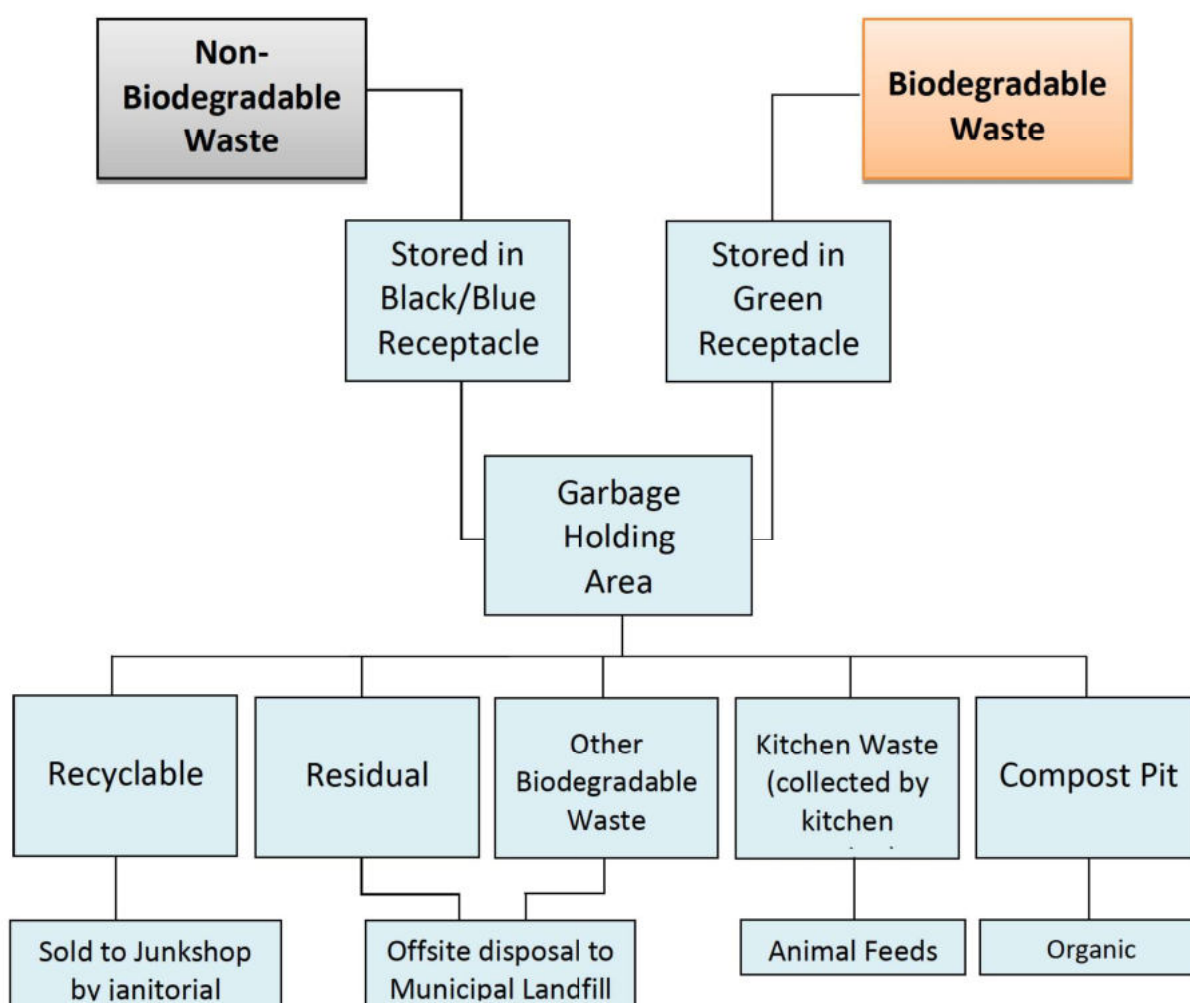
Republic of the Philippines
Province of Sorsogon
MUNICIPALITY OF MAGALLANES



MAGALLANES RURAL HEALTH UNIT AND BIRTHING FACILITY

MUNICIPAL HEALTH OFFICE MANAGEMENT PROCESS FLOW

A. General/Domestic Waste





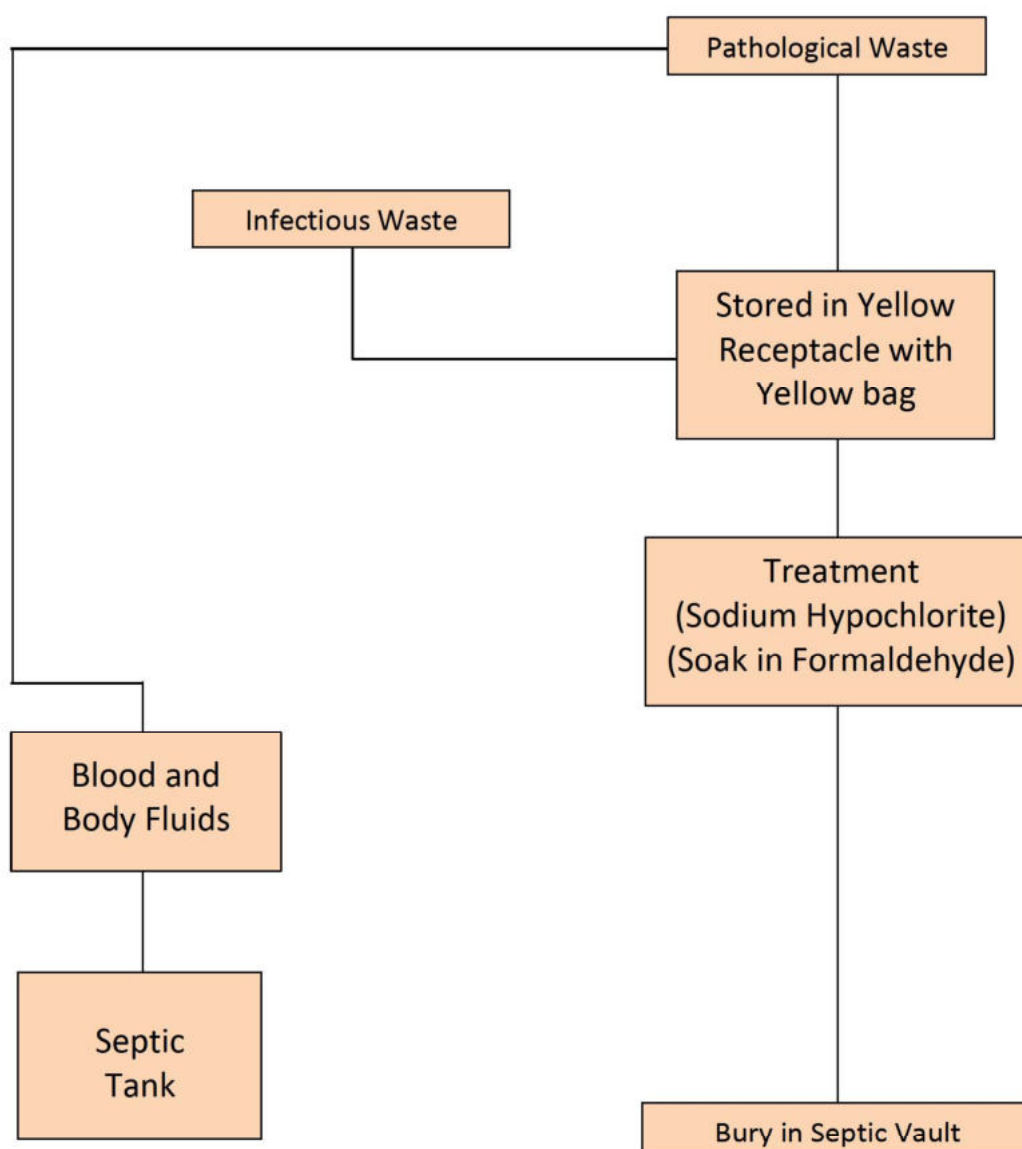
Republic of the Philippines
Province of Sorsogon
MUNICIPALITY OF MAGALLANES



MAGALLANES RURAL HEALTH UNIT AND BIRTHING FACILITY

MUNICIPAL HEALTH OFFICE MANAGEMENT PROCESS FLOW

B. Infectious and Pathological Waste





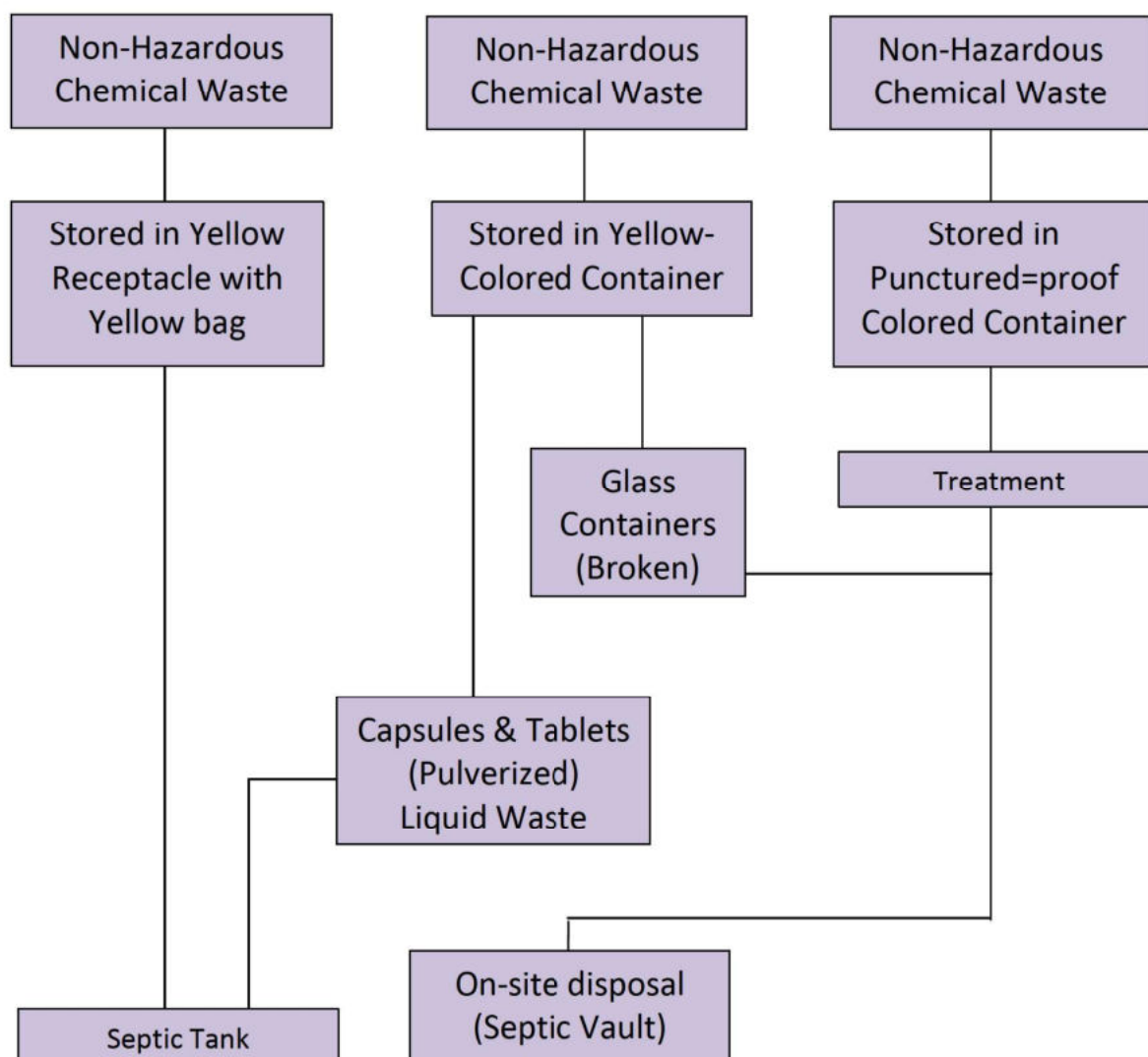
Republic of the Philippines
Province of Sorsogon
MUNICIPALITY OF MAGALLANES



MAGALLANES RURAL HEALTH UNIT AND BIRTHING FACILITY

MUNICIPAL HEALTH OFFICE MANAGEMENT PROCESS FLOW

C. Chemical, Pharmaceutical & Sharps





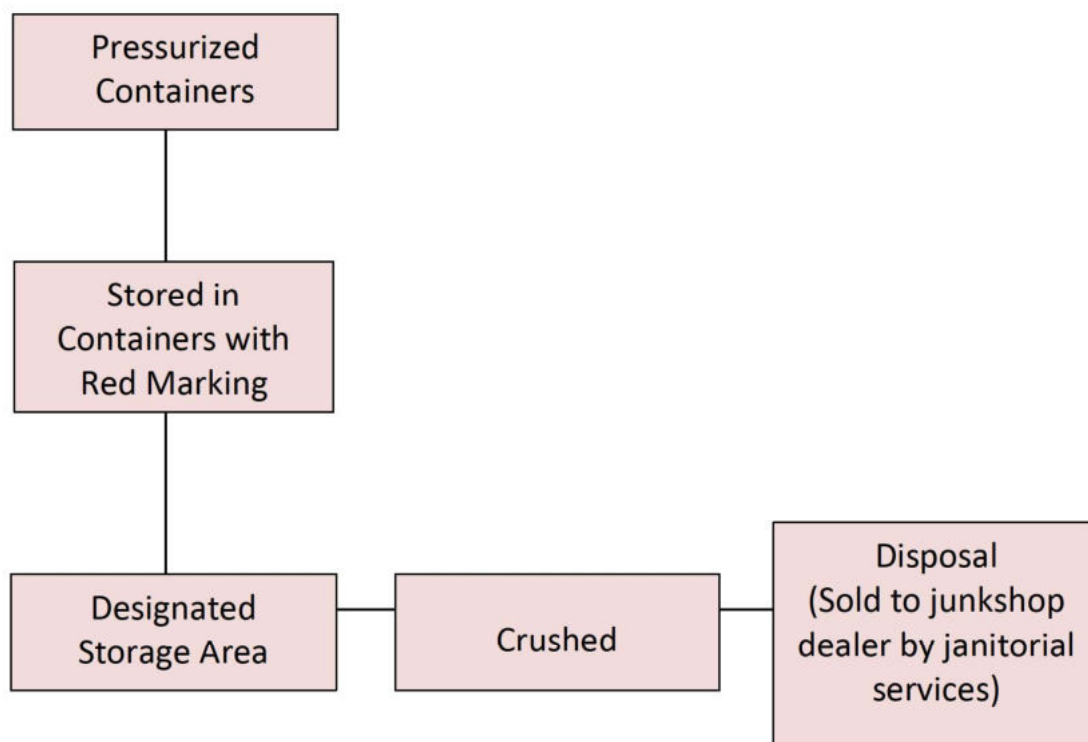
Republic of the Philippines
Province of Sorsogon
MUNICIPALITY OF MAGALLANES



MAGALLANES RURAL HEALTH UNIT AND BIRTHING FACILITY

MUNICIPAL HEALTH OFFICE MANAGEMENT PROCESS FLOW

D. Pressurized Containers





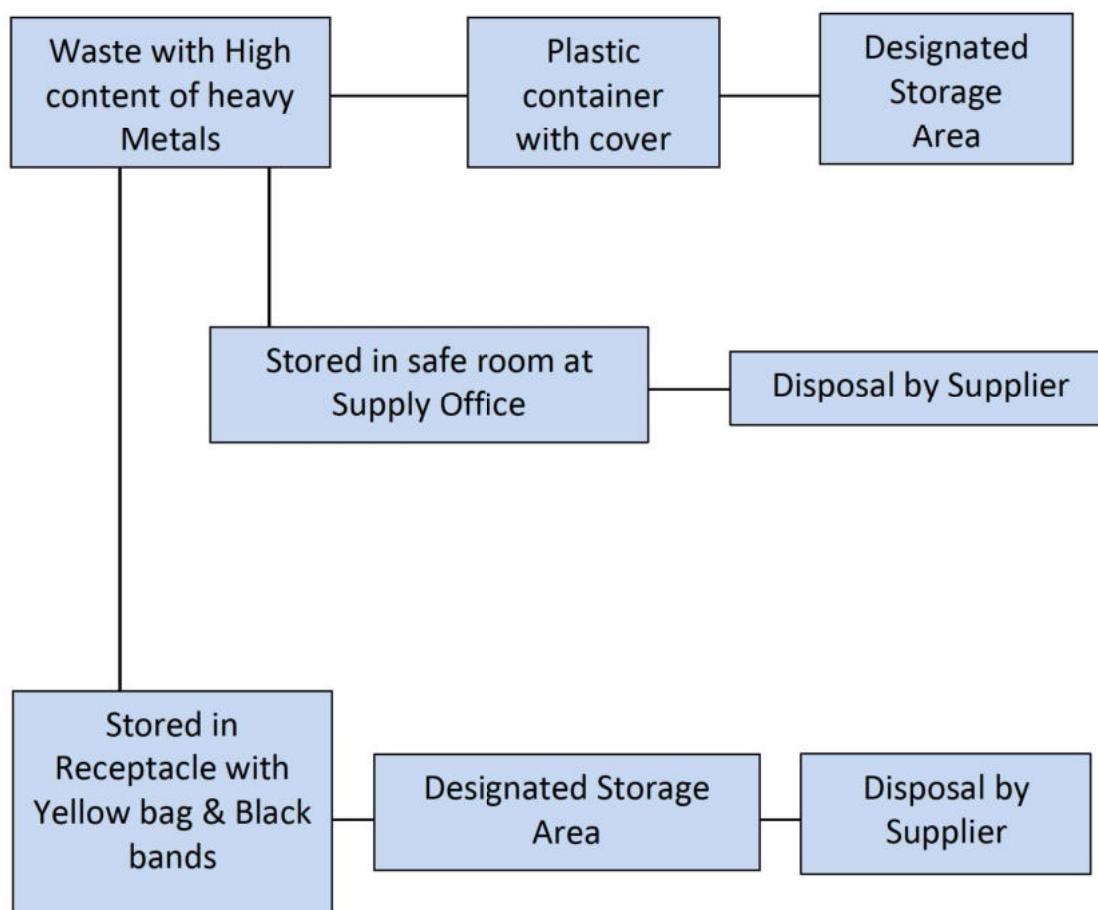
Republic of the Philippines
Province of Sorsogon
MUNICIPALITY OF MAGALLANES



MAGALLANES RURAL HEALTH UNIT AND BIRTHING FACILITY

MUNICIPAL HEALTH OFFICE MANAGEMENT PROCESS FLOW

E. Waste with High Content of Heavy Metals



3.9 Markets for Recyclables

In the municipality, there are no industries utilizing recycled materials. The only market for recyclable materials is the three privately-owned junkshops which accept cartons, plastics, bottles, iron, galvanized iron, aluminum cans, metals, magnetic wire among others. The estimate quantity of recyclable materials accumulated daily by these four junkshops are 14 kilos cartons, 23 kilos plastics, 110 pcs. bottles, 42 kilos iron, 19 kilos galvanized iron, 2.5 kilos aluminum cans, 4 kilos metals, and 3 kilos magnetic wire.

Table 16. List of Junkshops and Materials Accepted

MATERIALS ACCEPTED		JUNKSHOP OWNERS AND ADDRESS			TOTAL
		ROLLY MERCIALES Cawit Extension, Magallanes	REYNAN BITARA Cawit Extension, Magallanes	RESTITUTO BON Cawit Proper, Magallanes	
CARTONS	Estimated kilo/day	5 kls.	4 kls.	5 kls.	14 kls.
	Estimated income/day	10.00	8.00	5.00	23.00
PLASTICS	Estimated kilo/day	8 kls.	12 kls.	3 kls.	23 kls.
	Estimated income/day	16.00	33.00	9.00	58.00
BOTTLES	Estimated kilo/day	50 pcs.	40 pcs.	20 pcs.	110 pcs.
	Estimated income/day	25.00	24.00	2.00	51.00
IRON	Estimated kilo/day	20 kls.	15 kls.	7 kls.	42 kls.
	Estimated income/day	80.00	45.00	18.00	143.00
GALVANIZED IRON	Estimated kilo/day	10 kls.	6 kls.	3 kls.	19 kls.
	Estimated income/day	30.00	18.00	9.00	57.00
ALUMINUM CANS	Estimated kilo/day	1 kl.	1 ½ kls.	½ gm	2.5 kls.
	Estimated income/day	40.00	80.00	5.00	125.00
METALS	Estimated kilo/day	2 kls.	1 kl.	1 kl.	4 kls.
	Estimated income/day	90.00	45.00	20.00	155.00
MAGNETIC WIRE	Estimated kilo/day	2 kls.	1 kl.	½ gm.	3kls.
	Estimated income/day	140.00	70.00	20.00	230.00

3.10 IEC

During the year 2007 to 2009, conduct of information and education campaigns (IECs) was one of the intensive and massive endeavors of the Local Government Unit in compliance with RA 9003. Numerous IEC activities were conducted throughout the municipality which includes orientation-seminars on RA 9003 during community assemblies in 34 barangays, different religious and business sectors, NGOs, POs, all school levels, and other institutions; trainers' trainings among environmental advocates such as school-based, parish, youth, and other environmental organizations; workshops and planning activities with the 34 Barangay Solid Waste Management Committees; slides presentation and discussion with the use of multi-media projector; house to house campaigns; and distribution of leaflets and flyers.

Table 17. List of IEC Activities

IEC ACTIVITIES	MESSAGE	TARGETED AUDIENCE	EFFECTIVENESS
1. Orientation-Seminars on RA 9003 utilizing multi-media	Solid waste management is a must concern of all	<ul style="list-style-type: none"> - Community during assemblies - Religious and Business Sectors - NGOs and POs - Schools 	1. Increase public awareness on the tenets of solid waste management 2. Encourage provision of receptacles for bio, recyclable and residual wastes in barangays, offices, establishments and other institutions 3. Encourage cooperation and participation
2. Workshops and Planning Activities	Active BSWMC is crucial in effective and efficient implementation, monitoring and evaluation of SWM	34 BSWMC	1. Establish BMRF
3. House to House Campaign and Distribution of leaflets and flyers	Cooperation of each household is very important in realizing effective SWM	Households	Encourage practice of proper waste segregation
4. Trainers' Training	The LGU needs the support of other environmental advocates in massive implementation of RA 9003	Environmental Advocates: school-based, parish, youth organizations	Encourage additional task force in information dissemination

These aforementioned IECs resulted into an increased public awareness on the tenets of solid waste management and further encouraged cooperation and participation. Among other concrete manifestations of this positive response is the practice of some households of proper waste segregation; provision of receptacles for biodegradable, recyclable and residual wastes in barangays, offices, establishments and other institutions; and establishment of barangay MRFs.

At present, several IECs on RA 9003 and the two (2) ordinances of the LGU have also been conducted in 10 service barangays and schools. There are also signages of "no segregation, no collection policy" with schedule of collection being posted in strategic locations.

3.11 Costs and Revenues

Table 18. SWM Annual Budget and Expenditures

	ALLOCATION	EXPENDITURE
2013	1,000,000.00	929,442.50
2014	1,000,000.00	934,390.00
2015	1,500,000.00	1,481,380.40
2016	1,000,000.00	989,676.00
2017	2,200,000.00	1,568,273.38
2018	3,000,000.00	2,155,975.20

For the past six consecutive years, all expenditures for the SWM program were duly accounted for. There are several capital investments from the allocation which includes improvement of the municipal waste disposal facility and procurement of garbage truck, among others. Disbursements were also for the labor payment of SWM personnel tasked in the collection of wastes, operation and maintenance of MRF and of controlled disposal facility.

In 2013, 95.67% of the total expenditure was for the labor payment of SWM personnel and 4.33% was for the application and filing of water discharge permit. In 2014, all of the expenses were for the salary of SWM personnel. In 2015, likewise, labor payment had the big share of expenditure which is about 75.14%. The other 24.86% was spent for the operation, maintenance and improvement of the controlled disposal facility as well as for the "Basura Mo, Pandesal Ko" program. In 2016, from the total allocation, 90.04% was

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spent for the labor payment of SWM personnel, 1.12% for the maintenance of MRF, 8.50% for the improvement and rehabilitation of MRF, 0.20% for the operation of controlled disposal facility, and 0.14% for IEC materials. In 2017, from the total allocation, 71% was incurred for the improvement of municipal waste disposal facility and in 2018, 72% were spent for the improvement of MRF and the procurement of garbage truck.

Table 19. SWM Revenues

	REVENUE
2013	17,635.00
2014	23,100.00
2015	22,335.00
2016	29,795.00

SWM revenues reflected in the table above were mainly derived from the annual garbage fee collected from establishments securing business permits. In 2013 and 2014, annual garbage fee costs 65 pesos; while starting 2015, with the update of local revenue code, this amounted to 200 pesos. But despite such increase in annual garbage fee, it is observed that revenue lessened in 2015 compared to 2014. This is because of the decrease in the renewal of business permit in 2015. In 2016, the revenue amounted to ₱29,795.00.

Meanwhile, there is no fee being charged to households of 11 service barangays and there is no revenue generated from fines since implementation of RA 9003 and related municipal ordinances are not yet that strict.

3.12 Key Issues

Having the commitment to conform to the provisions set forth in RA 9003, in the year 2007-2009, an enormous endeavor in solid waste management program was initiated by the Municipal Government of Magallanes. This is however not sustained due to various underlying reasons.

As such, during the evaluation of present Municipal Solid Waste Management Program, the following key issues were noted:

Institutional

In the administrative component, there is no permanent MENRO tasked to manage the implementation and monitoring of the entire program, MSWMB seldom convene, not all barangays have organized BSWMC; while some organized BSWMC are inactive/nonfunctional.

In addition, though there are already two (2) Municipal Ordinances; the Mun. Ordinance No. 02-2006: An Ordinance Implementing the Municipal Comprehensive Solid Waste Management System for the Municipality of Magallanes, Prescribing Guidelines for its Implementation; Imposing Penalties and Sanctions for Violations Thereof, and the Mun. Ordinance No. 05-2009: An Ordinance Prohibiting the Use of Plastic Wrappers, Plastic Bags and Styrofoam in Stores/Groceries/and other Business/Commercial Establishments in the Municipality of Magallanes, Sorsogon formulated and approved, these are not yet fully implemented.

Equipment and Staff

Despite sufficient number of personnel tasked in the implementation of solid waste management, still some components of SWM are neglected because of unavailability of equipment and tools to facilitate effective SWM. There is also a shortcoming in the monitoring, evaluation, and feedbacking to personnel.

Source Reduction

Though re-use, recycling, and composting are mandated, some households are not that participative. Some have limited space in their areas to establish a compost pit; while others are just being passive. In terms of recycling, the key issue is that recycled products are not been patronized by locals and there is no possible market in town for recycled products.

Collection

With one garbage truck being utilized at present, service area is limited to ten población barangays only. In addition, some households, despite massive campaign on proper segregation, still dump off their non-segregated wastes and collectors are not that strict in the implementation of “no segregation, no collection” policy.

Processing Facilities

After successive typhoons, some barangay MRFs were destroyed; while some of the few existing BMRFs are not operational/properly managed.

Final Disposal Facilities

Continuous improvement of composting area, Temporary Residual Containment Area (TRCA), and septic vaults will be implemented until its development into a municipal eco-park. And as for the final disposal of wastes, the LGU will continue its contract with IWA BESU Corporation for sanitary landfill services until such time that there will be a sanitary landfill within the province.

Special Wastes

Special wastes are stored only in limited improvised receptacles in the TRCA; thus, a need for the construction of septic vaults with cover (10 m³ capacity) should be addressed to. The municipality should also anticipate possible increase in the volume of special waste generation wherein, treatment will be a necessity.

Health Care Wastes, Toxic, and Hazardous Wastes

Though at present, these are properly managed by the Magallanes Medicare Hospital and Rural Health Unit, the municipality should still be apprehensive on its

volume increase and be ready on its possible treatment and transfer. Close coordination with DOH on this concern should be made of.

Markets for Recyclables

Some recyclable items in the MRFs have no market value due to lack of recycling plant in the province and region. Junkshops are the only accessible markets for recyclables, and other recyclables are just been mixed to residuals.

Information and Education Campaign

It is observed that some people in the community have passive attitude, uncooperative especially in the campaign for self-regulation of RA 9003. Massive and intensified IECs with sufficient and effective machineries are indeed very important.

Cost and Revenues

Annual budget for solid waste management program is inadequate to afford all the expenses in implementing the various components of SWM; while there is very minimal revenue generated from the program.

Alternative Technologies

Currently, given the manageable waste volume generation in the municipality, alternative technologies are not deemed necessary. But of course, the municipality should be apprehensive on the gradual volume increase of various waste generations; thus, future utilization of possible alternative technologies should be included in the plan.

CHAPTER 4:

WASTE

CHARACTERISTICS

Comprehensive information on the quantity and type of waste generation of the municipality through the conduct of Waste Analysis and Characterization Study (WACS) is crucial in the development of this SWM Plan; specifically, in formulating appropriate SWM strategies, designing facilities, institutional arrangements and in providing baseline information in order to monitor and evaluate SWM performance in reducing waste generation. It is a process of determining the quantity and composition of waste that has been generated in every source by waste generators namely; residential. All gathered wastes are further been segregated and characterized into four major categories: a) biodegradable (kitchen and yard waste), b) recyclables (plastic etc.), c) residual waste, and d) special waste.

Using Slovin's Formula with 99% level of confidence and 10% error of tolerance or margin of error, sample size was determined. For residential/households' source, samples were 99 households from 19 barangays. Household-cooperators were further been categorized based on their income class: high income class, middle class, and low-income class.

Table 20. Identified Number of Household-Cooperators

BARANGAY	# OF HHs	# OF HHs SAMPLES	INCOME CLASS		
			High	Middle	Low
URBAN					
1. Aguada Norte	341	4	1	2	1
2. Aguada Sur	252	4	1	2	1
3. Banacud	283	4	1	2	1
4. Bacolod	204	4	1	2	1
5. Binisitahan Norte	194	4	1	2	1
6. Cawit Extension	330	4	1	2	1
7. Cawit Proper	250	4	1	2	1
8. Pantalan	231	3	1	1	1
RURAL					
9. Behia	453	6	1	3	2
10. Biga	218	6	1	3	2
11. Hubo	175	6	1	3	2
12. Caditaan	801	10	2	5	3
13. Cagbolo	233	6	1	3	2
14. Incarizan	263	6	1	3	2
15. Pili	293	6	1	3	2
16. Salvacion	219	6	1	3	2
17. Sta. Elena	217	6	1	3	2
18. Siuton	416	5	1	2	2

19. Tula Tula Norte	160	5	1	2	2
TOTAL	5,533	99	20	48	31

For non-residential source, public market, commercial establishments, institutional and industrial were identified. For the public market, there were two (2) from vegetable section and two (2) from fish section. For commercial establishment, there were two (2) food establishments, six (6) general stores and five (5) service centers. For institutional, there were four (4) schools namely Eduardo Lee Chan Memorial School, Magallanes North Central School, Aguada Elementary School and Magallanes National High School; the Local Government Unit, the Rural Health Unit; and the Our Lady of Mount Carmel Church.

For the purpose, the LGU through a special task force conducted a 3-day actual WACS last May 26-28, 2016. All daily generated wastes of the abovementioned WACS sample cooperators were collected for three consecutive days. The task force got the volume and bulk density of the collected waste, sorted out wastes according to category and classification, weighed and recorded. Shown in the succeeding tables are the results of this actual WACS.

4.1 Disposed Waste

As been revealed, the municipality has 14,144.14 kg. of waste disposed per day or 5,162, 610.16 kg./year or 5,162.61 tons/year. This translates into 0.377 per capita generation. Meanwhile, the highest volume of waste comes from the residential (95.09%), followed by institution (3.09%), commercial (1.76%), and industry (0.06%). Based on the percentage (%) by composition, shown in the table and pie chart below that recyclable (40.17%) is the highest, followed by biodegradables (35.83%), then disposal (11.46%), potential residuals (11.45%) and special wastes (1.09%).

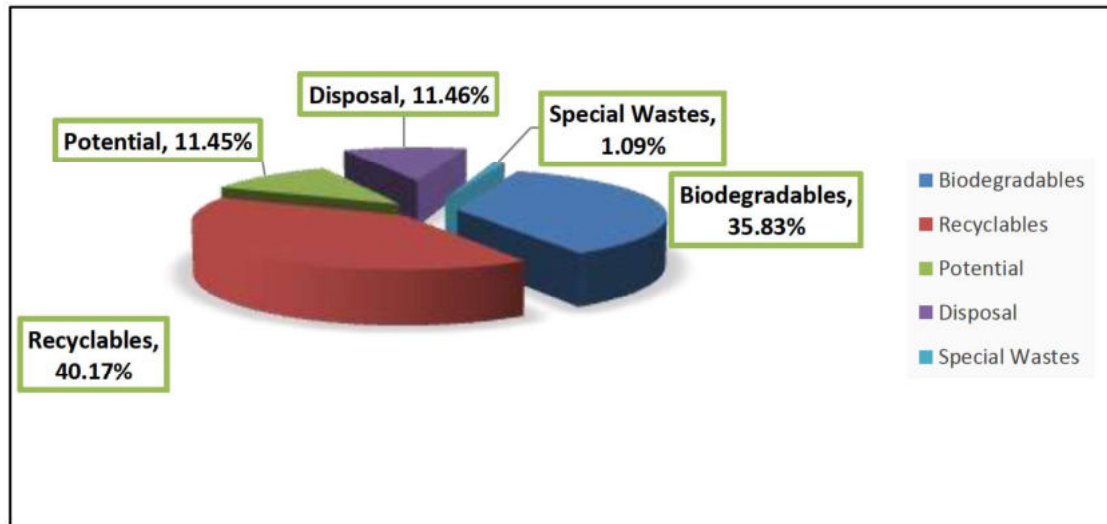
**Table 21. Quantity of Waste Disposed by Sector,
Municipality of Magallanes, 2020-2029**

Sector	Waste Disposed based on WACS			Percentage
	kg/ day	kg/ year	tons/ year	
Residential	13,449.86	4,909,199.47	4,909.20	95.09%
Commercial	248.86	90,832.99	90.83	1.76%
Institution	437.41	159,652.89	159.65	3.09%
Industry	8.01	2,924.82	2.92	0.06%
Total	14,144.14	5,162,610.16	5,162.61	100.00%
Population 2016				37,514
PCG residential level:				0.359
PCG LGU level (Residential & Non-Residential):				0.377

**Table 22. Waste Disposed by Composition,
Municipality of Magallanes, 2020-2029**

Classification	Disposed Waste			Percentage
	kg/day	kg/year	tons/year	
Biodegradables	5,067.40	1,849,601.72	1,849.60	35.83%
Recyclables	5,681.81	2,073,858.96	2,073.86	40.17%
Potential Residual	1,619.20	591,009.69	591.01	11.45%
Disposal	1,621.40	591,809.31	591.81	11.46%
Special wastes	154.33	56,330.48	56.33	1.09%
Total	14,144.14	5,162,610.16	5,162.61	100.00%

Figure 8. Pie Chart Showing Percentage (%) of Waste Composition, Municipality of Magallanes, 2020-2029



4.2 Diverted Waste

The current waste being diverted are the residuals such as food packs, sando bags, plastic bags, containers of shampoo, used clothing, tires, bottles of mineral water and soft drinks, etc. But despite the mandates of Municipal Ordinance No. 02-2006 on the three waste reduction strategies at source: re-use, recycling, and composting; only a number of households and other generators practice such interventions. Based from 2014 Community Based Monitoring System (CBMS) Survey, only 846 households (6%) practice recycling and 2,278 households (15%) do composting. As such, strict implementation of the said Ordinance is quite needed; especially that it was noted in the result of WACS that with an average daily waste generation per capita of 0.377 kg. /person/day, high percentage of waste are recyclables (40.17%) and biodegradables (35.83%). It is clearly shown in the tables that the LGU has a maximum potential for diversion (MPD) of 87.45% broken down as follows:

Biodegradable	-	35.83%
Recyclable	-	40.17%
Potential Residual	-	<u>11.45%</u>
Maximum Potential for Diversion	=	87.45%
Total Potential Materials for Recycling and Resource Recovery = 51.62%		

To support further the said diversion, there is really a need for massive IEC, compliance with the no segregation, no collection policy and establishment of MRFs and compost pit in all barangays. At present, there are no available actual data of diverted waste, however, as this plan will be implemented, data on diverted waste will become available.

**Table 23. Diversion Target
Municipality of Magallanes, 2019-2029**

YEAR	BIODEGRADABLE	RECYCLABLE	POTENTIAL RESIDUALS	TOTAL WASTE
				DIVERSION
	Kg/day	Kg/day	Kg/day	%
2019	3,211.85	3,649.83	1,021.95	54.00%
2020	3,395.48	4,133.62	1,181.04	59.00%
2021	3,582.83	4,478.53	1,194.28	62.00%
2022	3,773.86	4,679.59	1,358.59	65.00%
2023	4,121.48	5,037.36	1,526.47	70.00%
2024	4,476.30	5,402.43	1,543.55	74.00%
2025	4,682.57	5,619.08	1,716.94	77.00%
2026	4,892.88	5,839.89	1,736.18	79.00%
2027	5,107.29	6,224.52	1,915.24	83.00%
2028	5,325.87	6,455.60	1,936.68	85.00%
2029	5,711.98	6,691.18	1,868.63	87.45%

**Table 24. Summary of Potential Waste for Diversion,
Municipality of Magallanes, 2019-2029**

TYPE OF WASTE	SOURCES	2019 (kg/day)	2029 (kg/day)
Biodegradable	Residential, Commercial, Institutional, Other services	3,211.85	5,711.98
Recyclable	Residential, Commercial, Institutional, Other services	3,649.83	6,691.18
Residual with Potential for Waste Diversion	Residential, Commercial, Institutional, Other services	1,021.95	1,958.39
Total		7,883.63	14,361.55

4.3 Generated Waste

**Table 25. Generated Waste,
Municipality of Magallanes, 2020-2029**

Source of Wastes	Daily solid waste generation	
	Waste Generation (Tons/day)	Percentage %
1. Residential	13,449.86	95.09%
2. Commercial	248.86	1.76%
3. Institutional	437.41	3.09%
4. Industrial	8.01	0.06%
Total	14,144.14	100.00%

**Table 26. Projected Generated Waste Daily & Annually in Kgs. &Tons
Municipality of Magallanes, 2020-2029**

YEAR	WG	WG	WG	WG
	(Daily)	(Daily)	(Annually)	(Annually)
	(kgs/day)	(Tons/day)	(kgs/year)	(Tons/year)
2019	14,599.33	14.60	175,191.90	175.19
2020	14,762.94	14.76	177,155.32	177.16
2021	14,928.45	14.93	179,141.35	179.14
2022	15,095.46	15.10	181,145.48	181.15
2023	15,264.73	15.26	183,176.76	183.18
2024	15,435.51	15.44	185,226.13	185.23
2025	15,608.55	15.61	187,302.65	187.30
2026	15,783.48	15.78	189,401.78	189.40
2027	15,960.30	15.96	191,523.54	191.52
2028	16,138.99	16.14	193,667.92	193.67
2029	16,319.95	16.32	195,839.44	195.84

From the result of WACS on the generated waste of 14,144.14 kgs. /day, projected in the table above the increase in waste generation from 2019 to 2029. By year 2029, the municipality will eventually have 16,319.95 kgs. /day waste generation or 195,839.44 kgs./year. Shown further in Table 27 the projected generated waste per type; wherein, by year 2026 the amount of the following waste types in kilogram will be:

Biodegradable	-	5,757.28
Recyclable	-	6,454.64
Residual with Potential for Diversion	-	1,839.82
Residual for Disposal	-	1,841.43
Special	-	<u>175.14</u>
Total	-	16,068.32

**Table 27. Projected Generated Waste Per Type (Kgs/Day),
Municipality of Magallanes, 2020-2029**

Year	Biodegradable Kg/day (35.83%)	Recyclable Kg/day (40.17%)	Residual (w/ Potential for diversion) Kg/day (11.45%)	Residual For Disposal Kg/day (11.46%)	Special Kg/day (1.09%)	Total Kg/day (100%)
2019	5,230.94	5,864.55	1,671.62	1,673.08	159.13	14,599.33
2020	5,289.56	5,930.27	1,690.36	1,691.83	160.92	14,762.94
2021	5,348.86	5,996.76	1,709.31	1,710.80	162.72	14,928.45
2022	5,408.70	6,063.85	1,728.43	1,729.94	164.54	15,095.46
2023	5,469.35	6,131.84	1,747.81	1,749.34	166.39	15,264.73
2024	5,530.54	6,200.44	1,767.37	1,768.91	168.25	15,435.51
2025	5,592.54	6,269.96	1,787.18	1,788.74	170.13	15,608.55
2026	5,655.22	6,340.22	1,807.21	1,808.79	172.04	15,783.48
2027	5,718.57	6,411.25	1,827.45	1,829.05	173.97	15,960.30
2028	5,782.60	6,483.03	1,847.91	1,849.53	175.92	16,138.99
2029	5,847.44	6,555.73	1,868.63	1,870.27	177.89	16,319.95

Table 28. Projection of Waste Generation, Projected Waste for Diversion and Disposal
Municipality of Magallanes, 2020-2029

Year	Waste Gen/ Capita/day based on WACS (kg/d)	Projected Population	Daily Waste Gen based on Population (kg/d)	Target Waste Diversion %	Weight to be Diverted (kg/d)	Target Waste Disposal (%)	Weight to be Disposed (kg/d)	WACS (kgs/day)		
								Bio	Recyclable	Residuals
2019	0.377	38,725	14,599.33	54.00%	7,883.64	46.00%	6,715.69	35.83%	40.17%	11.45%
2020	0.377	39,159	14,762.94	59.00%	8,710.14	41.00%	6,052.81	5,230.94	5,864.55	1,671.62
2021	0.377	39,598	14,928.45	62.00%	9,255.64	38.00%	5,672.81	5,289.56	5,930.27	1,690.36
2022	0.377	40,041	15,095.46	65.00%	9,812.05	35.00%	5,283.41	5,348.86	5,996.76	1,709.31
2023	0.377	40,490	15,264.73	70.00%	10,685.31	30.00%	4,579.42	5,408.70	6,063.85	1,728.43
2024	0.377	40,943	15,435.51	74.00%	11,422.28	26.00%	4,013.23	5,469.35	6,131.84	1,747.81
2025	0.377	41,402	15,608.55	77.00%	12,018.59	23.00%	3,589.97	5,530.54	6,200.44	1,767.37
2026	0.377	41,866	15,783.48	79.00%	12,468.95	21.00%	3,314.53	5,592.54	6,269.96	1,787.18
2027	0.377	42,335	15,960.30	83.00%	13,247.04	17.00%	2,713.25	5,655.22	6,340.22	1,807.21
2028	0.377	42,809	16,138.99	85.00%	13,718.14	15.00%	2,420.85	5,718.57	6,411.25	1,827.45
2029	0.377	43,289	16,319.95	87.45%	14,271.80	12.55%	1,048.15	5,782.60	6,483.03	1,847.91
								5,847.44	6,555.73	1,868.63

CHAPTER 5:

LEGAL /

INSTITUTIONAL

FRAMEWORK

5.1 Local Laws and Regulations

Presented hereunder are the two (2) Municipal Ordinances passed and approved regarding solid waste management in the municipality.

Municipal Ordinance No. 02-2006

An Ordinance Implementing the Municipal Comprehensive Solid Waste Management System for the Municipality of Magallanes, Prescribing Guidelines for its Implementation; Imposing Penalties and Sanctions for Violations Thereof was enacted to support and complement the provisions of RA 9003 otherwise known as the Ecological Solid Waste Management Act of 2000. This ordinance applies to all people in all barangays and puroks of the municipality, all residential houses, business, commercial and industrial establishments, factories, commercial farms, public markets, talipapas and other places of work, and further covers institutions such as business offices, schools, churches, clinics and hospitals, and all public and private buildings and structures of any kind. Its purpose accordingly is to enhance ecological balance and implement a sustainable and integrated solid waste management system through: (1) the guidance, control and regulation of the generation, storage, collection, transportation and disposal of solid waste within the municipality, (2) the necessary controls and mitigation activities to prevent the negative environmental impacts of solid waste, (3) minimizing the generation of solid waste by encouraging the recovery of certain wastes for recycling and re-use, composting and other ways of utilizing waste. The ordinance has also three specific objectives: (1) ensure round-the-clock cleanliness and orderliness in residential and commercial areas, public places and open spaces, (2) the introduction of a high level of public awareness on the proper practice of solid waste management, (3) eliminate the utilization of open garbage dumps which breed diseases, foul odors, unsightly surroundings, pollute the soil, surface and groundwater and encourage scavenging activities.

Article V of the ordinance states the institutional mechanisms which shall guarantee its effective implementation. It enumerates the composition and duties and responsibilities of the Municipal Solid Waste Management Board (MSWMB) created

under Executive Order 09-2005 of the Local Chief Executive (LCE) which shall be the highest policy making body of the municipality regarding all solid waste management issues and concerns. Support mechanisms are further been discussed in Article VI in which the Office of the LCE shall be empowered to organize support mechanisms appropriate to the local solid waste situation of the municipality. These involve, among others the Office of the Municipal Administrator, the Local PNP Force, the Municipal Agriculture Office, the Municipal Health Officer, the Municipal Engineer, the Environment & Natural Resources Officer, the Municipal Planning & Development Officer, the Barangay Councils, and the different public schools within the municipality. The LCE, where appropriate, shall also organize and deputize on a municipal or barangay level or both civilian volunteer groups that shall be tasked to monitor, assist in the collection and/or disposal and lawfully enforce, in part or in its entirety, the Solid Waste Management Plan of the municipality. In the municipal level, the policy supervision of these groups shall be vested in the MSWMB while its actual day-to-day supervision will be under the Office of the Municipal Administrator. In the barangay level, on the other hand, these groups will be under the supervision of the Punong Barangay. For the acknowledgement of implementers and enforcers including deputies and volunteer group members, an identification card for each deputy and volunteer shall be provided upon appointment effectivity.

Section 13, 14, 15, and 16 elaborates the relevant provisions of this ordinance on waste segregation and storage, collection of solid wastes, transport of solid wastes, and zero-waste management respectively.

Regarding **on-site segregation and storage of solid wastes**, the following guidelines shall be strictly observed by all persons whether they are owners and households in residential areas or proprietors, owners, stall holders or caretakers of business or commercial establishments including public markets and talipapas:

- a. Solid wastes shall be stored and segregated at the site or place where they are generated according to the types of wastes: (1) biodegradable or compostable, (2) recyclable or reusable, (3) residual wastes;

- b. For biodegradable wastes, above persons shall utilize the composting method. Idle lots around or in the absence of it, cans and other containers shall be used for such purpose;
- c. For recyclable or reusable wastes, the same shall remain in the households. Residents shall have the option to recycle or sell non-biodegradable waste such as cardboard boxes, bottles and plastics or deposit them in the material recovery facility (MRF) of the barangay;
- d. Residual and bulky wastes shall likewise be deposited in the MRF of the barangay where they shall be collected by the garbage collectors/garbage truck;
- e. No garbage shall be stored in the frontage of the residential units and commercial establishments, including the immediate surroundings;
- f. For the Municipal Public Market, including commercial establishments within and around the area, there shall be a designated area and containers for collection by garbage haulers;
- g. For schools, churches, municipal government building and other public places, garbage containers shall be allowed to be located at the frontage or strategic places of the buildings for use by the public;
- h. Every barangay shall construct a Material Recovery Facility or MRF within its territorial jurisdiction. The strategic location of the place and its surroundings shall be considered in its choice. The operations in the establishment and implementation of MRFs shall conform to the requirement set by EMB-DENR and other concerned agencies.

In the absence of an appropriate location for MRF the concerned Barangay shall consider other locations including combining its MRF with

other Barangays or a suitable clustering system by two or more barangays;

- i. The presence of junkyards shall be considered in the construction of MRF in every barangay;
- j. Public or PU vehicles and passenger's sea vessels including buses, jeepneys, tricycles, motor launches or kumpits must install garbage receptacles within the said vehicles or vessels for used of their passengers during travels.

On the collection of solid wastes, following guidelines shall be strictly followed:

- a. A regular effective and accurate schedule for collection of wastes shall be arranged for the proper implementation of the Plan. Prioritization of areas and neighborhoods to be served by these schedules shall be carefully planned through the Office of the Municipal Administrator. In general, no special treatment in the collection of solid waste will be allowed.

Provided, that "special trips" shall be resorted to only on urgent and justifiable grounds and shall be coordinated through the Office of the Municipal Administrator;

- b. Solid waste collection shall collect wastes only in the designated areas of collection. For residual and bulky waste, residential and commercial establishments shall bring their wastes out only when the authorized municipal or barangay collectors have arrived. An appropriate signal of the collectors' arrival to collect garbage shall be arranged. These collectors shall be responsible in the transporting and depositing of these wastes to the municipal or barangay MRF;
- c. Non-segregated wastes shall not be collected by the garbage collectors; Provided, that in the case of bulky waste, consideration shall be given;

- d. For wastes from schools, churches, municipal government building and other public places, the barangay where they are located shall be responsible in the collection of said waste;
- e. Collection of waste shall be done in a manner that will avoid damage to solid waste containers as well as spillage or scattering of solid waste within the collection vicinity;
- f. The Local Government Unit (LGU) shall ensure that all collectors and other personnel directly dealing with collection of solid waste be equipped with personal gear and protective equipment to protect them from the hazards and risks of handling solid waste; and
- g. The LGU shall likewise provide the necessary training(s) to collectors and other personnel involved in collection to ensure that garbage is handled properly and in accordance with the guidelines set in RA 9003.

On the transport of solid wastes, the following guidelines shall be strictly followed:

- a. The waste compartment of the transport vehicle assigned in collecting garbage shall at all times have a cover to ensure the safe and hygienic containment of solid waste while in transit;
- b. In some cases, as may be determined by the Municipal Administrator, "special trips" may be requested from the garbage haulers or personnel in charge of collection to haul bulky, special or abnormally heavy garbage;
- c. In cases of inability to collect garbage at certain days or schedules due to calamities, heavy rains or any other valid reason, it shall be the obligation of the Local Government Unit through the Municipal Administrator to immediately broadcast such inability or its re-schedule to the public;

- d. Future vehicles to be acquired by the municipality for the collection and transport of garbage shall consider local conditions such as road size, road condition and distances

Further stated in Section 16 that it shall be the policy of the Municipality through this Ordinance that all persons whether residents, commercial establishments, offices and other places of habitation shall be mandated to reduce, re-use, recycle and compost waste that they generate. Hence a policy of **zero waste management** shall be encouraged from both private and public sectors.

Section 17 of Article XI stresses the following prohibited acts; to wit:

- a. Littering, throwing, and dumping of any kind of waste from candy wrapper and cigarette butts to construction debris to junk vehicles; discarded appliances and other immovable objects in public places and immediate surroundings, such as vacant lots, roads, sidewalks, alleys, canals, fairs or parks, and other public places; it shall also be unlawful to permit the same littering, throwing or dumping;
- b. To urinate or defecate in public places;
- c. The placing, piling or storing of waste or garbage outside of his/her residence during non-collection hours. Residents who have other tasks to do or have to be absent while waiting for the garbage to be collected must find ways or arrange for neighbors or friends to bring out their garbage in a timely manner;
- d. The disposal of dead animals, discarded fishes and other rejected aquatic products and human waste along seashores, riverbanks and other waterways within the municipality;
- e. The destruction, damaging, vandalizing or defacing of garbage receptacles or containers; this also includes the placing or putting of

heavy items into the garbage receptacles or containers for the purpose of adding burden to collectors or for plain mischief;

- f. The scattering of the contents of garbage receptacles or containers into the street or public places;
- g. The open burning of solid waste except for the purpose of smudging, smoking of fruit-bearing trees such as mango trees, driving away or elimination of mosquitoes, insects or other pests and other valid purposes. Provided that it is strictly prohibited to burn or cause the open burning of recyclable or reusable waste such as plastics, cellophane, Styrofoam and the like;
- h. The installation, posting and display of any kind of billboard, sign, poster, streamer, advertisement and other visual clutter in any part of the road, alley, sidewalk, aisle, post tree, parks and open spaces without the necessary permit from the municipal government.

For the purpose of a strict implementation and supervision of the ordinance, **regular inspection** shall be done by the MSWMB or its representatives; the local PNP and Barangay Officials. Residential areas, commercial establishments, schools and other buildings may be subject to a 24-hour daily inspection to ascertain and establish whether the abovementioned provided guidelines are observed and followed.

The following fines and penalties to be imposed are enumerated under Section 19 of Article XIII:

- a. Any person(s) who violates Subsections a, b, c, d, e and j of Article VII Section 13 shall be punished with a fine of:
 - Three hundred pesos (P300.00) for the first offense
 - Four hundred pesos (P400.00) for the second offense
 - Five hundred pesos (P500.00) for the third offense
- b. Any person who violates Subsection (a), (b), (c), (d), (g), and (h) of Article XI Section 17 shall upon conviction, be punished with a fine of Three

hundred pesos (P300.00) and render community service for one (1) to fifteen (15) days at the discretion of the Court. Community service shall include the following:

- i. Street sweeping; and
 - ii. Manual declogging or cleaning of canals, creeks, rivers and seashores; to be supervised by the Municipal Administrator's Office;
- c. Any person who violates Subsections (e) and (f) of Article XI Section 17 shall, upon conviction, be punished with a fine of not less than three hundred pesos (P300.00) but not more than five hundred pesos (P500.00) or imprisonment of not less than one (1) day to not more than fifteen (15) days, or both at the discretion of the Court.

Those violators who by some reason, fail to pay the fine shall have their fine collected upon renewal of permits and licenses, payments of tax declaration, community tax certificate, water bills or by some other schedule. Payment of fines shall be made through the Office of the Municipal Treasurer.

Moreover, there shall be an extension of financial reward not less than 50% of fine collected to be given to the deputy or volunteer member who made possible apprehension of violators of the Ordinance. A memorandum of Agreement to this effect shall be entered into between the LGU and the Deputy or Volunteer organization. Citations and recommendations shall also be awarded for outstanding deputies, volunteers and other implementers of this ordinance.

Municipal Ordinance No. 05-2009

An Ordinance Prohibiting the Use of Plastic Wrappers, Plastic Bags and Styrofoam in Stores/Groceries/and other Business/Commercial Establishments in the Municipality of Magallanes, Sorsogon enacted in response to address the solid waste management problem and the global warming issue by encouraging the use of biodegradable indigenous materials such as bayong, alat, cotton/cloth tote bags and other re-usable materials.

Relevant provisions of the said ordinance were stated in Section 3, 4, 5, and 6 respectively.

Prohibition on the Use of Plastic Bags on Dry Goods

No business establishment in the Municipality of Magallanes shall use plastic bags as wrapping or packaging materials on dry goods.

Regulation on the Use of Plastic Bags on Wet Goods

Business establishments dealing on wet goods may use plastic bags as primary packaging material for their merchandise.

Prohibition on the Use of Styrofoam

No business establishment, catering service/business, fast food and the likes shall use Styrofoam products as containers for food and other similar items.

Regulation on the Selling of Plastic Bags

Business establishments may offer to sell plastic bags to be used as secondary packaging material or as primary packaging material on goods such as sugar, flour/arina, ice/yelo, ice candy, hipon/alamang and the likes and such other dry goods when necessary provided that such establishment shall secure first a specific clearance from the LGU upon payment of the appropriate fee at the Office of the Municipal Treasurer and provided further, that they are selling in commercial volumes, a public notice showing proof of such clearance shall be posted in the conspicuous place of the establishment.

To ensure the full and complete compliance with the afore-cited ordinance, the following rules and regulations under **Administrative Provisions** of Section 7 shall be implemented by the Local Government Unit (LGU):

- a. Within six (6) months upon the effectivity of this ordinance, the LGU through its Environment Management Section shall conduct extensive information dissemination campaign throughout the municipality to educate all sectors as to the disadvantages of using plastic as wrappers and bags;

- b. The appropriate Departments such as the Municipal Agricultural Office, Municipal Administrator, Municipal Engineer, the private sector and other NGOs/Cooperatives/civil society groups shall be tapped by the LGU to propose and initiate measures including the possibility of public investment that would complement and support this ordinance by finding an alternate for plastic bags preferably those that are made of locally available materials including scrap paper, cartons, indigenous leaves and vines and the likes.

Provided, that livelihood projects/proposals that would introduce alternatives to plastic shall be coursed through the Municipal Cooperative Development Council (MCDC) which in turn shall formulate guidelines.

Provided finally, that the Sangguniang Bayan reserves the right to exercise its oversight function regarding the implementation of such projects;

- c. Upon the effectivity of this ordinance, store owners are given six (6) months to dispose/sell all their stocks of plastic bags/plastic wrappers, after which, the LGU shall conduct inspection of all establishments to determine if they have complied. Provided that if an extension is needed, ample time will be negotiated between all stakeholders of this ordinance;
- d. Consumers when buying groceries or whatever supplies are encouraged to bring their own re-usable bags, bayong, alat, tailored tote bags made of coco cloth/katsa, sako bag or any other similar materials for the carrying of their purchases or mga binakalan;
- e. All barangays of the Municipality are directed to implement the ordinance in their level and to see to it that its intent and purpose are followed. The barangay Council may opt to adopt or formulate their own barangay ordinance of similar purpose.

All persons and business establishments found guilty of violation of any of the abovementioned prohibited acts shall be punished in accordance with the following **penalty clauses**:

First Offense	– Five Hundred Pesos (P500.00) Fine
Second Offense	– One Thousand Pesos (P1, 000.00) Fine
Third Offense	– Two Thousand Pesos (P2, 000.00) Fine

In cases where the offender is a business establishment, their Business Permit to Operate shall be suspended or revoked for a period of one (1) year.

Permitting Procedures

Since the municipality has just a small volume of waste generation, it does not contract with private entities for its waste processing and disposal. The Local Government Unit solely administers the entire aspect of municipal solid waste management. Facility-wise, aside from the present municipal controlled disposal facility and municipal MRF, privately owned junkshops are the only solid waste facilities available in the municipality and there is no crafted permitting procedure for their operations as well as for their inspection and compliance procedures.

Permitting procedure which requires solid waste management orientation applies limitedly to commercial establishments securing their business permit to operate; wherein, before they could be granted with said permit, they are obliged to attend a one-day orientation on the implementation of RA 9003 and the related provisions set forth in Municipal Ordinance No. 02-2006 and Municipal Ordinance No. 05-2009. A fee for this purpose is being paid at the Municipal Treasurer's Office which amounted from 65 pesos in 2014 to 200 pesos in 2015 with the update of local revenue code. For monitoring and compliance procedure, quarterly inspection is conducted by MENRO-designate which could revoke business permits of establishment not practicing proper solid waste management.

5.2 Roles

The Municipal Solid Waste Management Board (MSWMB) as the highest policy making body of the municipality concerning all solid waste management issues and concerns; prepares, submits and implements a plan for the safe and sanitary management of solid waste generated within the municipality. Its duties and responsibilities are as follows:

1. Develop the Municipal Solid Waste Management Plan that shall ensure the long-term management of solid wastes, as well as integrate the various solid waste management plans and strategies of the barangays. In the development of the solid waste management plan, it shall conduct consultations with the various sectors of the community through an intensive education and information dissemination campaign.
2. Adopt measures to promote and ensure the viability and effective implementation of solid waste management programs in the component barangays.
3. Monitor the implementation of the solid waste management plan through its various political subdivisions and in cooperation with the private sector and accredited NGOs.
4. Adopt specific revenue-generating measures to promote the viability of its Solid Waste Management Plan
5. Convene regular meetings for purposes of planning and coordinating the implementation of the Solid Waste Management Plan
6. Oversee the implementation of the Municipal Solid Waste Management Plan.
7. Review every two (2) years or as the need arises the MSWMP for purposes of ensuring its sustainability, viability, effectiveness and relevance in relation to the local and international developments in the field of solid waste management.
8. Develop the specific mechanics and guidelines for the implementation of the Municipal Solid Waste Management Plan.

9. Recommend specific measures or proposals for franchises or build-operate-transfer (BOT) agreements with duly recognized institutions, pursuant to RA 6957, to provide either exclusive or non-exclusive authority for the collection, transfer, storage, processing, recycling or disposal of solid waste in the municipality. The proposal shall take into consideration appropriate government rules and regulations on contracts, franchises and BOT agreements.
10. Provide the necessary logistical and operational support to component barangays in consonance with Section 17 (f) of the Local Government Code of 1991.
11. Recommend measures and safeguards against pollution and for the preservation of the natural ecosystem.
12. Coordinate efforts of its component barangays in the implementation of the Municipal Solid Waste Management Plan.

As been further empowered to organize support mechanisms, the Office of the Local Chief Executive had issued Memorandum No. 20-2013, creating a Technical Working Group (TWG) on the development and formulation of the 10-Year Municipal Solid Waste Management Plan.

Moreover, for the purpose of proper documentation of the activities of the MSWMB, the Designated Municipal Environment and Natural Resources Officer serves as its secretariat. He was further tasked to be the Focal Person on the over-all implementation, monitoring, and evaluation of solid waste management in the municipality. He works collaboratively with the Municipal Administrator in proper management of the aspects of solid waste management being practice by the municipality such as collection, processing, disposal, and IECs among others.

The Barangay Solid Waste Management Committee (BSWMC), on the other hand, is the complementary body of MSWMB at the grassroots level which ensure proper solid waste management in their respective jurisdiction. With the crucial role of BSWMC, upon approval of this plan, all of the 34 barangays will organize/re-organize a functional BSWMC with clear plan of actions relative to solid waste management.

Every barangay will also be directed to construct/reconstruct a Material Recovery Facility (MRF) and maintain a composting facility within its territorial jurisdiction. The operations of BMRFs and composting facility will conform to the requirements set by EMB-DENR and other concern agencies.

In the implementation of proper, effective, and sustainable solid waste management; strict cooperation of all, especially the households, institutions and commercial establishments which are waste generators is very important. Self-regulation on waste reduction and observance of proper segregation and disposal on their part will contribute a lot.

A number of junkshops which is the only recycling entity in the municipality has also its share in reducing recyclable wastes. The municipality will have a close coordination with them along with all environmental organizations. They will be significant partners of the municipal government in addressing issues on solid waste management and in turning this plan into actions.

5.3 Municipal Solid Waste Management Board

As mandated under Article V of Mun. Ordinance No. 02-2006 Section 7 and 8 and by virtue of Executive Order 09-2016 of the Local Chief Executive, the Municipal Solid Waste Management Board was re-organized and composed of the following:

Chair:	Hon. Augusto Manuel M. Ragragio	- Municipal Mayor
Vice Chair:	Hon. Allen L. Arambulo	- Mun. Vice Mayor
Members:	Hon. Roy C. Carrascal SB Chairman, Committee on Natural Resources and Environment Protection	
	Hon. Ralph Josef M. Carranza SB Chairman, Committee on Health, Sanitation and Nutrition	
	Hon. Charita R. Bon	- ABC President - Municipal Administrator

Dra. Maria Norma G. Labalan	- Municipal Health Officer
Engr. Ma. Evans R. Marañá	- MPDC
Mr. Romarico J. Deona	- Engineering Assistant
Mr. Rafael M. Burton	- Municipal Agriculturist
Mr. Gregorio G. Guban	- Municipal Budget Officer
Mr. Jerry M. Canales	- Municipal Treasurer
Mr. Alex Arambulo	- Rep. fr. Recycling Industry
Mr. Robert M. Hodrial	- MENRO Designate
Mr. Sharo Banzuela	- MLGOO/DILG
Dr. Emma L. Navas	- Magallanes South District

As to date, the MSWMB has limited activities. After creation of the TWG on the development and formulation of the 10-Year Municipal Solid Waste Management Plan, the board convened to discuss important components to be included in the plan. Other future activities are just been integrated in this plan; including among others their quarterly meeting, organization and mobilization of sub committees/teams which will focus on each component of SWM, strict implementation and enforcement of RA 9003 and related municipal ordinances, improvement of SWM facilities, and assistance to barangays on the organization of Barangay Solid Waste Management Committee and formulation of barangay ordinances.

5.4 Barangay Solid Waste Management Committees

As of December 2019, all 34 barangays in the municipality have reorganized their BSWM Committees. The BSWMC, as mandated in Section 10 of RA 9003 has vital role in the successful implementation of SWM program; particularly in the segregation, collection and recycling of waste at source. It is composed of a Chairman who is the Punong Barangay and members who include public/private school representative, committee chairman on health, sanitation and environmental protection, homeowner/purok representative, public school PTA president or representative, religious organization representative, NGO representative (concerned on environment) and president of the market vendor association and junkyards owners.

A barangay ESWM secretariat who is usually from the community of barangay development council assists the committee in the performance of its functions. It provides technical assistance and administrative support to the committee whenever necessary.

Table 29. Status of Creation and Operation of BSWMC

NAME OF BARANGAYS	EO CREATING THE COMMITTEE	ACTIVE/INACTIVE
1. Aguada Norte	EO No. 03-2018	Active
2. Aguada Sur	EO No.01-2018	Active
3. Anibong	EO No. 06-2019	Active
4. Bacalon	EO No. 01-2019	Active
5. Bacolod	EO No. 01-2018	Active
6. Banacud	EO No. 03-2018	Active
7. Behia	EO No. 01-2018	Active
8. Biga	EO No. 03-2018	Active
9. Binisitahan Norte	EO No. 05-2018	Active
10. Binisitahan Sur	EO No. 01-2019	Active
11. Biton	EO No. 05-2019	Active
12. Bulala	EO No. 01-2019	Active
13. Busay	EO No. 02-2018	Active
14. Caditaan	EO No. 01-2018	Active
15. Cagbolo	EO No. 01-2018	Active
16. Cagtalaba	EO No. 01-2018	Active
17. Cawit Extension	EO No. 01-2018	Active
18. Cawit Proper	EO No. 03-2018	Active
19. Ginangra	EO No. 03-2018	Active
20. Hubo	EO No. 02-2018	Active
21. Incarizan	EO No. 03-2018	Active
22. Lapinig	EO No. 04-2018	Active
23. Magsaysay	EO No. 03-2018	Active
24. Malbog	EO No. 05-2018	Active
25. Pantalan	EO No. 05-2019	Active
26. Pawik	EO No. 04-2018	Active
27. Pili	EO No. 04-2018	Active
28. Poblacion	EO No. 04-2019	Active
29. Salvacion	EO No. 04-2019	Active
30. Sta. Elena	EO No. 01-2018	Active
31. Siuton	EO No. 03-2018	Active
32. Tagas	EO No. 01-2018	Active
33. Tula-Tula Norte	EO No. 01-2018	Active
34. Tula-Tula Sur	EO No. 05-2018	Active

5.5 Stakeholders Participation

With the conduct of Waste Analysis and Characterization Study, an orientation with cooperators was conducted. We had attendees from the secondary and primary school; as well as from the 19 barangay-cooperators, represented by Punong Barangays. We also had an orientation of cooperators from residential and commercial establishments. These meeting-orientations also served as venues to have participatory discussion on the issues of SWM in their respective streams and identification of necessary interventions. Somehow, with the inputs of each group, we had gathered various sentiments and ideas to be incorporated in the formulation of this plan.

Indeed, stakeholders' participation is crucial to achieve the vision, goals and targets of SWM thus, they will be involved in the entire process of planning, decision making, implementing, monitoring, evaluating, and feed backing. During meetings of the MSWMB, representation of each stakeholder will be ensured, as well as in the organization of SWM technical working groups.

CHAPTER 6:

PLAN STRATEGY

6.1 Vision

"A systematic, comprehensive, effective, and sustainable solid waste management for a healthy and ecologically balanced municipality of Magallanes; through strict implementation of legal mandates and active stakeholders' participation". This vision shares the same ideals with that of the Local Government Unit that is to have a healthy and ecologically balanced community in Magallanes. Thus, this plan will serve as an instrumental guide towards the fulfillment of such vision.

Specifically, the following are the goals of this solid waste management plan; to wit:

1. To ensure sustainability of solid waste management program by having permanent and equipped MENRO; as well as active MSWMB and BSWMC
2. To maintain the Municipal MRF and establish 100% barangay MRFs and composting facilities
3. To strengthen IEC drive in educating the public on the tenets of solid waste management and promoting environmental awareness
4. To promote self-regulation of RA 9003 and related Municipal Ordinances; particularly on waste reduction and diversion (re-use, recycling and composting)
5. To encourage entrepreneurship of recyclables and compostable and venture on marketing linkages for adequate funding
6. To achieve the annual target diversion rate set in Table 31 through viable strategies and public cooperation
7. To work for the safe closure and rehabilitation of controlled disposal facility; construction of alternative disposal facility; procurement of equipment; and development of municipal eco-park with working area, improved MRF, composting area, greenhouse or plant nursery, residual containment area, and septic vaults
8. To improve monitoring, evaluation and reporting system of the entire program

6.2 Targets

Shown in Table 30 and 31 are the diversion and disposal targets for each year in the 10-year planning period. The municipality plans to reach a diversion target of 87.45% by 2029; wherein only the remaining 12.55% of total wastes generated will be brought to municipal disposal facility. This means that out of the projected 16,319.95 total wastes generated in kg. per day, 14,271.80 is subject for diversion and barely 1,048.15 is for disposal.

**Table 30. Diversion and Disposal Yearly Targets
Municipality of Magallanes, 2020-2029**

DIVERSION AND DISPOSAL YEARLY TARGETS IN PERCENT											End of Planning Period
Year	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Diversion Target	54%	59%	62%	65%	70%	74%	77%	79%	83%	85%	87.45%
Disposal Target	46%	41%	38%	35%	30%	26%	23%	21%	17%	15%	12.55%

**Table 31. Projected Diversion and Disposal Targets (Kg. /Day)
Municipality of Magallanes, 2020-2029**

Year	Total Generated Waste (kg/day)	Waste Diversion Target (%)	Weight to be Diverted (kg/day)	Target for Disposal (%)	Target Waste to be Disposed (kg/day)
2019	14,599.33	54.00%	7,883.64	46.00%	6,715.69
2020	14,762.94	59.00%	8,710.14	41.00%	6,052.81
2021	14,928.45	62.00%	9,255.64	38.00%	5,672.81
2022	15,095.46	65.00%	9,812.05	35.00%	5,283.41
2023	15,264.73	70.00%	10,685.31	30.00%	4,579.42
2024	15,435.51	74.00%	11,422.28	26.00%	4,013.23
2025	15,608.55	77.00%	12,018.59	23.00%	3,589.97
2026	15,783.48	79.00%	12,468.95	21.00%	3,314.53
2027	15,960.30	83.00%	13,247.04	17.00%	2,713.25
2028	16,138.99	85.00%	13,718.14	15.00%	2,420.85
2029	16,319.95	87.45%	14,271.80	12.55%	2,048.15

6.3 Strategies

The afore-cited diversion and disposal targets would be made possible through the following strategies:

1. Permanent and equipped MENRO and active MSWMB and BSWMC
2. Intensive IEC to encourage cooperation of waste generators and other stakeholders
3. Strict implementation of related laws and municipal ordinances
4. Strengthening of waste management system such as proper segregation and sanitary storage, source reduction (reusing recycling and composting), collection, processing and disposal
5. Design particular SWM incentive program and projects such as Search for best Barangay/School SWM Implementer and giving due recognition to individuals and groups
6. Establishment, operation, and maintenance of MRFs and composting facilities in all barangays
7. Continue the operation and maintenance of municipal MRFs and composting facility; as well as utilization of technologies in the processing of wastes
8. Coordination and partnership with stakeholders and institutions, encourage entrepreneurship of recyclables and compostable and venture on marketing linkages

Further, to ensure the efficiency and effectiveness of enumerated strategies, the Municipal Government will allocate local appropriations and will do fund sourcing as necessary. It is likewise imperative that the LGU will establish close coordination with all BSWMC especially that the plan calls for a barangay-based SWM system. MSWMB through its TWG will collaboratively work with the BSWMC and will provide regular technical assistance.

Collection

Upon approval of this plan, the municipal government will implement barangay-based SWM system in pilot cluster of barangays – the present 10 service barangays (Aguada Norte, Aguada Sur, Banacud, Bacolod, Binisitahan Norte, Binisitahan Sur,

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Cawit Extension, Cawit Proper, Central, and Pantalan) as mandated by RA 9003 and Mun. Ordinance No. 02-2006. In this new system, the barangay will be responsible of the SWM; particularly of biodegradables and recyclables in its jurisdiction. The LGU will only collect residual and special wastes from the BMRF of these barangays. After establishing this barangay-based SWM system in the pilot cluster of barangays (Cluster 1), the same system will be introduced and implemented in other 3 more clusters of barangays.

Disposal Management

Residual wastes collected from the BMRF of pilot cluster barangays will be collected by Uswag Boys on a given schedule to be stored temporarily in the residual containment area in municipal eco-park; while special wastes will be placed in blue containers and stored in a separate area inside the RCA. When the amount of residual wastes reached the capacity of garbage trucks, it will be transported to the Sanitary Landfill Facility for final disposal.

Other Key Elements of Strategy

Indeed, solid waste management is everybody's concern. Thus, to fully address such concern, everyone should start within one's S-E-L-F and should realize that solid waste management is so **Simple** with **Empowered** BSWMC and that even with **Local** resources and means; as long as waste generators are **Friendly** and respectful to environment, vision and targets will be fulfilled.

S - Simple SWM Approach	Segregation and reduction at source. Address the waste concerns where and when it occurs
E - Empowered BSWMC	Decentralization of waste management/ barangay-based SWM
L - Local resources and means	Low tech, low cost. Segregated collection and segregated destination.
F - Friendly and respectful	Being friendly and respectful to environment of waste generators

CHAPTER 7:

SOLID WASTE MANAGEMENT SYSTEM

As mandated by RA 9003 and Mun. Ordinance No. 02-2006, the municipality will resort to barangay-based SWM system; wherein, BSWMC will be responsible of SWM in its respective jurisdiction. The Local Chief Executive as the Chairman of the MSWM Board will issue an Executive Order directing all barangays to organize/reorganize and activate/reactivate their BSWMC and to implement all programs and strategies stated in this plan. Specifically, BSWMC will construct/reconstruct and operate/maintain a barangay MRF and composting facility; will obligate households to do waste reduction and segregation; and will collect from them only residual and special wastes which could be stored temporarily at their barangay MRF until collected by municipal garbage truck.

Introduction and implementation of this new system will be by cluster of barangays. First, Cluster 1 which serves as pilot cluster; composed of the ten poblacion barangays presently served by the municipal garbage truck (Aguada Norte, Aguada Sur, Banacud, Bacolod, Binisitahan Norte, Binisitahan Sur, Cawit Extension, Cawit Proper, Poblacion, and Pantalan). After establishing the new system in the pilot cluster, same system will be introduced and implemented to other three more clusters: Cluster 2 – nine (9) barangays in the northern part of the municipality (Bacalon, Incarizan, Sta. Elena, Tula Tula Norte, Pili, Bulala, Magsaysay, Anibong, and Tagas), Cluster 3 – eight (8) barangays in the southern part (Caditaan, Siuton, Malbog, Salvacion, Pawik, Busay, Lapinig, and Tula Tula Sur), and Cluster 4 – seven (7) coastal barangays (Biga, Behia, Ginangra, Biton, Hubo, Cagbolo, and Cagtalaba.)

7.1 Source Reduction

Table 23, diversion targets states that 54% of the total waste generated will be diverted. This includes biodegradable, recyclable and potential residuals. At the end of the planning period the LGU must have achieved 87.45% diversion target. Only 12% of wastes will be collected and stored. This include wet plastics, wrappers, broken glasses, and other residuals. In order to achieve the 87.45% diversion target set in this plan, comprehensive reduction program will be implemented through cooperation of all waste generators – households, institutions, commercial

establishments including public market and other sources. This will be executed throughout the succeeding years with the following reduction strategies:

Table 32: Implementation of Reduction Strategies

STRATEGIES	IMPLEMENTING SCHEDULE	RESPONSIBLE PERSON
1. Reusing of reusable items	2019-onwards	TWG on IECs, Reduction and Segregation, and Monitoring & Enforcement
2. Recycling of recyclable materials	2019-onwards	TWG on IECs, Reduction and Segregation, and Monitoring & Enforcement
3. Mandatory composting	2019-onwards	TWG on IECs, Reduction and Segregation, and Monitoring & Enforcement, BSWMC, MAO for technical assistance,
4. Regulation on the use of plastic bags on wet goods (Mun. Ordinance No. 05-2009)	2019-onwards	MSWMB, SWM Focal Person, BSWMC, Mun. PNP for enforcement
5. Prohibition on the use of plastic bags on dry goods (Mun. Ordinance No. 05-2009)	2020-onwards	MSWMB, SWM Focal Person, BSWMC, Mun. PNP for enforcement

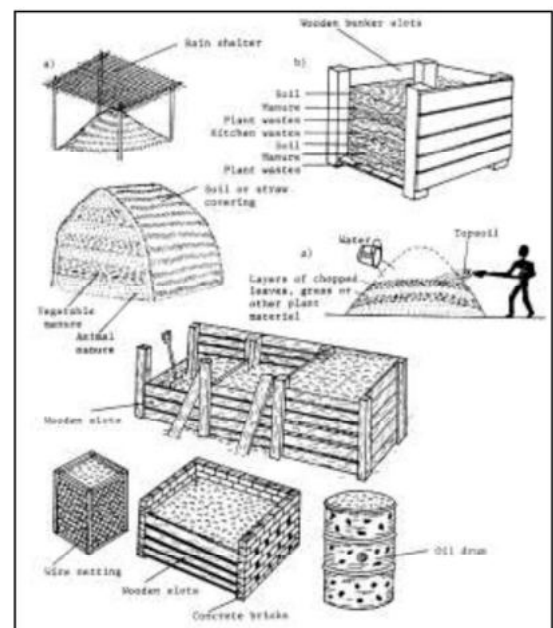
Through regular IECs to be conducted within the first quarter of each year, the first three strategies on source reduction listed above; reusing, recycling, and composting will be promoted among waste generators, especially among the households.

In particular, compliance to Municipal Ordinance No. 05-2009: An Ordinance Prohibiting the Use of Plastic Wrappers, Plastic Bags and Styrofoam in Stores/Groceries/and other Business/Commercial Establishments in the Municipality of Magallanes, Sorsogon will be strictly monitored and enforced, comes 2020. This is after thorough public information dissemination during the 1st to 2nd quarter of 2019 and introducing alternate for plastic bags by 3rd to 4th quarter of 2019. As stated further in the Ordinance, store owners will also be given six months to dispose/sell all their stocks of plastic bags /plastic wrappers – this will be from July-December, 2019. With this implementation of Ordinance 05-2009, households will compel to reuse eco

bags and bayongs in purchasing their goods and will decrease the volume of plastic wastes.

For recyclable materials, all generators (households, institutions, commercial establishments and public market) have the options to either recycle it by their own, or sell it directly to junkshops, or deposit it to their respective Barangay Material Recovery Facility (BMRF) for the disposition of Barangay Solid Waste Management Committee (BSWMC).

For compostable wastes, all households, schools and agricultural sector will be obliged to practice backyard/school yard composting and gardening with possible technical assistance from the Municipal Agriculture Office (MAO). This will be further encouraged through a Search for Eco-Friendly Home/School with criteria on proper waste segregation, composting and gardening; and with certain incentives. Thus, all compostable materials of households and schools will not be collected by the municipal garbage truck or barangay eco-trike/eco-boy. Only compostable wastes generated by other institutions such as the LGU, MMH and other government and non-government offices/agencies; as well as by commercial establishments and public market will be collected and processed by the municipal government through its centralized composting facility. However, for those households who do not have an area for composting, as verified by the BSWMC, they could deposit their compostable wastes to barangay eco-trike/eco-boy with a certain monthly collection fee, as will be determined by the barangay. The BSWMC will process this waste through their composting facility.



With the aforementioned proposition of barangay-based SWM especially of recyclables and compostable, barangays have to operate and maintain a

barangay MRF and composting facility. In case that barangays have no available area for the said facilities, barangays may coordinate with each other and have a set-up of clustered BMRF and composting facility or may rent space outside of their barangay. In this instance however, barangays should come up with a concrete guideline on the clustering; as well as with a memorandum of agreement in case of renting a space. The barangay should also consider the transportation of wastes from their barangay to clustered BMRF and composting facility; and of course, the additional cost it will incur. They should consult and seek assistance and approval of this regard from the MSWMB.

Meanwhile, direct implementation and monitoring of this reduction program will be managed by the Team headed by MENRO-Designate and the BSWMC at barangay level. Technical assistance on composting will be provided by the Municipal Agriculture Office. For enforcement, specifically on the observance of mandatory composting and on the compliance to the provisions of Mun. Ordinance No. 05-2009; BSWMC, eco-guards, and Mun. PNP will be tasked accordingly. IEC Team has also great part in widespread dissemination of this program and the strategies cited.

It is positive that there are already legal guidelines to push through the aforementioned strategies for source reduction program. It is clearly mandated in the Mun. Ordinance No. 02-2006 that generators have the responsibility to segregate their wastes according to types: (1) biodegradable or compostable (2) recyclable or reusable (3) residual wastes, that for biodegradable wastes, composting method shall be utilized; that for recyclable or reusable wastes, the option is to recycle or sell or deposit to BMRF; that only residual wastes shall be collected by garbage collectors. Continuous IEC of this mandate is just needed to remind generators of their responsibilities and to strictly implement and monitor of and impose fines for its violation as provided in the ordinance (Mun. Ordinance No. 02-2006, Chapter 5, page 82-88).

Of course, at first it is expected that target sectors for this reduction program will be resistant to cooperate, thus continuous IEC will be conducted informing them of their social and environmental responsibilities as well as of the fines to be imposed in case of the violations of the aforementioned mandate.

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7.2 Collection

7.2.1 Overview

Since present waste collection system in the municipality is somehow efficient wherein through previous IECs, generators have learned how to segregate and store their wastes and there is already established collection schedule for each of the 10 service barangays and designated pick-up locations, what will be done for the 2020 and 2021 will be just improving said system and strict implementation of "no segregation, no collection policy".

In 2020, new barangay-based SWM system cited will be introduced and implemented in pilot cluster of barangays, after intensive conduct of IECs in 2019. For households, schools, and agricultural sector in which recycling and composting will be imposed to, only special and residual wastes will be collected by the barangay through eco-boys/eco-trikes. Other institutions, contrariwise, such as offices in the LGU, MMH, other government and non-government offices/agencies as well as commercial establishments and public market, all wastes generated by them will be collected by the municipal garbage truck; provided that they practice proper waste segregation and storage system.

The existing Isuzu garbage truck will collect households' residual and special wastes from barangay MRF of Cluster 1 following the same schedule. Meanwhile, the first unit dump truck purchased in 2018 will collect biodegradables only from other institutions and commercial establishments. The second unit is for segregated recyclable, residual and special wastes from the same generators; ensuring that it is properly arranged in the compartments of the truck.

**Table 33. Proposed Schedule of Solid Wastes Collection
in the Pilot Cluster of Barangays by 2019**

DAYS	TIME	BARANGAY	TYPE OF WASTE	NUMBER OF TRIPS	VEHICLE USED
MONDAY	AM	Banacud MRF Bini Norte MRF Bini Sur MRF	Residual and Special	1-2 trips	1-unit Isuzu Garbage Truck, 1999 model, 4 cu.m. capacity
	PM	Institutions and Public Market	Biodegradable	1 trip	Purchased dump truck #1 in 2018
			Recyclable, Residual & Special	1 trip	Purchased dump truck #2 in 2018
TUESDAY	AM	Bacolod MRF Pantalan MRF Central MRF	Residual and Special	1-2 trips	1-unit Isuzu Garbage Truck, 1999 model, 4 cu.m. capacity
	PM	Institutions and Public Market	Biodegradable	1 trip	Purchased dump truck #1 in 2018
			Recyclable, Residual & Special	1 trip	Purchased dump truck #2 in 2018
WEDNESDAY	AM	Aguada Norte MRF Aguada Sur MRF Cawit Ex. MRF Cawit Proper MRF	Residual and Special	1-2 trips	1-unit Isuzu Garbage Truck, 1999 model, 4 cu.m. capacity
	PM	Institutions and Public Market	Biodegradable	1 trip	Purchased dump truck #1 in 2018
			Recyclable, Residual & Special	1 trip	Purchased dump truck #2 in 2018
THURSDAY	AM	Banacud MRF Bini Norte MRF Bini Sur MRF	Residual and Special	1-2 trips	1-unit Isuzu Garbage Truck, 1999 model, 4 cu.m. capacity
	PM	Institutions and Public Market	Biodegradable	1 trip	Purchased dump truck #1 in 2018
			Recyclable, Residual & Special	1 trip	Purchased dump truck #2 in 2018
FRIDAY	AM	Bacolod MRF PantalanMRF Central MRF	Residual and Special	1-2 trips	1-unit Isuzu Garbage Truck, 1999 model, 4 cu.m. capacity
	PM	Institutions and Public Market	Biodegradable	1 trip	Purchased dump truck #1 in 2018
			Recyclable, Residual & Special	1 trip	Purchased dump truck #2 in 2018
SATURDAY	AM	Aguada Norte MRF Aguada Sur MRF Cawit Ex. MRF Cawit Proper MRF	Residual and Special	1-2 trips	1-unit Isuzu Garbage Truck, 1999 model, 4 cu.m. capacity

SUNDAY	PM	Public Market	Biodegradable	1 trip	F
			Recyclable, Residual & Special	1 trip	Purchased dump truck #2 in 2018
	AM	Public Market	Biodegradable	1 trip	Purchased dump truck #1 in 2018
			Recyclable, Residual & Special	1 trip	Purchased dump truck #2 in 2018
	PM	Public Market	Biodegradable	1 trip	Purchased dump truck #1 in 2018
			Recyclable, Residual & Special	1 trip	Purchased dump truck #2 in 2018

In 2020, collection of residual and special wastes by the municipal garbage truck will be extended to Cluster 2 barangays in the northern part; in 2021 to Cluster 3 barangays in the southern part; and in 2022 to Cluster 4 in the coastal areas utilizing motor boats. While the LGU is still in the process of establishing the new system in Cluster 1, other 24 non-service barangays of 3 clusters will be served by their BSWMC; wherein, there will be also eco-trike/eco-boys who will collect special and residual wastes from households and deposit them in their BMRF. Afterwards, eco-boys will properly transport their monthly collected special and residual wastes from their BMRF to the Ecological Solid Waste Management Park or Eco-park in Sitio Canamucan, Barangay Aguada Sur; where the Residual Containment Area (RCA) for residuals and septic vaults for special wastes are located. BSWMC will schedule the household collection by purok; except those near at the BMRF who will deposit directly their segregated wastes to the BMRF.

For those households who do not have an area for composting, as verified by the BSWMC, they could deposit their compostable wastes to barangay eco-trike/eco-boy with a certain monthly collection fee, as will be determined by the barangay. The barangay will process this waste through their composting facility. They may also deposit their generated recyclable materials to BMRF as long as all wastes are properly segregated.

**Table 34. Schedule of Special and Residual Waste Collection
with the Proposed Service Expansion to 17 Rural Barangays in 2021-2022**

DAYS	TIME	BARANGAY	NUMBER OF TRIP	VEHICLE TO BE USED
1 st & 3 rd MONDAY	AM	Caditaan	1 trip	Purchased dump truck #1 in 2018
1 st & 3 rd TUESDAY	AM	Siuton	1 trip	
1 st & 3 rd WEDNESDAY	AM	Malbog and Busay	1 trip	
1 st & 3 rd THURSDAY	AM	Salvacion and Pawik	1 trip	
1 st & 3 rd FRIDAY	AM	Lapinig and Tula Tula Sur	1 trip	
2 nd & 4 th MONDAY	AM	Bacalon and Incarizan	1 trip	Purchased dump truck #2 in 2018
2 nd & 4 th TUESDAY	AM	Sta. Elena and Tula Tula Norte	1 trip	
2 nd & 4 th WEDNESDAY	AM	Pili	1 trip	
2 nd & 4 th THURSDAY	AM	Anibong and Tagas	1 trip	
2 nd & 4 th FRIDAY	AM	Bulala and Magsaysay	1 trip	

7.2.2 Collection Equipment and Routes

As been revealed in the projected quantities of waste generations and with strict implementation of Municipal Ordinance No. 02-2006 on waste reduction: reuse, recycling, and composting; the 3 units garbage truck is sufficient to serve the present 10 barangays in 2019: Aguada Norte, Aguada Sur, Banacud, Bacolod, Binisitahan Norte, Binisitahan Sur, Cawit Extension, Cawit Proper, Poblacion, and Pantalan. Designating compartments inside the garbage truck to separate each waste: compostable, recyclable, special, and residual in collecting from some institutions and commercial establishments and public market will still be practiced.

Table 35. Current and Additional Vehicles/Equipment

YEAR	UNIT	EQUIPMENT	MODEL	AVE. CAPACITY	CONDITION
CURRENT					
	1 unit	Isuzu Garbage Truck	1999	4 cu. m.	Good
	2 units	Dump Truck			Good
	10 units	Eco Tri-bike/Push Cart			Good
ADDITIONAL					
2019	10 units	Eco Tri-bike/Push Cart			
2020	10 units	Eco Tri-bike/Push Cart			
2021	10 units	Eco Tri-bike/Push Cart			
2020	10 units	Barangay MRF			
2021	10 units	Barangay MRF			
2022	10 units	Barangay MRF			

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The old Isuzu garbage truck will exclusively collect the residual and special wastes of Cluster 1 barangays. The remaining 2 units will be used for the collection in institutions and public market – 1 for biodegradables and 1 for segregated recyclable, residual, and special wastes. For the expansion of collection of residual and special wastes to Clusters 2 and 3 comes 2021 and 2022 respectively, the additional 2 dump trucks will be utilized; as shown in Table 35.

Likewise, 10 units of eco tri-bike/push cart will be purchased each year from 2020-2023 for the utilization of 34 barangays. Cluster 1 was given priority in 2020, Cluster 2 will be provided in 2021, Cluster 3 in 2022, and Cluster 4 in 2023. With these eco tri-bikes/push carts, barangays will be the ones to do house to house waste collection, preferably of special and residual wastes. The barangays will be encouraged also to purchase additional tri-bike out of their Barangay Development Fund (BDF). In addition, the LGU will also provide the barangays with 10 units BMRFs yearly from 2020 to 2022.

7.2.3 Private Collection Service

Given the small volume of waste generations as been projected, contracting with private haulers for collection service is not deemed necessary.

7.2.4 Storage and Set Out



As been presently practiced, each generator is responsible of their containers for storage. Households, schools, and agricultural sector will have two (2) separate containers for residual wastes (black container or labeled sack) and special wastes (red container or labeled sack). However, if households opt to dispose their other wastes to eco-trike/bike, they will also maintain green container or labeled sack for biodegradable waste and blue container or labeled sack for recyclable materials. While other institutions, commercial establishments, and public market will provide same four (4) color coded containers or labeled sacks/receptacles for each waste: biodegradable, recyclable, special, and residual.

The following same set-out schedule of all waste types will be implemented:

DAYS	TIME	BARANGAY
MONDAY	AM	Banacud Bini Norte Bini Sur
	PM	Institution & Public Market
TUESDAY	AM	Bacolod Pantalan Central
	PM	Institution & Public Market
WEDNESDAY	AM	Aguada Norte Aguada Sur Cawit Ex. Cawit Proper
	PM	Institution & Public Market
THURSDAY	AM	Banacud Bini Norte Bini Sur
	PM	Institution & Public Market
FRIDAY	AM	Bacolod Pantalan Central
	PM	Institution & Public Market
SATURDAY	AM	Aguada Norte Aguada Sur Cawit Ex. Cawit Proper
	PM	Institution & Public Market
SUNDAY	AM	Institution & Public Market
	PM	Institution & Public Market

For the 24 non-service barangays, eco-trike/eco-boy will be responsible to collect twice a week the residual and special wastes from each household and deposit the same in their BMRF. They will also be the one to transport the wastes to the Ecological Solid Waste Management Park or Eco-park monthly; until in year 2021-2022 through the 2 new dump trucks acquired in 2018, will collect at their BMRF (17 rural barangays) the special and residual wastes, with the following set-out schedule:

DAYS	TIME	BARANGAY
1 st & 3 rd MONDAY	AM	Caditaan
1 st & 3 rd TUESDAY	AM	Siuton
1 st & 3 rd WEDNESDAY	AM	Malbog

		Busay
1 st & 3 rd THURSDAY	AM	Salvacion, Pawik
1 st & 3 rd FRIDAY	AM	Lapinig, Tula Tula Sur
2 nd & 4 th MONDAY	AM	Bacalon, Incarizan
2 nd & 4 th TUESDAY	AM	Sta. Elena, Tula Tula Norte
2 nd & 4 th WEDNESDAY	AM	Pili
2 nd & 4 th THURSDAY	AM	Anibong, Tagas
2 nd & 4 th FRIDAY	AM	Bulala, Magsaysay

7.2.5 Segregated Recyclables

Generators have the option to either recycle, or sell to junkshops, or deposit in BMRF thru eco-trike/eco-boy their segregated recyclable materials. As such, the municipality will have a very minimal collection of this waste, stored in blue receptacle or labeled sack. Most of the 40.17% recyclables will expectedly come from the other institutions (aside from schools), commercial establishments, and public market. Same collection system will be followed until in 2021 when recyclables, residuals and special wastes will be collected separate from biodegradable by 1 dump truck.

Those recyclable materials deposited in BMRF will be under the disposition of BSWMC; either they will recycle or sell it to junkshops. The recyclable materials which will be retrieved by the municipal garbage truck will be deposited to the Municipal MRF and will be sold out to privately-owned junk shops when already in bulk.

Since the privately-owned junk shops in the locality have limitations in buying recyclable materials, the municipality will explore the possibility of coordinating with big junkshops outside the municipality. If it is feasible, the LGU will collect and deposit all other recyclables in the Municipal MRF and when already in large volume, ask big junkshops to collect the same from the municipality.

To further promote recycling in barangays, the municipality will continue to conduct livelihood skills training on making crafts out of recyclable materials and will coordinate with DTI and other agencies for possible market of the products.

7.2.6 Segregated Compostable

Since composting will be imposed to all households, schools, and agricultural sector, only those compostable biodegradable materials from other institutions, commercial establishments, and public market will be collected by the municipal garbage truck. Same collection system will be followed until 2021 when biodegradables will separately be collected by another dump truck.

Meanwhile, for those households who do not have an area for composting, as verified by the BSWMC, they could deposit their compostable wastes to barangay eco-bike/eco-boy with a certain monthly collection fee, as will be determined by the barangay. The barangay will be the one who will do composting of these wastes in their own barangay composting facility.

For the implementation of mandatory composting, technical assistance in proper composting procedure will be extended by the municipal government thru the Municipal Agriculture Office to the barangays.

7.2.7 Mixed Solid Waste/Residuals

Strict implementation of "no segregation, no collection" policy will be observed; hence, there will be no collection of mixed solid wastes. Residuals will be stored in black container or labeled sack by all generators and will be set out as scheduled.

Segregated residual and special wastes will be picked-up at BMRF; which will serve as holding area, during the same collection schedules as presented in Table 34. Shown in the table likewise is the type of collection vehicle, capacity and collection frequency. This will serve from 2019 onwards.

As stated earlier, by 2022, collection service particularly of special and residual wastes will be expanded to 9 barangays in the northern part (Bacalon, Incarizan, Sta. Elena, Tula Tula Norte, Pili, Bulala, Magsaysay, Anibong, and Tagas) and 8 barangays in the southern part (Caditaan, Siuton, Malbog, Salvacion, Pawik, Busay, Lapinig, and Tula Tula Sur). Barangay eco-boy will be responsible to collect said

wastes from households, to deposit the same in their BMRF, and to facilitate its collection by the dump truck twice a month.

7.3 Segregation, Recycling, and Composting

7.3.1 Segregation

At present, most generators in 10 service barangays (Cluster 1), through previous IECs are already practicing segregation. The existing Municipal Ordinance No. 02-2006, likewise, clearly mandates such provision on waste segregation. With these, the municipality will just focus on the monitoring and enforcement of its compliance. Barangay eco-guards will monitor the compliance of each household and other waste generator through regular inspection and will report violators to MENRO-Designate. The latter will then give warn for 1st to 3rd offenses through notice of violation, and will finally issue citation ticket for penalty. Fines should be paid for within a month. Households with unpaid fines will be listed and such list will be forwarded also to the LGU. All households in the list will be obliged to pay their fines when they make any transaction with the BLGU and LGU; like asking for CTC or certifications. If possible, the LGU will also coordinate with the Municipal Links of Pantawid Pamilyang Pilipino Program to reprimand 4Ps household-beneficiaries who have pending fines. Moreover, garbage collectors will be strict on the “no segregation, no collection” policy.

At the end of the 10yr planning period (2020-2029) all remaining barangay will be included in the segregation at source program of the municipality. Same strategy will be started-up in the 24 non-service barangays (Cluster 2-4, see timeline below). Households will be required to segregate and store their wastes accordingly; in labeled sacks/receptacles or color-coded containers. The municipality will further conduct continuous IECs on proper waste segregation and storage, and will provide trainer's training and capability training at barangay level to assist them in effective implementation, monitoring and enforcement of proper waste segregation and storage at source. The schedule of the special and residual waste collection for the other 17 barangays is presented in Table 34.

Moreover, all the 34 barangays will be directed to provide color-coded receptacles/labeled sacks in conspicuous places in their respective barangay. The same will be instructed to schools and offices; while the municipality will provide such in the areas of commercial establishments and public market.

YEAR	CLUSTER	BARANGAY
2019	1	Aguada Norte Aguada Sur Bacolod Banacud Binisitahan Norte Binisitahan Sur Cawit Extension Cawit Proper Pantalan Poblacion
2020	2	Bacalon Incarizan Sta. Elena Tula-Tula Norte Pili Bulala Magsaysay Anibong Tagas
2021	3	Caditaan Siuton Malbog Salvacion Pawik Busay Lapinig Tula-Tula Sur
2022	4	Biga Behia Ginangra Biton Hubo Cagbolo Cagtalaba

7.3.2 Recycling

As of December 2019, five (5) BMRFs are functional and 11 needs improvement while 18 needs to construct new BMRFs. The LGU will provide 10 units standard BMRF this year (2020) funded from the Solid Waste/Clean & Green Program as municipal

counterpart and another 10 units in 2021 and 2022. For this, the barangays were technically assisted by the Municipal Engineering Office (MEO). The MSWMB with its other support mechanisms provided seminars/trainings among BSWMC and eco-aides on how to operate their BMRFs. BSWMC headed by the Punong Barangay (PB) will manage the over-all implementation and monitoring of its BMRF. PBs may assign an eco-aide for the operation of BMRF. The MSWMB, on the other hand, will monitor the operation of BMRF in each barangay relative to the provisions of RA 9003 and Municipal Ordinance No. 02-2006. Specifically, the MENRO-Designate will regularly inspect BMRFs, prepare report and give feedbacks to BSWMC.

Both MRF of municipal and barangay will store all recyclable materials that are marketable. It will likewise temporarily serve as holding area of all collected special and residual wastes in barangay, waiting for collection of garbage truck or for delivery to the Municipal Eco – Park where residual containment area and septic vaults are located.

Given the absence of other recycling methods aside from selling to junkshops, some recyclable materials such as plastic bottles, etc. are treated as residuals for final disposal into non-biodegradable chamber. As such, there is a notable big volume and bulkiness of residuals stored in the RCA. The municipality, as stated earlier, will coordinate with big junkshops outside the municipality. The LGU will collect and deposit all other recyclables in the Municipal MRF and when already in large volume, ask big junkshops to collect the same from the municipality. The LGU will also purchase shredder and pulverizer machines in 2020 for other materials considered as residuals so as to address said issue of volume and bulkiness.

7.3.3 Composting/Management of Biodegradable Waste

As been discussed, composting of biodegradable wastes will be imposed to households, schools, and agricultural sector. In the 1st semester of 2018, Municipal IEC Team and BSWMC conducted thorough information dissemination on strict implementation of the provision in Municipal Ordinance No. 02-2006 regarding composting. Households, schools and agricultural sector were given 6 months to

comply accordingly. Afterwards, in 2019, MSWMB through its support mechanism and BSWMC will monitor its compliance through regular inspection to waste generators. Notice of violation will be sent to 1st, 2nd and 3rd offenses; while citation ticket will be issued for penalties. Same strategies in obliging and reprimanding payment of fines as that of violation in segregation will be practiced.

The municipality, thru the Office of the Municipal Agriculturist will provide technical assistance to barangays in the proper procedure of composting. For those households who do not have space for composting, as confirmed by the BSWMC, may deposit their biodegradable waste to barangay eco-trike/eco-boy. They will have to pay a certain monthly collection fee, as will be determined by the barangay; regardless the volume of their bio wastes. In this case, the municipal or barangay will be the one to compost said waste in their barangay composting facility.

Compostable waste will include yard waste, vegetable and fruit residues, fish cleanings, food/kitchen wastes, animal carcasses, and agricultural wastes. Table 36 reflects the quantity of biodegradable waste for diversion by barangay, as projected in 10 years.

Table 36. Quantity of Biodegradable Waste for Diversion by Barangay

BARANGAYS	QUANTITY (KG.) OF BIO TO BE COMPOSTED										
	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
1. Aguada Norte	207.21	209.87	212.66	215.32	218.12	220.92	223.72	226.53	229.48	232.43	235.38
2. Banacud	169.66	171.76	173.99	176.23	178.47	180.85	183.09	185.48	187.86	190.25	192.78
3. Bacolod	140.48	142.30	144.12	145.94	147.89	149.72	151.68	153.64	155.60	157.57	159.68
4. Binisitan Norte	125.49	127.03	128.70	130.38	132.06	133.74	135.42	137.25	138.93	140.76	142.58
5. Binisitan Sur	93.34	94.60	95.72	96.97	98.23	99.49	100.76	102.02	103.28	104.69	106.09
6. Cawit Extension	236.26	239.33	242.40	245.48	248.56	251.78	255.01	258.23	261.60	264.97	268.34
7. Cawit Proper	161.96	164.06	166.15	168.25	170.49	172.59	174.83	177.08	179.32	181.71	183.96
8. Central	88.75	89.87	90.99	92.11	93.36	94.49	95.75	97.01	98.27	99.40	100.80
9. Pantalan	160.07	162.16	164.26	166.36	168.46	170.56	172.80	175.05	177.29	179.54	181.79
10. Aguada Sur	158.58	160.54	162.64	164.74	166.83	168.94	171.18	173.42	175.53	177.91	180.16
11. Anibong	67.54	68.38	69.22	70.06	71.04	71.88	72.86	73.84	74.68	75.67	76.65
12. Bacalon	89.02	90.14	91.26	92.38	93.63	94.76	96.02	97.28	98.54	99.80	101.07
13. Behia	344.45	348.79	353.26	357.87	362.49	367.11	371.74	376.51	381.42	386.34	391.26
14. Biga	163.31	165.41	167.50	169.74	171.84	174.08	176.32	178.57	180.95	183.20	185.59
15. Biton	275.02	278.65	282.15	285.78	289.42	293.20	296.99	300.77	304.57	308.50	312.43
16. Bulala	83.48	84.60	85.58	86.70	87.81	88.94	90.06	91.32	92.44	93.70	94.83
17. Busay	82.67	83.78	84.77	85.88	87.00	88.12	89.25	90.37	91.49	92.75	93.88
18. Caditaaan	470.89	476.90	483.05	489.20	495.50	501.94	508.39	514.84	521.44	528.18	534.92
19. Cagbolo	153.18	155.14	157.23	159.19	161.29	163.25	165.35	167.59	169.70	171.81	174.06

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20. Cagtalaba	76.19	77.16	78.14	79.26	80.24	81.22	82.34	83.32	84.44	85.57	86.55
21. Ginangra	106.85	108.24	109.64	111.04	112.44	113.84	115.38	116.79	118.33	119.87	121.42
22. Hubo	118.87	120.41	121.94	123.48	125.16	126.70	128.38	130.06	131.61	133.30	135.12
23. Incarizan	189.79	192.16	194.68	197.20	199.71	202.24	204.76	207.43	210.09	212.76	215.57
24. Lapinig	104.15	105.41	106.80	108.20	109.60	111.00	112.40	113.81	115.35	116.76	118.30
25. Magsaysay	35.93	36.35	36.77	37.33	37.75	38.31	38.73	39.29	39.71	40.27	40.83
26. Malbog	47.01	47.57	48.13	48.83	49.39	50.09	50.65	51.35	52.05	52.61	53.32
27. Pawik	87.26	88.38	89.63	90.75	91.87	93.00	94.26	95.52	96.64	97.91	99.17
28. Pili	187.63	190.00	192.38	194.90	197.41	199.94	202.46	205.12	207.65	210.32	213.13
29. Salvacion	142.78	144.73	146.55	148.37	150.33	152.29	154.25	156.21	158.18	160.15	162.25
30. Sta. Elena	156.56	158.52	160.61	162.57	164.67	166.77	169.01	171.12	173.36	175.61	177.86
31. Siuton	268.00	271.35	274.85	278.35	281.98	285.62	289.27	292.92	296.71	300.50	304.43
32. Tagas	66.05	67.03	67.87	68.71	69.55	70.53	71.37	72.35	73.19	74.18	75.16
33. Tula Tula Norte	124.68	126.22	127.89	129.57	131.11	132.79	134.61	136.30	137.98	139.81	141.63
34. Tula Tula Sur	84.29	85.41	86.52	87.64	88.76	89.88	91.01	92.13	93.39	94.52	95.78
TOTAL	7083.40	7149.22	7216.05	7283.76	7352.48	7421.58	7492.08	7563.48	7635.12	7708.31	7782.78

Biodegradable wastes which will be collected from other institutions, commercial establishments and public market will undergo vermi-composting in the municipal facility in the site of municipal eco-park. Shredder and pulverizer machines will be useful in this process.

7.3.4 Marketing and Market Development

Since waste reduction at source will be implemented; such that composting will be imposed to households, schools and agricultural sector and recycling through selling to junkshops will be encouraged to generators, it is expected that only small volume of compostable and recyclable materials will be collected by the barangays and municipality. This will mainly come from other institutions and commercial establishments, including the public market.

With the aforementioned assumption, the compost that will be processed in the barangays and in the centralized composting facility is just enough for the utilization of barangays and the municipality at barangay communal garden and at municipal eco-park respectively.

7.4 Transfer

Given the small volume of solid wastes generated in the municipality which is still manageable, transfer of solid wastes is not yet perceived necessary.

7.5 Alternative Technologies for Residual Wastes

At present, the municipality has no advanced method of disposing residual wastes. All residual wastes are stored in the RCA. For this, the municipality will purchase 1 unit of Multi-Shredder and Pulverizer Machine in 2020 to somehow lessen the bulkiness of residual wastes. This machine, preferably the model with 15 HP motor that can minimize 350-450 kg./hour will pulverize various type of wastes especially plastic (PE, PP, PET), plastic purging, plastic profiles, films, plastic bottles, and plastic packaging. Pulverized plastics will then be used in hollow blocks or bricks making of the locals. Advanced machine for the processing and production of pulverized materials into a new product will be acquired by the LGU in 2021.

7.6 Disposal

Establishment of sanitary landfill is indeed costly. Thus, despite its fervor, the Municipal Government cannot afford yet having a sanitary landfill. And so far, as the result of WACS revealed, waste generation in the municipality is still manageable. Meanwhile, the existing storage facility (RCA) will be improved. The municipality will construct alternative facilities such as processing and working area, vermi-composting facility, recycling facility, residual containment area, and septic vaults. It will also improve its Municipal MRF and greenhouse/plant nursery; and will continue the construction of perimeter fence, run-off drainage, and access road to facilitate the collection and transport system. These will be all worked within 2020. And as for the final disposal of residual wastes, the LGU will partner with private sanitary landfill service provider beginning 2020 onwards.

For the rehabilitation of controlled disposal facility, an Ecological Solid Waste Management Park or Eco-Park will be developed. In place of the controlled disposal facility and biodegradable chamber will be a motor pool, multi-purpose hall and other amenities to be constructed in 2022 onwards.

7.6.1 SW Disposal Capacity

As shown in matrix below, based from the result of WACS, residual wastes will be 1,868.63 kg. by year 2029. With this projection, the improved Residual Containment

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Area (RCA) will serve as the residual management facility while rehabilitation of controlled disposal facility is on-going and while the LGU cannot afford yet having sanitary landfill. The estimated lifespan of the building of the RCA is five (5) years with regular maintenance and improvements. Whereas, the capacity of the existing containment area is 700 cu. m. which is good for one (1) year only. The LGU had already started utilizing the RCA since July 2019 and therefore it is expected to be full in June 2020. In anticipation of this situation, the LGU will construct another RCA to accommodate future residual wastes and partner with private sanitary landfill service provider in March 2020 as final disposal of residual wastes.

Table 37. Projection of Residual Wastes

2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
1,021.95	1,181.04	1,194.28	1,358.59	1,526.47	1,543.55	1,716.94	1,736.18	1,915.24	1,936.68	1,868.63

7.6.2 Existing Facilities

Last December 18, 2006, upon inspection of the Department of Environment and Natural Resources (DENR), various recommendations were given to the Local Government Unit regarding its open dumpsite. Thus, in coordination with the Environmental Management Bureau (EMB) the site was further been evaluated and categorized as a Controlled Disposal Facility, based on the collective disposable residual wastes which is less than or equal to 15 TPD. It was then ordered the preparation of a safe closure and rehabilitation plan for the existing open dumpsite as mandated by R.A. 9003. As such, from 2007 to 2009, several components of the closure, rehabilitation and development of an eco-park were initiated which include site clearing, site grading and stabilization based on the topographic survey. Perimeter earth-fill dike with 6" gravel surface around the disposal site was also constructed to prevent stray animals from entering and to divert rainwater run-off; while service road is provided to ensure possible loading and unloading of wastes and soil cover.

However, in 2018 several IECs on R.A. 9003 and ordinances have been conducted in 10 service barangays and schools. Various improvements have been implemented

in controlled waste disposal facility such as construction of earth dike, line canal and service road.

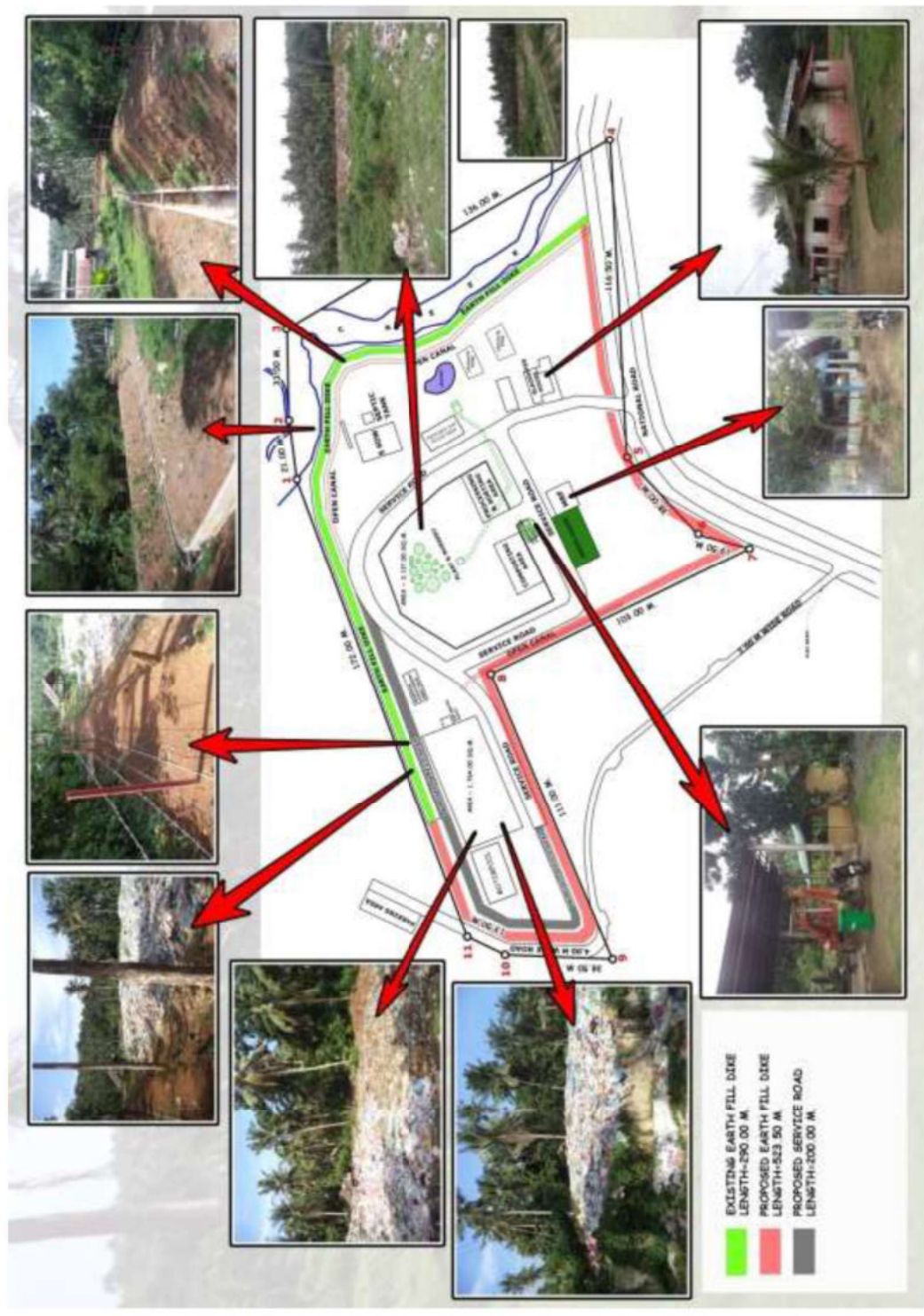
After the closure of Municipal Disposal Facility in August 2019, the existing facilities for the residual wastes are the MRF and the RCA building. The RCA caters all dried residual wastes packed in sacks and piled inside the building. The MRF caters all recyclable materials collected from the BMRFs which are sold to local junkshop owners.

The LGU further complied with the following requirements in the operation and maintenance of RCA as recommended by the DENR-EMB; to wit:

1. Drainage and runoff control shall be designed and managed such that storm water does not come in contact with waste and that discharge of sediments into the receiving body of water is minimized. Appropriate erosion shall be installed at storm discharge outfalls;
2. Provision for aerobic and anaerobic decomposition shall be instituted to control odor;
3. Working areas shall be minimized and kept at no more than a ratio of 1.5 square meter (sq. m.) or less per ton/day (tpd) of waste received on a daily basis;
4. Basic record keeping including the volume of waste received daily, special occurrences such as fires, accidents, spills, unauthorized loads, and daily waste inspection logs;
5. Improvement and maintenance of access roads;
6. Provision of at least 0.60 final soil cover at closure, and post closure maintenance of cover, drainage and vegetation; Post closure maintenance shall be for a period of ten (10) years;
7. Adequate separation or clearance between waste and underlying groundwater and any surface body of water shall be provided. Engineering controls shall be provided otherwise.

7.6.3 New Facilities

Figure 9. Proposed Municipal Ecological Solid Waste Management Park or Eco-Park



Since the municipality cannot afford yet having sanitary landfill it proposes an Ecological Solid Waste Management Park or Eco-park. Within this eco-park will be an improved MRF, Processing and Working Area, Recycling Facility, Vermi-composting Facility, Green House Garden or Plant Nursery, Residual Containment Area (RCA) which will serve as temporary storage facility of residuals, and Septic Vaults for special wastes.

7.6.4 Disposal Facility

In the proposed municipal eco-park, residual containment area and septic vault will be constructed as temporary storage/containment facilities for residual and special wastes respectively. Shredder and pulverizer machine will also be utilized herein to lessen the bulkiness of wastes. The LGU availed the services of a private sanitary landfill located in the Daraga, Albay (IWA BESU) for its final disposal.

The private SLF provider have ongoing plan to set up another SLF in Bulan. An adjacent town of LGU Magallanes. Upon its completion the delivery of residual waste to the disposal area will be closer. Another option of the LGU is to avail the services of waste management service provider to collect residual waste to be converted into a refuse derived fuel. Current Greenways Services is operating in Bulan and have plans to operate in various clusters in Sorsogon province to accommodate the waste generated in the two districts of Sorsogon.

7.7 Special Wastes

Table 38. Projection of Special Wastes (kg./day)

2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
159.13	160.92	162.72	164.54	166.39	168.25	170.13	172.04	173.97	175.92	177.89

With this proposed plan of developing a Municipal Ecological Solid Waste Management Park or Eco-Park with areas for processing and disposal of various types of wastes, unlike the common practice, all collected special wastes will now

be treated before depositing into septic vaults located in the facility at Sitio Canamucan, Aguada Sur. Personnel-in charge in the facility will be trained on the proper handling, treatment procedure and disposal of these special wastes. The final disposal of this type of wastes will be in the partner private sanitary landfill service provider.

7.7.1 Health Care, Toxic and Hazardous Wastes

Given that the Magallanes Medicare Hospital (MMH) and the Rural Health Unit (RHU) have their distinctive waste management system which follows the provisions of the Department of Health, still, the same institutions will manage their health care, toxic and hazardous wastes utilizing their own facilities.

The LGU considered all COVID-19 related wastes as potentially infectious and contaminated health care wastes, thus it strictly implements proper waste segregation at source and that COVID-19 related wastes are not mixed with other domestic solid wastes but are stored in yellow plastic bags that are properly labeled.

On the collection and transport of COVID-19 related wastes, proper chemical disinfection of infectious and contaminated health care wastes is done by waste collection personnel to minimize biological hazards and exposure of waste collectors and transporters on a separate schedule. All personnel directly involved in the collection, transport and storage, and treatment and disposal of COVID-19 related wastes were provided with personal protective equipment. Regular disinfection of all equipment, facilities, and collection and disposal vehicles is also being implemented.

In terms of the treatment and disposal of COVID-19 related wastes, upon collection and transport, it is being treated and temporarily deposited in a special septic vault in the Rural Health Unit while the LGU is still in the process of contracting a waste service provider that are allowed to process infectious wastes. On the other hand, the TRCA in Sitio Canamucan, will also construct a vault for infectious waste to augment the septic vault in RHU.





7.8 Information, Education and Communication (IEC)

An information dissemination, education and communication program will be implemented in order to ensure that all stakeholders are educated on SWM and environmental concerns and well-informed of the strategies, mechanisms and guidelines to be employed in the implementation of this SWM plan.

This IEC program will be managed by the Municipal IEC and Advocacy Team composed of PDO II Eden L. Ariate as Team Leader and MENRO Designate Robert G. Hodrial, AO II/HRMO I Sheryl G. Ortega, Mun. Engineering Assistant Romarico J. Deona, Sanitation Inspector Teoducio M. Ete Jr., and Agriculture Technician Nikka Angelu Torres as members. They will be responsible for promoting SWM concerns in the municipality. They will work under the directives of the Municipal Solid Waste Management Board (MSWMB) and will perform the following functions:

1. Establish linkage/networking with partners to generate support for SWM implementation;
2. Organize and train barangay IEC committees and other SWM advocates such as school-based organizations, youth organizations and other environmentally-focused groups;
3. Develop/produce/reproduce and disseminate SWM promotional mediums and materials such as multimedia presentations, posters, primers, flyers, signage, billboards and the likes;
4. Conduct information/advocacy campaign to all waste generators (households, commercial establishments, institutions and industries);
5. Document best SWM practices/model and facilitate its publication;
6. Perform such other related functions as may be required.

7.8.1 Introduction

IEC is really important to elicit cooperation and support in achieving the vision, goals and targets of this plan. As already proven by the municipality, constant reminder thru IEC to waste generators and stakeholders sustain the implementation of SWM program. Thus, continuous IEC program will be implemented by the municipality through the IEC and Advocacy Team. This is to address those individuals and groups

of waste generators who are non-compliant to SWM mandates; as well as uncooperative to its program strategies, mechanisms, guidelines and activities.

Strategies and Key Activities

There will be six key activities under the IEC program enumerated as follows:

1. Development, preparation and dissemination of all IEC materials
2. Conduct of separate re/orientations and briefings to: (1) at least three members of BSWMC, (2) School Heads, (3) other institutions such as the LGU, NGAs, NGOs, other offices, and leaders of sectoral groups, (4) owners of commercial establishments, and (5) agricultural sector.
3. Partnership with other institutions for widespread information dissemination
4. Facilitate Trainers' Training to SK officials and environmental advocates (barangay IEC team, school-based, parish, youth and women's organization)
5. Conduct of IEC campaigns to: (1) households during barangay assemblies, (2) schools, and (3) other institutions such as the LGU, NGAs, NGOs, other offices, and leaders of sectoral groups
6. Sectoral/group exposure to the Proposed Municipal Ecological Solid Waste Management Park or Eco-park

Development, Preparation and Dissemination of IEC Materials

Necessary materials will be developed to support the IEC program. Multimedia presentations will be prepared for social media posting and utilization during conduct of assemblies, orientation seminars and trainings. Print materials such as primers, flyers, posters, signage and billboards will be designed, produced/reproduced and displayed/distributed to target audiences. Public service announcements (e.g., bandilyo), radio and TV plugs/programs will also be made and aired through the local FM station and local cable network.

Moreover, best practices of SWM implementation will be documented and promoted by featuring in social media; specifically, in the municipal website. A primer about the SWM plan and the important provisions of RA 9003 written in local dialect will be produced and distributed to stakeholders. Catchy slogans will be designed and posted in conspicuous areas to have great chances of messages

being remembered by the target audience. Posters, primers, information sheets and flyers will be displayed in lobbies of offices and establishments.

Conduct of Re/Orientations and Briefings

Orientations/Re-orientations and briefings especially during the first quarter of each year will be conducted separately to groups of stakeholders: (1) at least three members of BSWMC, (2) School Heads, (3) other institutions such as the LGU, NGAs, NGOs, other offices, and leaders of sectoral groups, (4) owners of commercial establishments, and (5) agricultural sector. This is to inform them about the salient provisions of RA 9003 and related Municipal Ordinances and to present them the SWM Plan. They will be oriented about the reduction and segregation scheme; as well as the collection schedules and policies, and disposal management. It will be clearly discussed to them that:

1. Barangay-based SWM system will be adopted; wherein each barangay will be responsible in the collection and processing of wastes from households
2. Reduction and segregation at source will be enforced as mandated by law and ordinances; such that only residuals and special wastes will be collected by the barangay and thus, recycling and composting is required.
3. Those who will deposit their recyclables and biodegradables to barangay, will be charged a monthly garbage fee of twenty pesos (P20.00) as payment for the storage of recyclables and composting of biodegradables.
4. "No segregation, no collection" policy will still be practiced and collection schedules will be observed accordingly.
5. The municipal garbage truck will collect all type of wastes only from commercial establishments, public market and other institutions aside from schools; while merely the residuals and special wastes will be collected from every barangay MRF as scheduled.

It will be expected that through this activity, each of the abovementioned stakeholders will make their individual plan of actions on how their group/sector could adapt and abide with the reduction and segregation scheme; as well as with the barangay-based SWM system. It will further be explained that the LGU will always ready to extend assistance to every group/sector along the process.

Separate orientation will also be given to LGU staffs working on the SWM and barangay personnel who will serve as eco-boy/aide and guard on the proper waste management; particularly on collection, storage in MRF, composting and final disposal. Meanwhile, the municipality will continue conducting SWM orientation among commercial establishments securing or renewing business permits.

Partnership with other institutions

Encourage other institutions which have direct contact/communication with large number of waste generators to incorporate RA 9003 & Mun. Ordinances discussion such as barangay officials in their assemblies, religious organizations in their advocacies on environment, educational institution in their classes, DSWD 4Ps municipal links in their parent beneficiaries' meetings & health personnel in their seminars.

Trainers' Training to SK Officials and Environmental Advocates

To strengthen the implementation of IEC program, trainers' training will be conducted to SK officials and environmental advocates such as the barangay IEC team, school-based, parish, women and youth organizations which will serve as additional task force. Once trained, they will be mobilized by the municipality in intensifying the conduct of IEC not only in their respective organization/group/sector but also in the entire community of Magallanes. They will be provided with IEC materials such as soft copy of multi-media presentations, posters, primers and flyers for their utilization and distribution.

Conduct of IEC campaigns

IEC campaigns will be intensified to reach all waste generators; especially in residential areas, schools and other institutions. Municipal IEC and Advocacy Team will do the campaign during every possible venue such as barangay assemblies, meetings of 4Ps beneficiaries, school activities/gatherings, PTA meetings and the likes. Barangay IEC team and additional task force from trained environmental advocates will be tapped to do house-to-house campaign – distribution of primers and flyers to inform the residents about the mandates of law and ordinances, the

SWM plan and program of the municipality, and the strategies/schemes to be employed.

Sectoral/Group Exposure to Proposed Municipal Eco-Park

Sectoral groups and stakeholders will be brought, by schedule, to the Proposed Municipal Ecological Solid Waste Management Park or Eco-Park for exposure to the different ways of waste processing and disposal in facilities such as in MRF, processing and working area, composting area, greenhouse or plant nursery, residual containment area, and septic vaults. This is to show to the target audience the situation of garbage in the facility, to deepen their understanding of the distinctive means of waste processing and disposal, and to make them realized the importance of waste reduction and segregation at source.

7.8.2 Core Messages

Presented in the matrix hereunder are the core messages of IEC for each target audience in support to SWM program and activities.

Table 39. Sample SWM Key Messages

SWM Program	Households	Market	Institution
Litter Prevention	"Tangod Ko, Linig Ko"/ "Tapat Ko, Linis Ko"	Ang maduming tindahan, Siguradong matumal ang bentahan	Iyong munting basura, pakibulsa na
Source Reduction	Tayo na't magkaisa Bawasan ang basura Kalusugan ng mga bata Makasisiguro ka	Suki, bayong ang gamitin Plastik na supot ay basurang babalik satin	Kahit ikaw ay bata May magagawa Iwasan ang basura Na masakit sa mata
Segregation	Mag-anak na may pag-unawa At malasakit sa iba Di mag-aalintana Sa pagsinop ng basura	Basurang magkakauri Ayusin sa isang tabi Upang makaiwas sa langaw na kadiiri	Simple lang naman Kung paglalaanan Ng iba't ibang lalagyan Ang basura sa paaralan
Recycling	Basura ay may pakinabang Pwedeng libangan O kaya'y pagkakitaan	Kailangan mo ba ng dagdag kita? Ipunin ang basura at 'yong ibenta Siguradong magkakapera ka	Bata, bata! Napulot na basura Pwede mong ibenta Nakatulong ka na, May baon ka pa
Composting	Basurang nabubulok Sa pananim ay subok Sa bakuran man o bundok	Nabubulok na basura Huwag ibalewala Ibigay sa trak na magkokolekta Para magawang pataba At mapakinabangan pa	Mag composting sa paaralan Nang mabawasan Pasanin ng pamahalaan At makatulong sa halamanan

The points that will be greatly emphasized in the IEC campaigns will be the salient provisions in RA 9003 and in this Plan, viz.

1. *Litter Prevention*

Every waste generator is expected to be responsible of keeping their surroundings clean and free from wastes that can cause various diseases. IEC should make the public realized of their social and environmental responsibility and that everyone has its share in SWM and in protecting the environment.

2. *Source Reduction*

This is an important point that must be reiterated in the various IEC activities. It calls for the cooperation of all waste generators from households, market, schools and other institutions in order to lessen the volume of waste generated and to decrease the burden upon the resources of the municipal government. Specific, reusing is much encouraged like the utilization of bayong instead of plastic bags in market.

3. *Classification and Segregation of Wastes*

Classification is a primary aspect of SWM that must be emphasized. Although relatively simple, identifying waste categories (biodegradable, recyclable, residual, and special) still confuses many households and other generators. An emphasis on this can help facilitate proper observance of segregation-at source.

Meanwhile, the need for segregation at source, as mandated in Section 21 of RA 9003 is further been supported by the "No segregation, No Collection" policy. Waste generators must understand that each waste has different processing and disposal system; thus, need to be segregated accordingly. And for systematic segregation and storage, every household and other generator should maintain distinctive receptacles for each type of waste.

4. Recycling

One of the key aspects of SWM is recycling of certain materials. During IEC, it should be instilled in the public the importance and benefits of recycling. It would not only decrease the volume of wastes to be processed by the LGU, but it would also provide them income-generating opportunities; as being stressed by the core message, "May pera sa basura".

5. Composting

Just like recycling, composting is another form of waste reduction. Biodegradables should be composted by generators themselves so as to unburden the municipality of the increasing waste volume. It is also advantageous in gardening/farming; wherein, compost is a best fertilizer and has definite market value.

7.8.3 Approach

Conduct of IECs will be by cluster; depending on stakeholders or waste generators' group. It will utilize multi-media campaign which will combine interpersonal approaches such as orientation seminars, trainers' training, assembly meetings, information campaign, sectoral/group exposure trip with distribution of print materials. If possible, hands on demonstration will also be incorporated in these IEC activities to practically teach the target audience on the process of waste reduction and diversion such as composting.

Table 40. IEC Activities and Implementation Schedule

IEC ACTIVITIES	PURPOSE	TARGET AUDIENCE	RESPONSIBLE PARTY	TIME DURATION	BUDGETARY REQUIREMENTS
Development, preparation and dissemination of all IEC materials	To have ready materials for efficient and effective conduct of IECs	All waste generators (households, institutions, market and industry)	Municipal IEC and Advocacy Team	Development and preparation is within 2017 while continuous reproduction and dissemination will be every	100,000.00/year

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				first sem of each year	
Conduct of separate re/orientations and briefings to groups of stakeholders	To orient about RA 9003 and municipal ordinances, and present the SWM plan	(1) At least three members of BSWMC, (2) School Heads, (3) Other institutions such as the LGU, NGAs, NGOs, other offices, and leaders of sectoral groups, (4) Owners of commercial establishments, and (5) Agricultural sector.	Municipal IEC and Advocacy Team	Every first quarter of each year	50,000.00/year
Partnership with other institutions	To be able to reach more target audience	Attendees or members of sectors	Municipal IEC and Advocacy Team	Every first quarter of each year	-
Facilitate Trainers' Training	To strengthen and intensify IEC program by having additional task force	SK Officials and Environmental Advocates: barangay IEC team, school-based, parish, youth and women's organization	Municipal IEC and Advocacy Team	Every first quarter of each year	30,000.00/year
Conduct of IEC Campaigns	To educate all waste generators of RA 9003 and SWM Plan and made them realized their social and environmental responsibility	(1) Households during barangay assemblies, (2) Schools, and (3) Other institutions such as the LGU, NGAs, NGOs, other offices, and leaders of sectoral	Municipal IEC and Advocacy Team Additional IEC Task Force	Year-round	50,000.00/year

		groups			
Sectoral/ Group Exposure to Proposed Municipal Eco-park	To give the target audience a glimpse of the waste facilities in order to heighten their understanding on the need for waste reduction and segregation at source	Sectoral/ Group like stakeholders, students, youth, women; etc.	Municipal IEC and Advocacy Team	Year-round	20,000.00/year
TOTAL					250,000.00/year

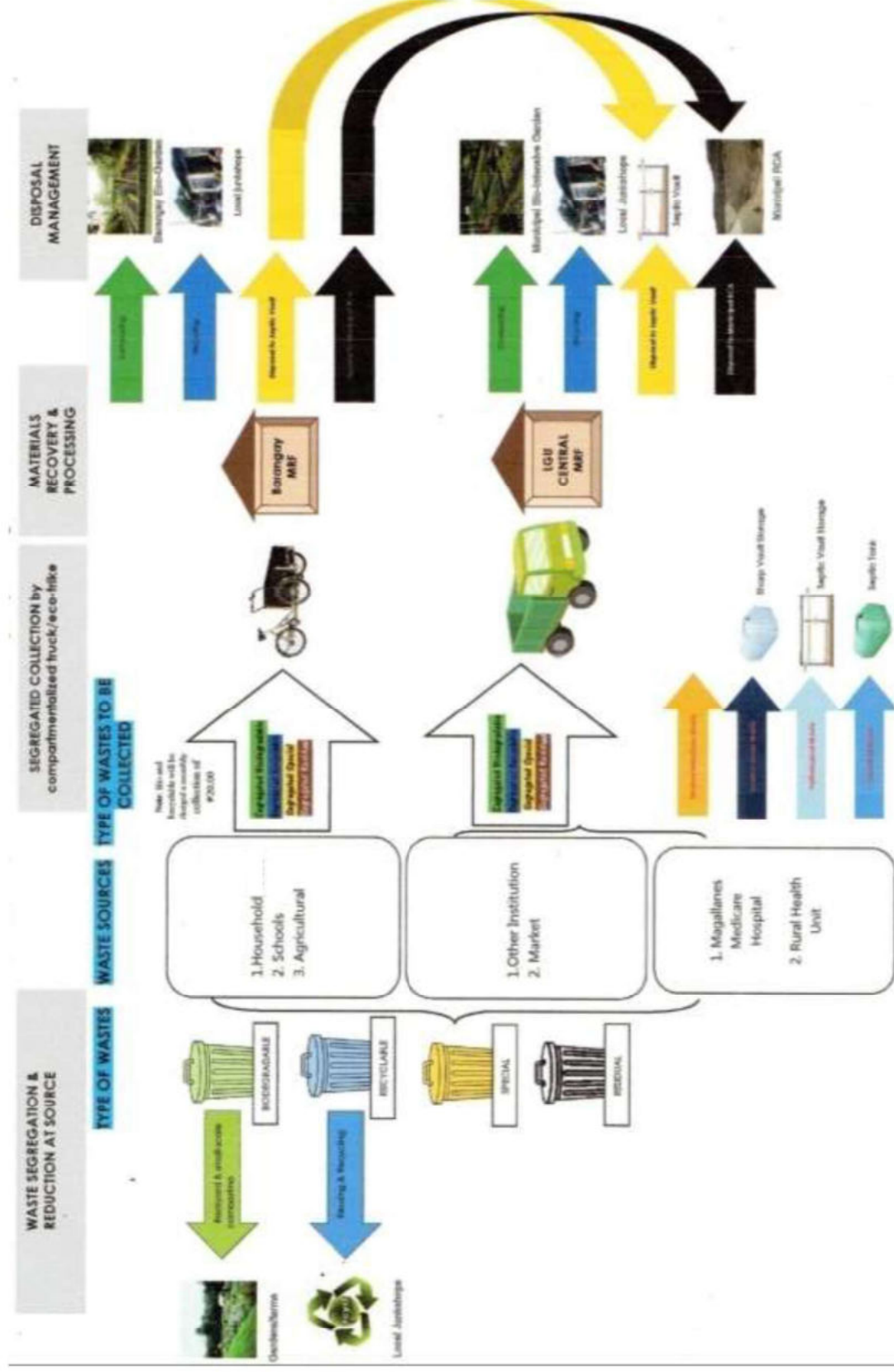
All of the above IEC strategies and activities will be continuously implemented throughout the 10-year period. Evaluation of the implementation of IEC program will be conducted at the end of each year; wherein, best practices will be documented while issues will be given due recommendations. Report on this will be prepared and submitted to the Municipal SWM Board afterwards.

CHAPTER 8:

IMPLEMENTATION STRATEGY

8.1 Framework

Figure 10. Projected Waste Flow, Municipality of Magallanes, 2019-2029



All programs, strategies and activities incorporated in this plan will be implemented by the Municipal Government thru the MSWMB within the 10-year period. It will ensure that proposed SWM system comprehensively enumerated in Chapter 7 in order to achieve the vision, goals and targets will be realized within the set schedules.

As reflected in the framework above, the projected waste flow will start from waste generators who are expected to seriously commit in the first component of SWM – waste segregation and reduction. With the proposed barangay-based SWM system, all households, schools and agricultural sector will be required to do recycling and backyard/schoolyard/farm composting. Only their residual and special wastes will be collected by their respective BSWMC thru eco-trike/eco-boy. In case that they have no area for composting and opted to deposit their recyclables and biodegradables to BMRF, a monthly garbage fee of twenty pesos (P20.00) will be charged for the processing of their wastes. In this instance, the BSWMC will be responsible for the collection of all type of wastes including residuals and special wastes. They will deposit recyclables in their BMRF until being recycled/sell to junkshops, process biodegradables by composting, and temporarily store residual and special wastes in BMRF for collection by municipal garbage truck or for transport and deposit directly to residual containment area and septic vaults in the Municipal Eco-park at Sitio Canamucan, Barangay Aguada Sur. With this structure, all barangays are required to institute collection scheme and schedules, establish/operate/maintain BMRF and composting area, and have barangay eco-garden.

For the other institutions aside from schools and commercial establishments, the LGU will still be responsible for the collection and processing of all type of wastes in the central MRF, municipal composting facility, residual containment area and septic vaults. It will also collect and dispose residual and special wastes from barangay MRF.

Meanwhile, same as the present SWM system will be followed by the Magallanes Medicare Hospital and Rural Health Unit; especially in the management and disposal

of health care, toxic and hazardous wastes in their own facilities in accordance with DOH provisions. They will also manage their biodegradables and recyclables by maintaining composting area and MRF respectively. Only their residuals and special wastes will be deposited to the municipal garbage truck.

8.2 Diversion Projections

At the base year 2019, the municipality sets its diversion projection at 54%. This target will be achieved by instituting and intensifying reuse, recycling and composting campaigns within its jurisdiction. This projection is set to be achieved upon approval of this plan and will be correspondingly increased by 4-5 percent every year thereafter as set by the MSWMB. The increment percentage was determined based on the data collected throughout the previous implementation period, the evaluation and accomplishment reports, and issues/challenges identified by the Board.

At the end of the ten-year period covered by this Plan, the municipality must achieve **87.45 %** diversion rate. This is approximately **14.05 tons/day** out of **16.07 tons of total generated waste per day**.

Table 41. Diversion Projection by Percentage

Year	Total Generated Waste (kg/day)	Waste Diversion Target (%)	Weight to be Diverted (kg/day)
2019	14,599.33	54.00%	7,883.64
2020	14,762.94	59.00%	8,710.14
2021	14,928.45	62.00%	9,225.64
2022	15,095.46	65.00%	9,812.05
2023	15,264.73	70.00%	10,685.31
2024	15,435.51	74.00%	11,422.28
2025	15,608.55	77.00%	12,018.59
2026	15,783.48	79.00%	12,468.95
2027	15,960.30	83.00%	13,247.04
2028	16,138.99	85.00%	13,718.14
2029	16,319.95	87.45%	14,271.80

Table 42. Waste Diversion Projection for 10 Yr. Planning 2020-2029

YEAR:	BIODEGRADABLE		RECYCLABLE		POTENTIAL RESIDUALS		TOTAL WASTE
							DIVERSION
	Kg/day	%	Kg/day	%	Kg/day	%	%
2019	3,211.85	22	3,649.83	25	1,021.95	7	54.00%
2020	3,395.48	23	4,133.62	28	1,181.04	8	59.00%
2021	3,582.83	24	4,478.53	30	1,194.28	8	62.00%
2022	3,773.86	25	4,679.59	31	1,358.59	9	65.00%
2023	4,121.48	27	5,037.36	33	1,526.47	10	70.00%
2024	4,476.30	29	5,402.43	35	1,543.55	10	74.00%
2025	4,682.57	30	5,619.08	36	1,716.94	11	77.00%
2026	4,892.88	31	5,839.89	37	1,736.18	11	79.00%
2027	5,107.29	32	6,224.52	39	1,915.24	12	83.00%
2028	5,325.87	33	6,455.60	40	1,936.68	12	85.00%
2029	5,711.98	35	6,691.18	41	1,868.63	11.45	87.45%

8.3 Monitoring Program

Another basic element of a successful SWMP implementation is having a monitoring system to ensure compliance with the plan and to evaluate its consistency and efficacy. In the LGU's ardent hope that this Plan would not be relegated to a mere scrap of paper, a participatory monitoring program will be employed with.

All BSWMC and other groups of waste generators like in schools, other institutions, market and agricultural will create a Monitoring and Evaluation Team (M & E Team). The team will monitor and evaluate SWM implementation in their respective area using a monitoring and evaluation tool provided by MSWMB. Quarterly reports will be submitted to the Municipal Monitoring and Evaluation Team which will include the following information:

1. For BSWMC who will manage the collection and processing of wastes from households: estimated amount/volume of all types of waste collected from households; estimated amount/volume of biodegradables processed in barangay composting area; estimated amount/volume of recyclables stored

in BMRF, sold to junkshops and amount generated; estimated amount/volume of residual and special wastes transported/deposited to municipal facility. It will also report the number of violators apprehended, types of violations committed and recorded, total amount of fines and penalties collected; as well as the amount generated out of the monthly garbage collection and processing fees vs. the expenditures of operation. Issues and challenges in the implementation of SWM components as well as possible recommendations should also be written in the report.

2. For schools and agricultural who will be obliged to manage their own biodegradables and recyclables: estimated amount/volume of all types of waste generated, estimated amount/volume of biodegradables processed in composting area, estimated amount/volume of recyclables stored in MRF and sold to junkshops and amount generated, estimated amount/volume of residual and special wastes transported/deposited to municipal facility; as well as the challenges encountered in SWM implementation and actions to be recommended.
3. For other institutions and the market who will be served by the municipal garbage truck: estimated amount/volume of all types of waste (biodegradables, recyclables, residuals and special waste) generated and deposited to municipal facility.

On the other hand, a Municipal Monitoring and Evaluation Team (M & T Team) headed by the Designated MENRO will take charge of the over-all monitoring and evaluation of SWM implementation within the municipality. Quarterly reports will be submitted to the MSWB and upon review, submit the same to the Municipal Development Council (MDC) and Sangguniang Bayan. This information will also be made available to interested parties and will be posted in municipal bulletin boards. The periodic report will be the consolidation of all reports from BSWMC, schools and other institutions, market and agricultural. This will contain the following information:

1. Waste Generation - estimated total amount/volume of waste generated in the municipality; based from the submitted report of waste generators
2. Waste Diversion - estimated total amount/volume of waste

- | | | |
|--|---|--|
| | | diverted by the municipality; based from the submitted report of waste generators and the records in municipal MRF |
| 3. Waste Disposal | - | estimated total amount/volume of waste disposed by the municipality; based from the submitted report of waste generators and counterchecked in the records at municipal disposal facility |
| 4. Enforcement of | - | number of violators apprehended, types violations committed and recorded for a period of time, total amount of fines and penalties collected |
| 5. Revenue and Expenditures the | - | total amount generated from SWM and total expenditures; based from the report submitted by waste generators and the records in municipal MRF; as well as from the records of Office of the Municipal Treasurer of annual garbage fee remittance from the application/renewal of business license |
| 6. Challenges and Possible Recommendations | - | issues related to the implementation of SWM and actions to be taken into consideration |

The Municipal M & E Team will likewise conduct regular monitoring and evaluation of proper waste segregation of all generators, collection system in each barangay, operation and maintenance of barangay/school/agricultural MRF and composting area; as well as the collection and transport procedure of the municipal garbage truck, operation and maintenance of Municipal Eco-park, central MRF, recycling

facility, composting area, green house/plant nursery, residual containment area and septic vaults. Any violations with regards to SWM and operation of facilities will be noted, given recommendations and be relayed to concern group of stakeholders.

The LGU will further create a multi-sectoral M & E Team who will annually review all records and reports in order to determine compliance with segregation requirements, efficiency within the collection area, materials recovered by source (volume or %), effectiveness of waste processing and disposal, and income generated vs. expenditure of operation. The Team will then report this to the MSWMB; including its ability to meet the required targets based on the plan, its effectiveness on IEC activities and the LGU's compliance in using the disposal facility. The evaluation written output should be given to the MSWMB Secretariat on or before January 30 of the ensuing year to, consequently, provide the necessary input for any amendment to this Plan or to any adjustments in its implementation.

For strict implementation and supervision of compliance to RA 9003 and municipal ordinances as well as to the SWM system, strategies and guidelines set in this Plan, the M & E Team will ensure its enforcement. At the barangay level, there will be eco-guards who will look after the compliance of households; while at the municipal level, M & E Team headed by MENRO will be supported by PNP personnel in dealing with and imposing fines and penalties to violators. Imposition of fines and penalties will follow the provisions set under Section 19 of Article XIII of Municipal Ordinance No. 02-2006.

8.4 Incentive Programs

To encourage wide participation of the community in the full implementation of this solid waste management plan, the municipality, specifically with the Solid Waste Management Board at the helm, would institute various incentive programs, viz:

1. The LGU would award Plaques of Commendation and/or Cash Incentives to individuals who exhibit innovation, dedication, initiative, and creativity pertaining to solid waste management;

2. The LGU would present Plaques of Commendation and/or a benefit of two-year exemption from annual garbage fee to business establishments which observe outstanding solid waste management practices;
3. The LGU would grant SWM Seals of Approval to establishments which comply with the specifications of this plan and cooperate with the municipality's effort in ensuring source reduction, material conservation, environmental preservation, and waste management. Relative to this, the LGU would encourage the local consumers to buy from the establishments which are proactive in observing sustainable and eco-friendly practices;
4. The LGU would hold annual Search for Best SWM Implementer and Eco-friendly Contest among barangays and schools as an IEC measure and a way of giving incentive and recognition to the most deserving unit;
5. The LGU would implement Goods for Garbage Project such as "Basura Mo, Pandesal Ko" for barangay residents and "Lapis at Papel Para sa Basurang Dala" for school children. In this project, the LGU will give 10-peso worth of pandesal (residential) or a pencil and a pad of paper (school children) in exchange for 1 kilo of residual wastes

The concrete guidelines for the implementation of the above-enumerated incentive programs will be crafted upon approval of this plan.

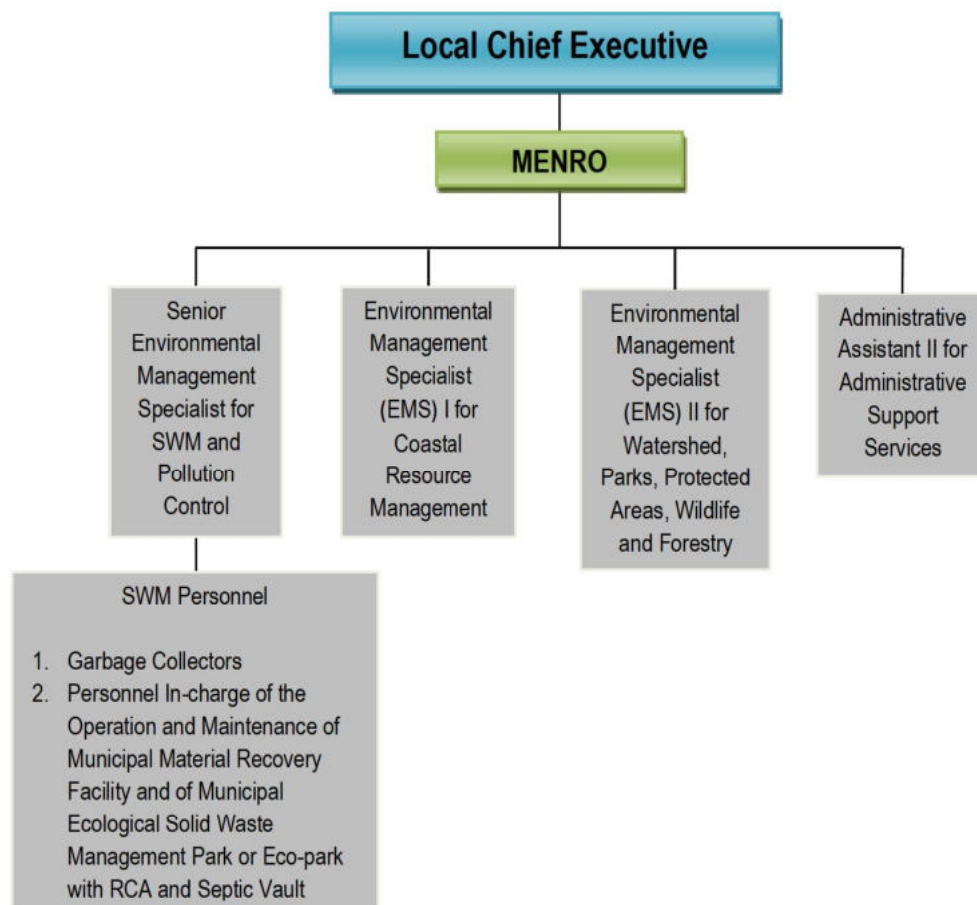
CHAPTER 9:

INSTITUTIONAL

ASPECTS

For effective, efficient and sustainable implementation of this SWM Plan, it is recommended that the physical structure of the Office of the Municipal Environment and Natural Resources should be established. This includes the permanent appointment of a MENR Officer and other personnel; and the setting up of an office equipped with facilities and equipment. Hereunder is the proposed organizational composition of the MENRO.

Figure 11. Organizational Structure of Proposed Establishment of MENR Office



The General Functions of the proposed Office of the Municipal Environment and Natural Resources (MENRO) are as follows; viz:

1. Implement/enforce national laws and local ordinances regulating the emission/ discharge of harmful substances to the atmosphere, and water systems, solid waste management policies and directives, and recommend for the apprehension of violators and abatement of the pollution;

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2. Manage the ecological and natural resources of the municipality, primarily promoting sustainability of local resources, such as but not limited to forests, watersheds, rivers, coasts and fishing grounds;
3. Implement programs for the protection and preservation of the environment, as well as rehabilitation of areas critically affected by industries, effects of natural calamities, result of man-made activities, etc.;
4. Provide technical assistance to the Local Chief Executive and the Legislative branch on policy and decision-making;
5. Conduct continuing education for the municipality's constituents stressing on environmental stewardship, awareness and responsibility;
6. Gather and maintain records of environmental data, activities, assets and compliments and evaluate the state of environment of the Municipality;
7. Coordinate environmental activities within the territorial jurisdiction of the municipality and integrate it with the environmental master plan;
8. Facilitate capacity building for local adaptation planning, implementation and monitoring of climate change initiatives in vulnerable communities and areas;
9. Recommend key development investments in climate- sensitive sectors such as water resources, agriculture, forestry, coastal and marine resources, health, and infrastructure to ensure the achievement of local sustainable development goals.

For the establishment of MENRO, there is a need for the creation of various plantilla positions as presented in Figure 11. Since there is already an existing EMS II, only the following position titles will be created in conformity with the qualification standards set by the Civil Service Commission and its index of Occupational Services, Position Titles and Salary Grade for LGUs.

	<u>TITLE OF POSITION</u>	<u>SALARY</u>
	<u>GRADE</u>	
One (1)	Environment Management Officer	24
One (1)	Senior Environmental Management Specialist for Solid Waste Management and Pollution Control	18
One (1)	Environmental Management Specialist I	11

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	for Coastal Resource Management	
One (1)	Administrative Assistant II	8
	for Administrative Support Services	

The personnel to be filled in the existing Environmental Management Specialist II, on the other hand, will focus on the Watershed, Parks, Protected Areas, Wildlife and Forestry.

Meanwhile, listed below are the corresponding duties and responsibilities of each personnel who will comprise the Office of MENRO:

Senior Environmental Management Specialist for
Solid Waste Management/Pollution Control

1. Establish and manage a comprehensive solid and liquid waste management information data base and dissemination system;
2. In collaboration with technically responsible government and private agencies relative to solid and liquid waste generation and management access techniques as well as the management, technical and operational approaches to resource recovery;
3. In collaboration with processors/recyclers, access the list of materials being recycled or bought by them and their respective prices; and
4. In coordination with the National Government Agencies and other technically responsible government and private agencies, access information on cleaner production/cleaner technologies that promote efficient solid and liquid waste management.
5. Promote the development of a recycling market through the establishment of a recycling network that will enhance the opportunity of recycling;
6. Act as the hub for networking of other local government units and barangays (especially within the province), non-government organizations and industry on voluntary compliance of the pertinent provisions of solid and liquid waste management act and clean air act as well as this ordinance;

7. Provide, facilitate technical assistance in pilot modeling of solid and liquid waste management facilities including technologies and techniques for effective solid waste management;
8. Develop, test and disseminate model waste minimization, emission control and reduction auditing procedures for evaluation options;
9. Recommend policies to eliminate barriers to waste reduction programs; and
10. Maintain service and operate the Municipal Ecological Solid Waste Management Park or Eco-park with MRF, processing and working area, recycling facility, vermi-composting facility, green house garden or plant nursery, residual containment area (RCA), and septic vaults and all other facilities and equipment within it.

Environmental Management Specialist II for

Watershed, Parks, Protected Areas, Wildlife & Forestry

1. Implementation of community based forestry projects, such as integrated social forestry, establishment of new regular reforestation projects, except to those located in protected areas and critical watersheds, completed family and community based contract reforestation projects, subject to policies and procedures prescribed by the DENR, Forest Land Management Agreements, in accordance with DAO No. 71, Series of 1990 and other guidelines that the DENR may adopt and Community Forestry Projects, subject to concurrence of financing institutions, if foreign assisted, pursuant to Section 3.1 (a) of DAO 30, Series of 1992;
2. Establishment and maintenance of the municipality's tree parks and other tourist attractions through beautification projects, except those in protected areas and the collection of fees for their services and the use of facilities established therein, pursuant to Section 3.2 (a) of DAO 30, Series of 1992;
3. Except import and export, regulation of flora outside protected areas, including industries and business engaged in their propagation and development, such as orchidaria and nurseries;
4. Implementation and rehabilitation in conservation hotspots and the conservation of rare and endangered species activities, in areas identified

and delineated by the DENR, pursuant to Section 3.2 (a) of DAO 30, Series of 1992;

5. Implement plans and programs for the protection and preservation of natural resources, rehabilitation of beauty of natural spots and maintain ecological balance of the man and his surroundings;
6. Ensure optimization as well as promote conservation in the use and utilization of all natural resources found within the territorial limits of the municipality through education and training of the citizens for the preservation and protection of the natural beauty of the environment and the resources it provides; and perform other duties that may be assigned by law ordinance; and
7. Maintain, or whenever applicable restore the beauty of nature spots within the territorial jurisdiction of the municipality through the conduct of regular survey and inventory on the flora and fauna found within the boundaries of the municipality and make the same available to the public.

Environmental Management Specialist I for
Coastal Resource Management Division

1. Implementation of community based marine protected area, marine sanctuary and mangrove forest reserves within the territorial jurisdiction of the municipality;
2. Enforcement of fishery laws in municipal waters, both national and locally promulgated, including the conservation of mangroves, extension and on-site research services and facilities related to fishery activities
3. Regulation of coastal/marine tourism facilities and other marine/coastal tourist attraction, including the acquisition of equipment, regulation and supervision of business concessions and security services for such facilities, pursuant to Section 17 (b)(2)(xi) of RA 7160 and DENR Administrative Order No. 30, Series of 1992; and
4. Enforcement of community-based mangrove reforestation and other laws relative to its protection, pursuant to Section 17 (b)(c)(iii) of RA 7160.

Administrative Assistant II for

Administrative Support Services

1. Maintain records of personnel, including but not limited to Personnel Data Sheet (PDS), OPCR and IPCR, Daily Time Record (DTR), Leave of Absence, etc.
2. Prepare necessary documents for the procurement of supplies and equipment, as well as maintain records and inventory of supplies and equipment according to government standards and forms;
3. Facilitate internal and external communications and maintain a centralized record management system for the department;
4. Facilitate official transactions for department personnel, including following up of procurement documents, payments/ reimbursements and such other documents relative to the function of the office; and
5. Prepare financial and administrative plans for the department as well as annual financial and administrative reports.

The Municipal Environment and Natural Resources Officer (MENRO) to be appointed; contrariwise, should be a citizen of the Philippines, of good moral character, a holder of a college degree preferably in environment, forestry, agriculture or any related course from a recognized college or university, and a first-grade civil service eligible or its equivalent. He/She must have acquired experience in environmental and natural resources management, conservation, and utilization, of at least five (5) years.

The MENRO will take charge of the Municipal Environment and Natural Resources Office and will perform the following duties and responsibilities:

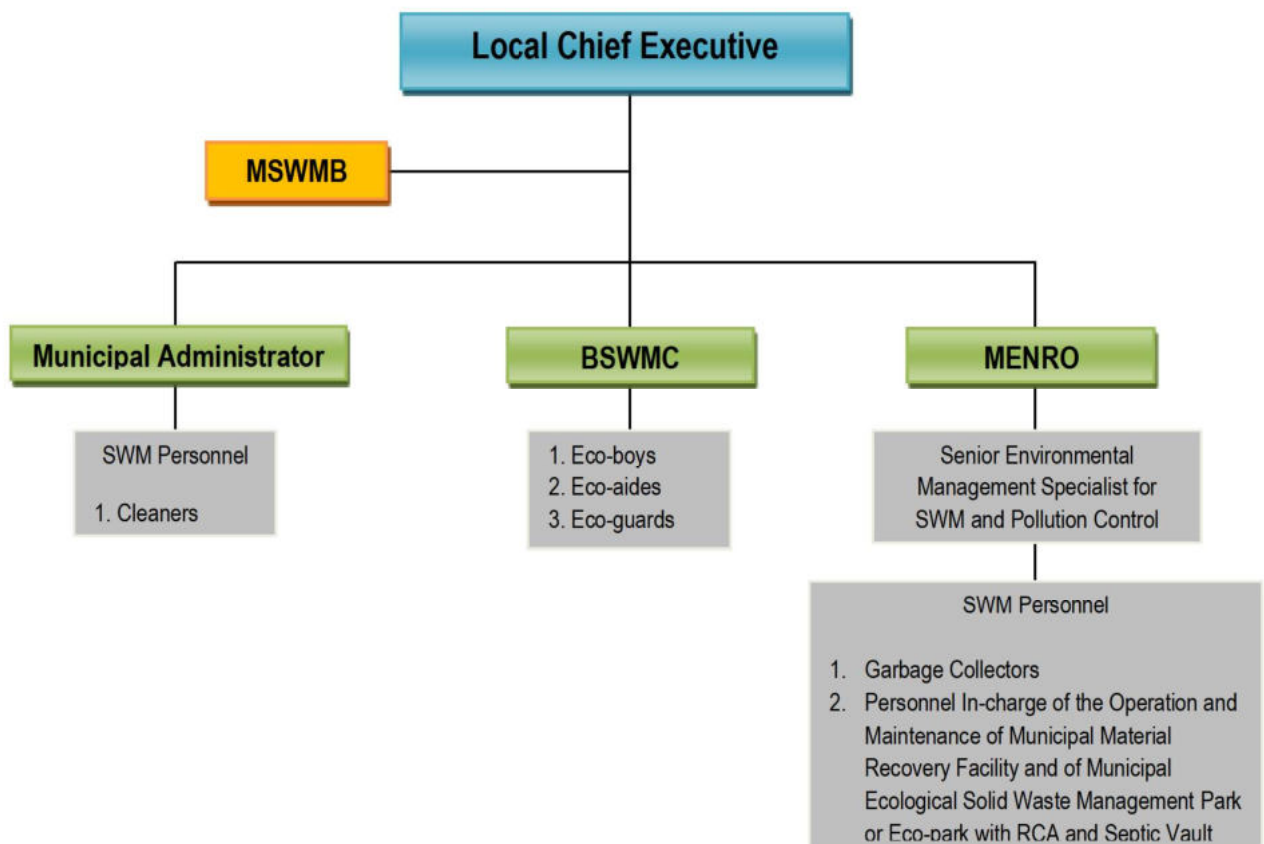
1. Formulate measures for the consideration of the Sanggunian and provide technical assistance and support to the LCE, in carrying out measures to ensure the delivery of basic services and provision of adequate facilities relative to environment and natural resources services as provided for under Section 17 of R.A. No. 7160;

2. Develop plans and strategies and upon approval thereof by the LCE, as the case may be, implement the same, particularly those which have to do with climate change adaptation strategies and environmental programs which the LCE is empowered to implement and which the Sanggunian is empowered to provide for under R.A. No. 7160;
3. Establish, maintain, protect and preserve communal forests, watersheds, tree parks, mangroves, and similar forest projects;
4. Provide extension services to beneficiaries of forest development projects and technical, financial and infrastructure assistance;
5. Manage and maintain seed banks and produce seedlings for forests and tree parks;
6. Provide extension services to beneficiaries of forest development projects and render assistance for natural resources-related conservation and utilization activities consistent with ecological balance;
7. Coordinate with government agencies and non- governmental organizations in the implementation of measures to prevent and control land, air and water pollution with the assistance of the Department of Environment and Natural Resources and the Environment Management Bureau;
8. Be in the frontline of the delivery of services concerning the environment and natural resources, particularly in the renewal and rehabilitation of the environment during and in the aftermath of man-made and natural calamities and disasters due to global warming as to the effect of climate change;
9. Recommend to the Sanggunian and advise the LCE, on all matters relative to the protection, conservation, maximum utilization, application of appropriate technology and other matters related to the environment and natural resources; and
10. Exercise such other powers and perform such other duties and functions as may be prescribed by law or ordinance.

Upon creation of the Office of MENRO, organizational structure on solid waste management implementation will be adjusted as well. As shown in the figure below, MENRO will be directly under the LCE and with the guidance of MSWB. Although the

MENRO personnel will also include the Environmental Management Specialist I for Coastal Resource Management, Environmental Management Specialist II for Watershed, Parks, Protected Areas, Wildlife and Forestry, and Administrative Assistant II for Administrative Support Services; only the Senior Environmental Management Specialist will focus on solid waste management and pollution control. Also involved under the MENRO are the garbage collectors and personnel in-charge of the operation and maintenance of the Municipal Ecological Solid Waste Management Park or Eco-park with MRF, processing and working area, recycling facility, vermi-composting facility, green house garden or plant nursery, residual containment area (RCA) and septic vault. Only personnel assigned as cleaners in the streets and other public areas will be under the supervision of municipal administrator. The Barangay Solid Waste Management Committees (BSWMC); on the other hand, will be under the guidance of the MSWMB, chaired by the LCE.

Figure 12. Proposed Organizational Structure on the SWM Implementation



Moreover, while the creation of the MENRO will still be in the process, a Functional Chart of all technical working groups (TWGs) is hereby designed to ensure that this plan will start its implementation as soon as been approved. These TWGs will be responsible in each component of solid waste management. They will be working under the directives and guidance of the Municipal Solid Waste Management Board (MSWMB).

Figure 13. Proposed MSWMB-TWG Functional Chart



9.1 Roles

Being the highest policy making body of the municipality concerning all solid waste management concerns, the MSWMB will also be the one to ensure implementation of this SWM Plan. Its specific duties and responsibilities are enumerated in Chapter 5.

Meanwhile, each of the four major stakeholders in SWM: (1) waste generators, (2) regulators/implementers, (3) service providers, and (4) partner organizations/institutions/ agencies/establishments has an important role to improve the effectiveness and efficiency of SWM through active participation and continuous cooperation.

First, waste generators which is the whole populace of the municipality, classified into residential, institutional, agricultural, industrial, and commercial establishments including the public market. They have indeed the major responsibility to reduce wastes through re-using, recycling, and composting; to segregate; and to properly dispose their wastes in accordance with existing regulations. Being socially and environmentally responsible and discipline, as well as practicing self-regulation of each generator would definitely make a difference in the long run. For this, massive information, education, and communication campaign is needed which will be intensively and continuously conducted through the succeeding years.

Second, the regulators/implementers consist of the executive and legislative branches of the LGU, the MSWMB, the BSWMC, and other support mechanisms. Political will, commitment, and hard work in their part is essential to realize effective and sustainable SWM. Regular meeting among these groups of stakeholders will be maintained for the monitoring, evaluating, feed backing, innovating, and further improving the implementation of SWM. They will be strict in implementing and monitoring compliance to RA 9003 and related regulations; plus, the actualization of this plan. They will also be in continuous coordination and collaboration with other stakeholders through meetings and open dialogues.

Third, the service providers which include the cleaners, collectors, and other personnel directly involved in each component of SWM such as in collecting,

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transporting, processing, and disposing wastes. Proper execution of the aspects of SWM is their responsibility, thus, they will be equipped with necessary trainings. And since they are working with/for the generators, close cooperation between them will be established to increase effectiveness of waste segregation and collection system, recovery and recycling of materials, and proper disposal.

Fourth, the organizations/institutions/agencies/establishments which are constant partners of the LGU in pursuing all endeavors in SWM. During 2007-2009; NGOs, POs, and other environmental-driven organizations from school, youth and religious sectors became active partners of the LGU in the advocacy for effective SWM. They have been mobilized for the conduct of IECs and monitoring after they underwent trainers' training. Continuous coordination with these organizations will be done to sustain such collaborative effort. Some national government and even international agencies concerning environment have also great part in the process, like for instance the Agencia Española de Cooperación Internacional Para El Desarrollo, a SpanInternational Cooperation Agency for Development which granted the municipality with Five Hundred Thousand Pesos (P500, 000.00) for the construction of biodegradable chamber in the municipal categorized waste disposal facility in 2009. Other NGAs, likewise, are always been of help through their technical expertise. Moreover, a number of junk shops in the municipality involved in recovery and recycling is beneficial as well in the processing of recyclable materials, thus reducing the volume of waste for disposal.

9.2 Legal

In point of fact; in addition to many subsisting national laws, circulars and guidelines; there are already two Municipal Ordinances (Municipal Ordinance No. 02-2006, An Ordinance Implementing the Municipal Comprehensive Solid Waste Management System for the Municipality of Magallanes, Prescribing Guidelines for its Implementation; Imposing Penalties and Sanctions for Violations Thereof and Municipal Ordinance No. 05-2009, An Ordinance Prohibiting the Use of Plastic Wrappers, Plastic Bags and Styrofoam in Stores/Groceries/and other Business/Commercial Establishments in the Municipality of Magallanes, Sorsogon (Chapter 5); enough to provide the municipality with the envisioned systematic,

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comprehensive, effective and sustainable solid waste management for a healthy and ecologically-balanced community, should have been strictly implemented.

Moreover, as considered beneficial in the implementation of this Plan, the following are the proposed changes on municipal structure, zoning and building code, appropriation ordinances, and plans to impose penal provisions:

Municipal Structure

As shown in Figure 11 and 12, this 10-Year Solid Waste Management Plan calls for the creation of MENR Office with the permanent appointment of MENR Officer and four other personnel. However, while the said creation and appointments are still in the process, the responsibilities and functions pertaining to SWM will be directly under the MSWM Board; with the assistance of various technical working groups presented in Figure 13. Only personnel assigned as cleaners in the streets and other public areas will be under the supervision of municipal administrator.

Zoning and Building Code

The proposed change in zoning and building code will be done in pursuant to prescribed Administrative and Enforcement procedure expressly provided in Section 49, Article X of the Municipal Zoning Ordinance No. 99-01 and in congruence with the Comprehensive Land Use Plan of this Municipality.

At present, a parcel of land in Sitio Canamucan, Aguada Sur is being utilized as a residual containment area for temporary storage of residual wastes. Eventually, as the implementation of this plan progresses and in furtherance of SWM agenda, the LGU will resort to the establishment of Municipal Ecological Solid Waste Management Park or Eco-park with alternative processing and disposal facilities. The LGU will designate areas for the establishment of working area, recycling facility, vermi-composting facility, residual containment area, and septic vault. Mun. MRF and greenhouse/plant nursery will likewise be improved and maintained.

Furthermore, the LGU will partner with the nearest private sanitary landfill service provider for the final disposal of wastes.

Appropriation Ordinances

The LGU will adopt the policy of appropriating five percent (5%) of the 20% Development Fund for the implementation of SWM programs.

Plans to Impose Penal Provisions

Upon approval of this plan, penal provisions implicitly cited in RA 9003 and Municipal Ordinances relevant to SWM will be strictly imposed to violators. Aside from the charge of civil, criminal, and administrative suits, as the case maybe, for transgressing the prohibited acts under RA 9003, penal sanctions can also be incorporated in future local ordinances anent solid waste management to deter violations. The municipal legal officer can spearhead prosecutions in furtherance of the SWM agenda.

CHAPTER 10:

SOCIAL AND ENVIRONMENTAL ASPECTS

In the commitment to abide with RA 9003; the LGU scrupulously formulated this SWM Plan as a tool in addressing proper solid waste management. The plan concomitantly accords environmental laws and local ordinances to further avert the adverse effect of global warming and climate change.

10.1 Social Aspects

Significant social impacts from community-based SWM

The devolution of solid waste management and its transformation into a community-based operation calls for a great degree of participation from waste generators; particularly the households, schools and agricultural. It paves the way for collective action and the forging of solid partnership for it is upon these factors that success of this SWM scheme depends on.

It is expected, however, that not all will be that participative and supportive; but the LGU through the MSWMB and TWG will be committed in making them understand the importance of RA 9003 and other ordinances; as well as have them realized their social and environmental obligation by means of continuous conduct of IECs.

Social acceptability of proposed SWM system (including collection system, processing and disposal)

Typical reaction to any change is an initial resistance from the people, especially given the more stringent provisions that are set in place by RA 9003 and those embodied in this plan. Truly, it takes a substantial amount of discipline to transform the community's lackadaisical ways and attitude towards more exacting requisites of a sustainable and ecological SWM scheme. However, it is a firm belief that since this Plan has been crafted after considering the municipality's profile and characteristics, the current SWM conditions, and the needs and aspirations of the people, the latter would find this Plan acceptable and timely. Further, the proposed SWM system can gain high acceptability and desirable momentum through the conduct of IEC campaigns or drives.

Table 43. Social Acceptability of Proposed SWM

SWM System	Positive	Negative
Waste segregation at source	<ul style="list-style-type: none"> ○ Increase awareness on proper solid waste management ○ Livable and healthy environment 	<ul style="list-style-type: none"> ○ Low percentage of compliance ○ Sustainability
Barangay-based collection system	<ul style="list-style-type: none"> ○ Empower BSWMC in SWM ○ Additional barangay revenue if well implemented and managed 	<ul style="list-style-type: none"> ○ Monthly garbage fee would be a burden to some households who preferred to deposit even their biodegradables and recyclables ○ Low percentage of compliance ○ Sustainability
Processing	<ul style="list-style-type: none"> ○ Recycling may open opportunity for income generation ○ Compost will be beneficial in maintaining backyard/schoolyard/communal garden and in generating additional source of income 	<ul style="list-style-type: none"> ○ Limited market for recycled products ○ Low percentage of compliance to composting ○ Sustainability
Disposal	<ul style="list-style-type: none"> ○ Public awareness on proper solid waste management; particularly of residuals and special wastes ○ Promote shared responsibility of waste generators 	<ul style="list-style-type: none"> ○ Likely occurrence of diseases especially in areas near the disposal facility ○ Possible discharge of leachate from disposed waste during rainy days

Requirements of Stakeholders

To foster an innovative partnership among stakeholders in driving this plan forward, the following are some of the requirements that must be established and complied with:

1. Exhibit strong and resolute political will and proactive participation of all other stakeholders;
2. Adequate capacity-building activities for the stakeholders to be empowered and be more proactive in addressing SWM issues and concerns;
3. Training of BSWMC, SWM coordinators in schools and other institutions, business owners, private enterprise, service providers/SWM personnel, business owners, and other stakeholders in carrying out their part in SWM; and
4. Identification and mobilization of sufficient resources

Conditions concerning scavengers/waste pickers at the disposal site and what the municipality can do to improve their conditions

At present, this does not apply to the municipality because it is neither an extant issue nor is there any indication from data collected on the municipality's population, education, and poverty incidence that this matter will become a concern within the timeframe covered by this Plan. However, as this work intends to cover all possible challenges regarding SWM that this municipality may encounter in the future, it is deemed necessary to include guidelines that would address this issue as well, viz;

1. The case of scavengers and waste pickers would be a clear manifestation of poverty incidence and social welfare condition in the municipality; thus, proper referral must be made to MSWDO for case assessment and provision of livelihood assistance as the case may be, among others under existing social programs;
2. Work hand in hand with the local legislative body in crafting ordinances that would deter scavenging which may cause serious health concern. Similarly, an ordinance that would impose penalties, when the need arises, upon the parents, guardians, or persons who would exploit minors and compel them to scavenging;
3. Coordinate with the MHO to provide preventive and curative health services as the case may be to those who are exposed to health dangers resulting from scavenging and waste-picking; and,
4. As much as possible, relocate any scavengers squatting or residing proximate to the disposal facility or within the prohibited zone and provide livelihood opportunities for them.

10.2 Environmental Aspects

The efficient, proper and timely implementation of this Plan will surely have various positive environmental impacts; among others are: (1) protection and conservation of municipal waters, (2) prevention of coastal habitat degradation resulting from water pollution, (3) prevention of leachate contamination of underground potable water resources, and (4) mitigation of impacts of climate change.

Meanwhile, the environmental aspects of the proposed SWM system to be considered, pursuant to Section 40 of RA 9003 and in consideration of municipal profile and WACS study result are as follows:

1. Proximity of the site to the homes of the community's residents and business establishments;
2. Distance of the site from sensitive environmental resources such as bodies of water, aquifers, dams, groundwater reservoir, and watershed areas, among other;
3. The capacity of the chosen area for the proposed municipal eco-park with RCA and other processing and disposal facilities;
4. Accessibility of the site from major roadways or thoroughfares; and
5. Adequacy of earth cover material to comply with the criteria prescribed by the law.

CHAPTER 11:

COST ESTIMATES /

FINANCIAL

ASPECTS

Another important consideration in the formulation of this Plan is its financial aspects. Certainly, with adequate funds, this plan will be workable. Thus, presented in the succeeding tables are the investment cost (capital outlay-vehicles and equipment, and capital outlay-structures and physical development), annual cost (personnel expenses, and maintenance and other operating expenses), funding options, cost evaluation and comparison, and summary.

11.1 Investment Cost

Table 44. Capital Outlay - Vehicles and Equipment, 2020-2029

Item and Description	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Segregation and Source Reduction										
Receptacles for Segregated Wastes	20,000		20,000		20,000	30,000		40,000		50,000
Sub-Total	20,000		20,000		20,000	30,000		40,000		50,000
Collection and Transport										
40 units Eco Tri-bike/Push Cart		100,000	100,000	100,000	100,000		100,000		100,000	
2 units Dump truck		1,000,000				2,000,000				
Sub-total		1,100,000	100,000	100,000	100,000	2,000,000	100,000		100,000	
Materials Recovery and Processing										
Weighing Scales	30,000			30,000		30,000			30,000	
Shredding Machine		300,000					400,000			
Pulverizer Machine		500,000					600,000			
Advanced Machine		1,000,000								
Sub-total	30,000	1,800,000		30,000		30,000	1,000,000		30,000	
Disposal Management										
Mower for Landscaping	30,000					30,000				
Backhoe				2,500,000					3,500,000	
Shredding Machine					300,000					300,000
Pulverizer Machine					500,000					500,000
Sub-total	30,000			2,500,000	800,000	30,000			3,500,000	800,000
Program Management										
Complete Computer Set		50,000				60,000				
Tables, Chairs, Cabinets and other Office Fixtures		100,000				100,000				
Sub-total		150,000				160,000				
TOTAL	80,000	3,050,000	120,000	2,630,000	920,000	2,250,000	1,100,000	40,000	3,630,000	850,000

Table 45. Capital Outlay - Structures and Physical Development, 2020-2029

Item and Description	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Source Reduction										
Purchase of Bayong for Distribution	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000
Sub-Total	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000
Collection and Transport										
Construction of Motor pool					1,000,000				2,000,000	
Sub-total					1,000,000				2,000,000	
Materials Recovery and Processing										
Improvement of MRF	100,000				100,000	200,000				
Improvement of Water and Electrical System	50,000				100,000					
Establishment of Working Area			1,000,000							
Establishment of Recycling Area			1,000,000							
Establishment of Vermi-composting Facility			500,000							
Sub-total	150,000		2,500,000		100,000	300,000				
Disposal Management										
Closure of Controlled Dumpsite and Rehabilitation into an Eco- Park				2,000,000	1,000,000	1,000,000		1,500,000		
Construction of Residual Containment Area and Septic Vaults			1,500,000					1,500,000		
Construction of Run-Off Drainage	200,000				200,000	300,000				300,000
Construction of Perimeter Fence	500,000	500,000								
Construction of Service Roads/Access Road	500,000	1,000,000					1,000,000		2,000,000	
Establishment of Gas Vents and Leachate Collection Pipes	100,000		100,000							
Sub-total	1,300,000	1,500,000	1,600,000	2,000,000	1,200,000	1,300,000	1,000,000	3,000,000	2,000,000	300,000
Program Management										
Construction of Multi-purpose Building		1,000,000					2,000,000			
Establishment of IEC Boards	10,000	10,000	10,000	10,000	10,000	20,000	20,000	30,000	30,000	30,000
Sub-total	10,000	1,010,000	10,000	10,000	10,000	20,000	2,020,000	30,000	30,000	30,000
TOTAL	1,470,000	2,520,000	4,120,000	2,020,000	2,320,000	1,630,000	3,030,000	3,040,000	4,040,000	340,000

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11.2 Annual Costs

Table 46 hereunder shows the breakdown of annual cost for 10 years of plan implementation.

Table 46. Breakdown of Annual Cost

Project	Activities	Cost/Timeframe									
		2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Personnel Expenses	1. Segregation and Source Reduction	1,680,000	1,680,000	1,680,000	1,680,000	1,680,000	1,680,000	1,680,000	1,680,000	1,680,000	1,680,000
	2. Collection and Transport	452,424	452,424	637,272	637,272	637,272	452,424	452,424	637,272	637,272	637,272
	3. Materials Recovery	420,000	420,000	600,000	600,000	600,000	420,000	420,000	600,000	600,000	600,000
	4. Disposal Management	272,424	272,424	401,666	503,332	503,332	272,424	272,424	401,666	503,332	503,332
Maintenance and Other Operating Expenses	1. Collection	175,000	225,000	325,000	525,000	525,000	175,000	225,000	325,000	525,000	525,000
	2. Materials Recovery	25,000	25,000	75,000	75,000	75,000	25,000	25,000	75,000	75,000	75,000
	3. Disposal Management	5,000	5,000	55,000	55,000	55,000	5,000	5,000	55,000	55,000	55,000
	4. Program Management	470,000	475,000	475,000	475,000	475,000	470,000	475,000	475,000	475,000	475,000
Establishment of MENRO Office with permanent personnel and adequate equipment and supplies	1. Allocation for General Services and MOOE	2,844,848	2,999,848	3,343,938	4,784,504	4,784,504	2,844,848	2,999,848	3,343,938	4,784,504	4,784,504
Improvement of SWM system by having reliable vehicles and equipment	1. Purchase of vehicles (eco-trike, dump truck and backhoe)	90,000	2,910,000	130,000	2,640,000	930,000	2,000,000	100,000		100,000	
	2. Purchase of materials and equipment (bayong, receptacles, weighing scale, lawn mower, shredding										

[illegible]

11.3 Funding Options

For the past three years, the major source of funds in the implementation of the SWMP of the municipality was derived from Internal Revenue Allotment (IRA). Table 47 below showed the IRA of the municipality in 2017-2019, the SWM estimated cost based on approved AIP, percent share of the general services from the SWM cost, and the estimated percent share of SWM cost to IRA.

From the total SWM cost, only a minimal amount was spent for development projects. Big percent of program cost was for the general services.

Table 47. IRA of the Municipality, Year 2017 – 2019

Year	Amount (in Peso)	SWM Estimated Cost (based on approved AIP)		Percent Share of the General Services from the SWM Cost	Estimated Percent Share of SWM Cost to IRA
		CDF	GF		
2017	101,289,079.00	2,200,000.00	200,000.00	9.09 %	2.36 %
2018	108,673,811.00	3,000,000.00	500,000.00	16.67 %	3.22 %
2019	119,609,066.00	2,500,000.00	600,000.00	24.00 %	2.59 %

Meanwhile, the only recorded source of revenue generated from SWM is the annual garbage fee collected from establishments in their application/renewal of business permit. Despite the increase of this fee from P165.00 to P200.00 in 2014 upon approval of the revised revenue code; still, the municipality has very limited revenue source. Thus, this plan proposes; especially that barangay-based waste collection system will be adopted, that a monthly garbage fee will be charged to households which will opt to deposit even their biodegradables and recyclables. This revenue will be utilized by the barangays in the operation and maintenance of their barangay MRF and composting facility; as well as labor payment to eco-boys, eco-aides and eco-guards. Meanwhile, revenue that will derive from the annual garbage fee of establishments will still go directly to municipal funds.

It is likewise assumed that with the strict implementation of RA 9003 and related municipal ordinances, there will be additional revenue coming from fines, fees and penalties as estimated in Table 48.

Table 48. Potential Sources of Revenues

Source	Particulars	Cost/Timeframe				
		2020	2021	2022	2023	2024
Fines, fees and penalties	Individual/ establishments/ institutions	25,000	20,000	15,000	10,000	5,000
Collection from garbage fees	Establishments	30,000	55,000	80,000	105,000	130,000
	Households	300,000	400,000	500,000	600,000	700,000
Sale from compost fertilizer	Organic and vermi compost fertilizer	5,000	10,000	20,000	20,000	20,000
Sale from recyclables	Plastics, bottles, metals	5,000	10,000	15,000	20,000	25,000
TOTAL		365,000	495,000	630,000	755,000	880,000

The LGU also considers outside sourcing as another funding option such as in year 2009 when Agencia Española de Cooperación Internacional Para El Desarrollo, a Spanish International Cooperation Agency for Development (AECID) granted the LGU with five hundred thousand pesos for the construction of biodegradable chamber in the municipal waste disposal facility. Since the biggest amount of expenditures will be for the capital outlay; specifically, for the purchase of equipment and vehicle; as well as for structures and physical development, the LGU will prepare and submit individual proposal on these projects for funding of national and international agencies.

11.4 Cost Evaluation and Comparison

It will be noted in Table 41 that for the first five years, the cost for the implementation of SWM is relatively high compared to the projected revenues because of the engineering component for the improvement of facilities, construction of alternative facilities, closure and rehabilitation of controlled dumpsite into an eco-park; including purchase of necessary equipment and vehicles. It is anticipated; on the other hand, that for the next five years of this plan, implementation cost which is

mainly for the annual maintenance and other operating expenses will eventually decrease.

Table 49: Projected Cost and Revenues, 2020-2024

Year	Estimated SWM Cost	Projected Revenues	Percent Income/Lost from the Cost
2020	5,049,848	365,000	0.072279%
2021	9,124,848	495,000	0.054247%
2022	8,488,938	630,000	0.074214%
2023	10,439,504	755,000	0.072321%
2024	9,129,504	880,000	0.096391%

11.5 Summary

Table 50. Summary of Investment Costs, Annual Costs & Annual Revenues, 2020-2024

Cost Items	TOTAL	2020	2021	2022	2023	2024
Investment Cost (capital outlay)	19,250,000	1,550,000	5,570,000	4,240,000	4,650,000	3,240,000
Annual Cost (PS + MOOE)	22,982,642	3,499,848	3,554,848	4,248,938	5,789,504	5,889,504
TOTAL	42,232,642	5,049,848	9,124,848	8,488,938	10,439,504	9,129,504
ANNUAL REVENUES	3,125,000	365,000	495,000	630,000	755,000	880,000

The above data reflects comparison of the projected cost of investment, annual expense and annual revenues relative to the implementation of SWM. Based on the summary of the initiated programs and projects, the municipality has no benefit cost in terms of the return of investments. Any revenue arising from the above investments shall form part of the municipality's initiative programs and projects.

CHAPTER 12:

PLAN

IMPLEMENTATION

12.1 Phases and Responsibilities

There are eight components in the implementation of this plan which are presented in matrix below: engineering component; policy support; administrative/management matters; economic enterprise; capability building; IEC component; incentive and awards; and monitoring and evaluation.

Table 51. Activities and Responsible Center

Activity	Responsible Persons
Engineering Component	
I. Development of Municipal Ecological SWM Park/Eco-park 1. Improvement of Mun. MRF and Greenhouse/Plant Nursery 2. Improvement of Water and Electrical System 3. Establishment of Working Area 4. Establishment of Recycling Area 5. Establishment of Vermi-composting Facility 6. Construction of Residual Containment Area and Septic Vaults 7. Construction of Run-Off Drainage 8. Continuation of the Construction of Perimeter Fence 9. Continuation of the Construction of Access and Service Roads 10. Establishment of Gas Vents and Leachate Collection Pipes II. Safe Closure and Rehabilitation of Controlled Dumpsite 1. Soil Covering 2. Construction of Motorpool 3. Construction of Multi-purpose Hall	MSWMB MEO
Policy Support	
1. Lobby to the SB re: formulation and passing of other concrete ordinances with regards to the enforcement of RA 9003 2. Encourage and assist barangays in formulating and passing their own ordinance on SWM	Mayor's Office SB BSWMC
Administrative/Management Matters	
1. Creation and establishment of MENRO with additional personnel who will focus on delineated duties such as in conduct of IECs, implementation and monitoring of segregation, collection, MRF operation/management, composting and final disposal 2. Purchase of office supplies, equipment and protective gears for effective operation in MENRO 3. Procurement of vehicles and equipment such as eco-trike, dump truck, back hoe, weighing scale, mower, shredding machine, pulverizer machine, and advanced machine	LCE SB Admin. Office MENRO
Economic Enterprise	
1. Assistance to small scale entrepreneurs on recycling 2. Initiate/Promote alternative livelihood/IGPs on recycling 3. Venture on possible market of recycled products, indigenous handicrafts, organic fertilizer & vermi compost	LCE MSWMB MENRO MAO PESO/

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	DOLE/DTI
Capability Building	
1. Facilitate trainings of BSWMC 2. Conduct trainings among SWM personnel, staff, and other stakeholders/partners 3. Regular conduct of meetings, capability enhancement/team building activities among the TWG members 4. Attendance/participation in seminars & trainings of EMB, NSWMC and other agencies	MSWMB TWG MENRO
IEC Component	
1. Development, preparation and dissemination of all IEC materials 2. Conduct of separate re/orientations and briefings to groups of stakeholders 3. Partnership with other institutions 4. Facilitate Trainers' Training 5. Conduct of IEC Campaigns 6. Sectoral/ Group Exposure to Proposed Mun. Eco-park	MENRO TWG on IEC Other Institutions/Civic Groups
Incentive and Awards	
1. Giving of awards and recognitions to individuals and groups for outstanding SWM practices 2. Granting of SWM Seals of Approval to establishments 3. Conduct of Annual Search for Best SWM Implementer and Eco-friendly Contest 4. Implementation of Goods for Garbage Project	
Monitoring and Evaluation	
1. Conduct of regular inspection to groups of waste generators 2. Monitoring of execution of proper SWM system 3. Review and consolidation of reports coming from stakeholders 4. Preparation of consolidated report and presentation of the same	Mun. Monitoring and Evaluation Team

12.2 Milestones

During the 10-year period, the municipality of Magallanes able to achieve the following:

1. SWM TWGs organized and MENRO created by 2019 and 2020; and functional onwards
2. MRF improved by 2020 and effectively managed and maintained onwards
3. 100% BSWMC organized & functional in pilot barangays by 3rd quarter of 2020
4. 100% BMRF established in pilot barangays by the end of 2020 and operational/maintained by 2021 onwards
5. BMRF in Cluster 2 to 4 established by the end of 2023
6. 100 % people awareness on RA 9003 and related Municipal Ordinances by the last quarter of 2020 and compliant to the new SWM system starting first quarter of 2021

7. Facilities such as working area, recycling facility, vermi-composting area, residual containment area and septic vault established from 2022 to 2023
8. Equipment such as dump truck, shredder machine, pulverizer purchased and be made available by 2021
9. New SWM system (segregation, collection, diversion & final disposal) in pilot barangays introduced by 2020 and strictly implemented by 2021
10. Closure and rehabilitation of controlled dumpsite realized in 2019
11. Municipal Eco-Park developed and sustained by 2023 onwards
12. Diversion targets set in this plan achieved each year
13. IECs and incentive programs implemented year-round

12.3 Implementation Schedule

In order to guide the implementation of all the programs, projects, activities and strategies; and eventually achieve the goals and targets, specific schedule in 10-year period of each activity under the six components is set in Table 52.

Table 52. SWM Plan Implementation Schedule, Municipality of Magallanes, 2020-2029

Activity	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Engineering Component										
1. Improvement of Mun. MRF and Greenhouse/Plant Nursery										
2. Improvement of Water and Electrical System										
3. Establishment of Working Area										
4. Establishment of Recycling Area										
5. Establishment of Vermi-composting Facility										
6. Construction of Residual Containment Area and Septic Vaults										
7. Construction of Run-Off Drainage										
8. Continuation of the Construction of Perimeter Fence										
9. Continuation of the										

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Construction of Access and Service Roads										
10. Establishment of Gas Vents and Leachate Collection Pipes										
11. Safe Closure and Rehabilitation of Controlled Dumpsite										
12. Construction of Motorpool										
13. Construction of Multi-purpose Hall										
14. Development and maintenance of eco-park										
Policy Support										
1. Lobby to the SB re: formulation and passing of other concrete ordinances with regards to the enforcement of RA 9003										
2. Encourage and assist barangays in formulating and passing their own ordinance on SWM										
Administrative/Management Matters										
1. Creation and establishment of MENRO with additional personnel who will focus on delineated duties such as in conduct of IECs, implementation and monitoring of segregation, collection, MRF operation/management, composting and final disposal										
2. Purchase of office supplies, equipment and protective gears for effective operation in MENRO										
3. Procurement of vehicles and equipment such as eco-trike, dump truck, back hoe, weighing scale, mower, shredding machine, pulverizer machine, and advanced machine										
Economic Enterprise										
1. Assistance to small scale entrepreneurs on recycling										
2. Initiate/Promote alternative										

livelihood/IGPs on recycling										
3. Venture on possible market of recycled products, indigenous handicrafts, organic fertilizer & vermi compost										
Capability Building										
1. Facilitate trainings of BSWMC										
2. Conduct trainings among SWM personnel, staff, and other stakeholders/partners										
3. Regular conduct of meetings, capability enhancement/team building activities among the TWG members										
4. Attendance/participation in seminars & trainings of EMB, NSWMC and other agencies	As need arises									
IEC Component										
1. Development, preparation and dissemination of all IEC materials										
2. Conduct of separate re/orientations and briefings to groups of stakeholders										
3. Partnership with other institutions										
4. Facilitate Trainers' Training										
5. Conduct of IEC Campaigns										
6. Sectoral/ Group Exposure to Proposed Mun. Eco-park										
Incentive and Awards										
1. Giving of awards and recognitions to individuals and groups for outstanding SWM practices										
2. Granting of SWM Seals of Approval to establishments										
3. Conduct of Annual Search for Best SWM Implementer and Eco-friendly Contest										
4. Implementation of Goods for Garbage Project										
Monitoring and Evaluation										
1. Conduct of regular inspection to groups of waste generators										

2. Monitoring of execution of proper SWM system										
3. Review and consolidation of reports coming from stakeholders										
4. Preparation of consolidated report and presentation of the same										