

Final Report
on
Consulting Services
for
Solid Waste Management
(Environmental Management)
within
Project Micropolis
in
Metro Manila, Republic of the Philippines

CHAPTER 23

ATTACHMENT 7: SOLID WASTE MANAGEMENT PLANS FOR THE FIVE CORE BARANGAYS

A cooperation between



and



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23 ATTACHMENT 7: SOLID WASTE MANAGEMENT PLANS FOR THE FIVE CORE BARANGAYS

Solid Waste Management Plan for Barangay Pinagkaisahan

Solid Waste Management Plan Of Barangay Pinagkaisahan

INTRODUCTION

Barangay Pinagkaisahan was created by City Ordinance No. 5377, s-63 on March 21, 1963 as a legal barrio. It became a barangay under Presidential Decree No. 557 issued on September 21, 1974 when all barrios in the Philippines were converted into barangays. It is bounded on the north by Lagarian (Diliman) Creek, EDSA on the east, New York street on the south, and E. Rodriguez avenue on the west.

Land area, population and income. The barangay has a gently sloping topography from southeast going down the northwest with a total land area of 32.4749 hectares. Its total population is 10,195 with 1,906 households and population density of 313.93 persons/ha. It has an average annual income of PhP93,672.10 pesos. Its total annual budget amounts to PhP 3,504,092.29.

Environmental condition. The barangay is comparatively clean compared to other urban communities. The big problem is that solid wastes are dumped along several streets, particularly two or three days before waste collection on *Mondays and Thursdays*. Pushcart boys and scavengers searching for recyclables scatter all types of wastes along the streets, as there are no public garbage bins. The collected solid wastes are disposed at the Payatas dumpsite.

Slum areas. Majority of the informal settlers live along the Lagarian creek and sometimes under the bridge of EDSA fronting Nepa-Q-Mart.

The solid waste management plan. This *Solid Waste Management Plan* (SWMP) is prepared in line with environmental protection and solid waste management program of Quezon City pursuant to the provisions of Republic Act 9003: Ecological Solid Waste Management Act of 2000, and the directive of DILG per Memorandum Circular No. 2001-38. This activity is part of the solid waste management project funded by the Swedish International Development Cooperation Agency (SIDA), with Conexor Sensus AB as our Swedish consultant, the barangay being one of the pilot areas of DILG *Project: Micropolis*,

Part 1: SUMMARY of the Barangay Solid Waste Management Plan

Vision. Barangay Pinagkaisahan is planned to be a clean and beautiful community that is safe, secured and self contained where commerce is active to provide livelihood to its constituents.

Areas for waste management. The waste management areas considered by the barangay runs along the provisions of RA 9003 as follows: a) Waste collection and transfer; b) Waste processing and pre-treatment; c) Waste reduction at source; d) Reuse and recycling; e) Composting (focus on separate collection of organic materials for composting); f) Solid waste facility or MRF; g) Education and public information; h) Special (hazardous) wastes; i) Incentive program; and j) Funding and resource requirements.

Goals. At the end of the 10-year planned period, the following goals shall have been accomplished by the barangay:

General goal – Efficient solid waste management system instituted in the whole barangay.

Specific goals – Waste collection, transfer and processing are improved; waste generation is minimized; recycling and composting are undertaken; small solid waste facilities or MRF established; environmental education and public information campaign conducted year-round throughout the barangay; SWM incentive program is set up; and required resources and funding for waste management programs/projects in the barangay is sustainably secured.

Waste management indicators. The indicators of achievement for the effective implementation of the SWM Plan are:

- a. Efficiency of waste collection and transfer.
- b. Utilization of methods and improvement of facilities for processing and pre-treatment of waste.
- c. Effectiveness of waste reduction at source, particularly segregation and recycling.
- d. Continuous improvement of reuse and recycling scheme.
- e. Collection of organic materials for delivery to composting plant in adjacent barangay.
- f. Establishment of small solid waste facility or MRF for recyclables.
- g. Conduct of public health and environmental education, and effectiveness of public information campaign.
- h. Minimization of health and safety risks in the handling, storage and transport of special (hazardous) wastes.
- i. Establishment of incentive programs for residents, community organizations, waste management teams, barangay officials and others.
- j. Acquiring needed resources – human, financial and material – on time.

Component programs. The SWMP of Barangay Pinagkaisahan has 10 major components. These are: 1) Collection and transfer; 2) Waste processing; 3) Source reduction; 4) Recycling; 5) Collection of organic materials for composting; 6) Solid waste facility or MRF; 7) Education and public information; 8) Special waste; 9) Resource requirement and funding; and 10) Incentive programs.

Part 2: BARANGAY PROFILE & EXISTING SITUATION

2.1 The Barangay Profile

2.1.1 Brief description of the barangay and background information

Description of the Barangay:

Barangay Pinagkaisahan was created by City Ordinance No. 5377, s-63 on March 21, 1963 as a legal barrio. It became a barangay under Presidential Decree No. 557 issued on September 21, 1974 when all barrios in the Philippines were converted into barangays. It is bounded on the north by Lagarian (Diliman) Creek, EDSA on the east, New York street on the south, and E. Rodriguez avenue on the west.

Its total land area is 32.4749 hectares.

Barangay finance – It has an average annual income of PhP93,672.10 pesos; IRA (Internal Revenue Allotment) share, PhP1,882,338.00; and RPT (Real Property Tax) share of PhP1,528,092.19.

TABLE 1. Average Annual Income, IRA Share and RPT Share (Philippine Peso)

Financial Data	1999	2000	2001	2002	2003
Average annual income	69,288.49	84,563.90			93,672.10
IRA Share	1,531,165.00	1,681,548.00			1,882,338.00
Share in Real Property Tax	1,248,385.62	1,398,580.17			1,528,092.19
TOTAL	2,848,839.11	3,164,692.07			3,504,092.29

Background Information and General Situation:

Socio-economic situation – The barangay is composed mostly of middle income families. Old-rich residents (estimated to be one percent of the population) are found in the streets of F. Manalo, Sgt. Catolos, Maryland, Detroit, Chicago and Egea. Slum dwellers are mostly situated in portions of Bernardo Park, and the streets of Ermin Garcia and Maryland.

The predominant economic enterprises in the barangay are sari-sari stores, although there are some business establishments along EDSA, New York and E. Rodriguez such as Dagupan Bus terminal, BayanTel head office, Gift Gate, Traditional Food Corp. (producers of Jungle Juice, Pinky’s Nuts, etc.), Wilson Shoes and Alpha Records. Several lumber and hardware establishments are also located along major roads.

Social & cultural – The Bernardo Park is the social and cultural center of the barangay. Radio-television broadcast are aired lived from the park during the 1950s until mid-60s. The barangay was one of the residential areas of the upper class of Quezon City.

Slum areas – Majority of the informal settlers live along the Lagarian creek and under the bridge of EDSA fronting Nepa-Q-Mart.

Physical-spatial features & infrastructures – The most prominent landmarks of the barangay are the Bernardo Park, the first public park in Quezon City, and the Ramon Magsaysay (Cubao) High School, which is located at the original of the city hall.

2.1.2 Estimated population and population projection for a 10-year period

Barangay Pinagkaisahan has 1,906 households with a total population of 10,195 and a population density of 313.93 persons/ha. The projected population from 2004 to 2013 is presented in Table 2.

TABLE 2. Population, Population Density and Number of Households of Bgy. Pinagkaisahan

Plan Year	Calendar Year	Present / Projected Population	Population density (Persons/hectare)	Number of Households
	1995	10,195	313.93	1,906
	2000	11,910	366.74	2,247
	2001	12,303	378.85	2,321
	2002	12,709	391.35	2,398
0	2003	13,128	404.25	2,477
1	2004	13,561	417.58	2,559
2	2005	14,022	431.78	2,646
3	2006	14,499	446.47	2,736
4	2007	14,992	461.65	2,829
5	2008	15,517	477.81	2,928
6	2009	16,060	494.53	3,030
7	2010	16,622	511.84	3,136
8	2011	17,221	530.28	3,249
9	2012	17,841	549.38	3,366
10	2013	18,483	569.15	3,487

2.2 Solid Waste Management: Existing Situation in the Barangay

2.2.1 Current state and trends of solid waste management in the barangay

Current state. The current practice of solid waste management in the barangay is the regular collection of garbage on *Mondays and Thursdays* coordinated with the Environmental Protection and Waste Management Department of Quezon City (QC-EPWMD). All types of wastes, both segregated and non-segregated are collected by open dump trucks. The collected wastes are brought directly to the Payatas dumpsite.

Segregation of waste at household level has stopped temporarily due to the complaint of residents that the wastes are mixed together in one dump truck during collection.

Problems. The major problem is the practice of pushcart boys collecting recyclables from plastic bags and leaving the waste scattered on the streets and sidewalks. This is reportedly the cause of community health problems, particularly occurring during rainy season,.

Trends. Reduction of waste are planned through the reuse and recycling of recyclable wastes and composting of biodegradables. This scheme will be implemented in year 2004.

2.2.2 Profile of sources of solid wastes

Some 85% of solid wastes of the barangay come from residential households and several commercial establishments. Garden wastes, street sweepings, and debris from construction/demolition are also generated in the area adding some 15-25%.

2.2.3 Estimated solid waste generation and projection and waste characterization

Estimated solid waste generation and projection by source. No official records of waste generation has been generated in the barangay until the SIDA-assisted project was implemented and conducted weighing operations in two waste collection cells sometime in June-August 2003. The total volume of garbage for 2003 is estimated at 6,957.84 kg/day or an average of 2,539.61 tons/year.

The projected waste generation rate of the barangay is estimated 7,187 kg/day or 2,623.38 tons/year for 2004 and expected to generate 9,796 kg/day or 3,575.54 tons/year by 2013 (see Table3 below).

TABLE 3. Projected Waste Generation of Bgy. Pinagkaisahan

Plan Year	Calendar Year	Projected Population	Projected Waste Generation	
			Kg/Day	Tons/Year
0	2003	13,128	6,958	2,539.61
1	2004	13,561	7,187	2,623.38
2	2005	14,022	7,432	2,712.56
3	2006	14,499	7,684	2,804.83
4	2007	14,992	7,946	2,900.20
5	2008	15,517	8,224	3001.76
6	2009	16,060	8,512	3,106.81
7	2010	16,622	8,810	3,215.53
8	2011	17,221	9,127	3,331.40
9	2012	17,841	9,456	3,451.34
10	2013	18,483	9,796	3,575.54

Waste characterization. The weighing experience in the barangay produced an estimated 5-10% recyclable and 40% biodegradable materials. The barangay garbage coordinators claim that the amount of recyclables are low because most of these materials are sold to pushcart boys or junkshops, particularly metals, glass bottles, newspapers, magazines, directories, plastic packaging, etc.

2.2.4 Characteristics and conditions of collection, storage, processing, and disposal

Collection. Collection of solid waste is undertaken twice a week, every Mondays and Thursdays, by three (3) open dump trucks from each individual residential households and commercial establishments.

The barangay is subdivided into three (3) major collection cells covering the following streets: 1) Ermin Garcia St.; 2) New Orleans, Chicago and Detroit streets; 3) Maryland, Sgt. Catolos and Felix Manalo streets.

Garbage on the boundary roads of the barangay (EDSA, New York street, Judge Jimenez street and E. Rodriguez avenue) not covered by the regular cells they are collected by dump trucks assigned by MMDA-QC-EPWMD.

Storage and processing. There are no designated waste storage areas in the barangay. However, street sweepers who sells the recyclables to a junkshop located in the barangay selectively undertake segregation and recycling.

Waste disposal. Like all barangays in Quezon City, collected wastes are hauled to Payatas Dumpsite for disposal.

2.2.5 Location of waste management facilities

The barangay has two existing small recycling stations where recyclable materials are deposited prior to selling or collection by bulk buyers. No waste containers or receptacles are provided by the barangay. Private residential buildings provide their own garbage receptacles.

Part 3: BARANGAY SOLID WASTE MANAGEMENT PLAN

3.1 Overview of the Barangay Solid Waste Management Plan

3.1.1 Barangay Solid Waste Management Plan in a nutshell

Vision and strategy. Barangay Pinagkaisahan is planned to be a clean and beautiful, community that is safe, secured and self contained where commerce is active to provide livelihood to its constituents. The main strategy for achieving this vision is through an efficient solid waste management system consisting of systematic waste collection, transfer and processing system; waste reduction and recycling; setting up of *mini*-MRF; education and information campaign; and providing awards and incentives.

Main areas for waste management. The waste management areas considered by the barangay runs along the provisions of RA 9003 as follows: a) Waste collection and transfer; b) Waste processing and pre-treatment; c) Waste reduction at source; d) Reuse and recycling; e) Composting (mainly collection of organic materials to be brought to nearby composting facilities; f) Solid waste facility or MRF for recyclables; g) Education and public information; h) Special (hazardous) wastes; i) Incentive program; and j) Funding and resource requirements.

Goals. At the end of the 10-year planned period, the following goals shall have been accomplished by the barangay:

General goal – Efficient solid waste management system instituted in the whole barangay.

Specific goals – Waste collection, transfer and processing are improved; waste generation is minimized; recycling is undertaken; existing solid waste facilities or MRF upgraded; environmental education and public information campaign conducted year-round throughout the barangay; SWM incentive program is set up; and required resources and funding for waste management programs/projects in the barangay is sustainably secured.

Major waste management indicators. The indicators of achievement for the effective implementation of the SWM Plan are:

- a. Efficiency of waste collection and transfer.
- b. Utilization of methods and improvement of facilities for processing and pre-treatment of waste.
- c. Effectiveness of waste reduction at source, particularly segregation and recycling.
- d. Continuous improvement of reuse and recycling scheme.
- e. Collection of organic materials for delivery to composting plant in adjacent barangay.
- f. Establishment of small solid waste facility or MRF for recyclables.
- g. Conduct of public health and environmental education, and effectiveness of public information campaign.
- h. Minimization of health and safety risks in the handling, storage and transport of special (hazardous) wastes.
- i. Establishment of incentive programs for residents, community organizations, waste management teams, barangay officials and others.
- j. Acquiring needed resources – human, financial and material – on time.

Component programs. The SWMP of Barangay Pinagkaishan has 10 major components. These are: 1) Collection and transfer; 2) Waste processing; 3) Source reduction; 4) Recycling; 5) Collection of organic materials for composting; 6) Solid waste facility or MRF; 7) Education and public information; 8) Special waste; 9) Resource requirement and funding; and 10) Incentive programs.

Solid waste management action plan.

The general action plan for the implementation of solid waste management program is presented below.

Period	Action Plan	Results
2004-2005	<p>Develop solid waste management projects focused on waste reduction through re-use, recycling, composting, and setting up of MRF as crucial strategy.</p> <p>Initiate program for building the capacity of barangay waste management action team.</p> <p>Start health and environmental education, and public information campaign. Provide residents with basic information on solid waste management.</p> <p>Set up scheme for community participation in waste management projects.</p> <p>Commence solid waste management projects in selected puroks (neighborhood areas) of the barangay improving the waste collection and transfer system.</p> <p>Start setting up of incentive program.</p> <p>Renovate existing small MRF for solid wastes – adding storage containers and receptacles</p> <p>Mobilize adequate resources [human, financial and material] for SWM projects.</p>	<p><i>Improvements in solid waste management underway in the barangay</i></p>
2006-2008	<p>Solid waste management projects underway in all neighborhood areas of the barangay improving the waste collection and transfer system, and solid waste management facilities.</p> <p>Continue building capacity for full implementation of solid waste management program.</p> <p>Step up health and environmental education, and public information campaign.</p> <p>Enhance incentive programs.</p> <p>Fully establish small MRF facilities.</p> <p>Secure sufficient resources [human, financial and material] for SWM projects.</p>	<p><i>Solid waste management improved.</i></p>
2009-2013	<p>Continue implementing the solid waste management plan with more improvements in waste collection and transfer system, and upgrading of solid waste management facilities.</p> <p>Continue building capacity for specialized solid waste management projects.</p> <p>Strengthen health and environmental education, and public information campaign.</p> <p>Firm up incentive programs.</p> <p>Fully establish MRF for solid wastes – storage containers, collection points or transfer station.</p> <p>Sufficient resources [human, financial and material] adequately provided to SWM projects.</p>	<p><i>Solid waste management greatly improved.</i></p>

3.1.2 Summary description of the solid waste management components

As provided for in RA 9003, the major components of the SWMP are: Collection and transfer; processing; source reduction, recycling and composting; solid waste facility; education and public information; special waste; resource requirement and funding; incentive programs. The summary descriptions of these components are described below.

- a. **Collection and transfer** – This component program seeks to improve waste collection and transport of solid waste within the barangay. It targets the reduction of the number of garbage collection trucks from the present six (6) trucks every collection days (Mondays and Thursdays) to two (3) trucks at the end of 2013. The barangay will have only three (3) collection cells; hence, rerouting of truck itinerary will be instituted.
- b. **Processing** – This program will focus on the *segregation* of different types of solid waste for re-use, recycling and composting. The existing *recycling center* will be improved and redesigned and containers or receptacles will be set up.
- c. **Source reduction** – The barangay will reduce sufficient amount of waste coming from households and commercial/business establishments through waste segregation and recycling. Target: 65% reduction of waste by end of 2013.
- d. **Recycling** – The focus of this program is the collection of recyclable materials at its primary source—the households, offices and business establishments. Sufficient amount of solid wastes will be reduced; target: 80% of reusable and recyclable materials are recycled, or collected and brought to the barangay recycling centers.
- e. **Collection of organic materials** – This program deals with the efficient collection of “compostable” materials. Composting of organic materials will not be undertaken in the barangay. Collected materials will be brought to adjacent barangays with composting equipment and facilities.
- f. **Solid waste facility** – This component intends to upgrade two (2) existing recycling station into a mini-materials recovery facility (MRF) which shall serve as temporary storage of solid wastes, collection points, or transfer station for recyclables.
- g. **Education and public information** – A barangay-wide health and environmental education, public information campaign on solid waste management, in general, and waste reduction, segregation and collection, recycling and composting, in particular will be implemented by the barangay.
- h. **Special waste** – This component seeks to promote safe handling, storage and transport of hazardous wastes to minimize its health and environmental risks and impact due to improper procedure in handling and disposal of these types of wastes.
- i. **Incentive program** – The barangay will initiate special awards which will provide incentives, *cash or otherwise*, to residents, community organizations and business enterprises actively supporting and participating in the solid waste management programs of the barangay.
- j. **Resource requirement and funding** – This component will secure adequate resources [human, financial and material] for the implementation of the projects and activities relating to the solid waste management program of the barangay.

3.2 Vision of Barangay Solid Waste Management

Barangay Pinagkaisahan is planned to be a clean and beautiful, community that is safe, secured and self contained where commerce is active to provide livelihood to its constituents.

An efficient solid waste management system will be installed in the barangay to achieve this vision. This will include mini-resource centers (micro-MRF) or small enterprises for recyclable materials.

3.3 Barangay Solid Waste Management Strategy

The main strategy for achieving the above-stated vision are the systematic waste collection, transfer and processing system; waste reduction and recycling; setting up of *mini*-MRF; education and information campaign; providing awards and incentives; and securing adequate funds for the SWM program.

More specifically, the strategies for solid waste management includes:

- a) Instituting innovative approaches for efficient solid waste management.
- b) Reducing waste at source through reuse and recycling, and collection of organic materials.
- c) Upgrading of waste management facilities.
- d) Encouraging community participation.
- e) Instituting accountability, integrity and transparency in local governance.
- f) Developing a clean and healthful urban environment and livable barangay community.

3.4 Key Areas for Solid Waste Management and Issue Analysis

3.4.1 Key areas for solid waste management

The key areas for attaining the vision the SWM Plan are the following:

- a. Waste collection and transfer
- b. Waste processing and pre-treatment
- c. Waste reduction at source, particularly segregation and recycling
- d. Reuse and recycling scheme
- e. Solid waste facility or MRF
- f. Education and public information
- g. Handling, storage and transport of hazardous wastes
- h. Incentive program
- i. Provision of human, financial and material resources

3.4.2 Critical issues

The major issues affecting the efficient implementation of the solid waste management plan are:

- a. Consistency of time schedules for garbage collection and transport
- b. Effective waste segregation, recycling and reduction system
- c. Active participation of the community and non-government organizations
- d. Implementation of an effective education and public information campaign
- e. Provision of incentives for cooperation and participation in the SWM program of the barangay.

3.5 Solid Waste Management Goals and Objectives

3.5.1 Management indicators for the realization of the vision

The identified management indicators, consistent with the provisions of RA 9003, for achieving the SWM vision of the barangay solid waste management are defined as follows:

- a. Efficiency of waste collection and transfer.

- b. Utilization of methods and improvement of facilities for processing and pre-treatment of waste.
- c. Effectiveness of waste reduction at source, particularly segregation and recycling.
- d. Continuous improvement of reuse and recycling scheme.
- e. Installation of composting equipment and production/marketing of compost.
- f. Establishment of solid waste facility or MRF.
- g. Execution of public health and environmental education, and effectiveness of public information campaign.
- h. Prevention or minimization of health and safety risks in the handling, storage and transport of special (hazardous) wastes.
- i. Setting up of incentive programs for residents, community organizations, waste management teams, barangay officials and others.
- j. Provision of appropriate and timely resources.

3.5.2 Solid waste management goals

The goals of this SWM Plan: *At the end of the 10-year planned period, the following goals shall have been achieved:*

General goal:

Efficient solid waste management system instituted in the whole barangay.

Specific goals:

- ◆ Waste collection, transfer and processing are improved
- ◆ Waste generation is minimized
- ◆ Recycling is effectively undertaken
- ◆ Existing solid waste facilities or MRF upgraded
- ◆ Environmental education and public information campaign conducted year-round throughout the barangay
- ◆ SWM incentive program is set up
- ◆ Required resources and funding for waste management programs/projects in the barangay is secured

3.5.3 Objectives

The achievement of these goals shall be reflected in the attainment of the following objectives:

1. Improved waste collection and transport to disposal station or final disposal sites, efficient crew operations and use of modern transport equipment.
2. Waste generation rate minimized, waste at source reduced; use of household, office and building storage containers; refuse management at home, offices, medium-rise buildings and commercial premises improved.
3. Sizeable portion of waste generated are reused and recycled.
4. Existing solid waste facilities or MRF upgraded – storage containers and receptacles provided.
5. Year-round implementation of environmental education and public information campaign throughout the barangay.
6. Set up incentive program for waste management.
7. Secure required resources and funding for waste management programs/projects in the barangay.

3.6 Solid Waste Management Component Programs and Action Plan

3.6.1 Collection and transfer

- a. **Overview of the component program** – This component program seeks to improve waste collection and transport of solid waste within the barangay. It targets the reduction of the number of garbage collection trucks from the present six (6) trucks every collection days (Mondays and Thursdays) to two (3) trucks at the end of 2013. The barangay will have only three (3) collection cells; hence, rerouting of truck itinerary will be instituted.
- b. **Situation analysis** – Six (6) dump trucks are currently used in collecting garbage in the barangay. Sometimes there are more wastes than expected, particularly on Mondays, an additional (1) truck is requested from QC-EPWMD to collect excess garbage. Dump trucks cannot penetrate areas along the Lagarian creek; hence, the residents bring their wastes out and dump them on the sidewalks and street pavements. This has always been the problem of the barangay particularly along Ermin Garcia street where dumping of garbage is unchecked.
- c. **Program objectives** – At the end of 2013, the barangay wants to collect 90% garbage collection and transport all these wastes to disposal station or final disposal sites using only three (3) modern waste collection trucks. The barangay seeks to own its modern transport equipment to improve waste collection and transport, as well as crew operations.
- d. **Action plan** – The present waste collection cells shall be redesigned in line with the schedule of waste reduction at source (households). Segregation of different types of solid waste for re-use and recycling, will begin in early 2004 with the strict enforcement of barangay ordinance on solid waste management. Only segregated waste will be collected. The barangay will establish strategic *collection points* for the temporary storage of solid waste while awaiting collection and transfer to processing sites or to final disposal sites. Properly designed containers or receptacles will be provided in these collection points. The barangay will buy its own transport equipment beginning 2006 with one (1) truck, then one (1) truck each in 2009 and 2012.

3.6.2 Processing

- a. **Overview of the component program** – This program will focus on the *segregation* of different types of solid waste for re-use, recycling and composting. The existing *recycling center* will be improved and redesigned and containers or receptacles will be set up.
- b. **Situation analysis** – Waste generated by households are usually not segregated and mixed-up in plastic bags or waste containers. These are collected individually from the household during collection days (Mondays and Thursdays) by dump trucks. No processing are undertaken in the households nor in housing condominiums and townhouses within the barangay. Segregation program was initiated before, but it did not succeed due to poor participation of the community. Residents who segregate their garbage stopped segregating their garbage because only one truck collects both the recyclables and organic materials.
- c. **Program objectives** – At the end of 2013, garbage in the barangay shall be processed through an efficiently segregation system. No garbage will be collected if not segregated at source.
- d. **Action plan** – The barangay will strictly enforce existing barangay ordinance on solid waste management. The same will be updated to comply with the provisions of RA

9003 and the directive of the DILG on this matter. Beginning 2004, the barangay will strongly campaign for waste segregation to minimize solid wastes to be collected by dump trucks. Recyclables shall be collected by the barangay collection brigades and brought to the existing recycling center, which will also be upgraded into a mini-MRF.

3.6.3 Source reduction

- a. **Overview of the component program** – The barangay will reduce sufficient amount of waste coming from households and commercial/business establishments through waste segregation and recycling. Target: 65% reduction of waste by end of 2013.
- b. **Situation analysis** – The barangay generates an estimated 208.74 tons of wastes in year 2003. The Environment Committee calculates approximately the generation of 215.62 tons beginning 2004, it is expected to increase to 293.88 tons by year 2013. Organic materials are usually mixed up with reusables and recyclables, making it difficult to reduce waste at source.
- c. **Program objectives** – The objective is to reduce waste at source by means of *waste segregation* in combination with reuse and recycling. This component will encourage of the use of containers and introduce effective trash management at home, offices, large buildings and commercial premises. The barangay is targeting a reduction of 25% in the first three years, another 20% during the following three years, and finally 20% in the last four years, for a total of 65% reduction of waste. [The barangay do not intend to go into composting, but organic wastes will be collected separately.]
- d. **Action plan** – The barangay will reduce the waste generated at source is through segregation, mainly into reusables, recyclables and organic materials. The segregated wastes shall be collected by barangay collection brigades from the households and offices, and brought to the barangay *recycling centers* where the improperly separated wastes will be properly segregated and manually classified further into different types (e.g. metals, glass, bottles, plastics, plastic packages, papers, corrugated papers, cardboards, tin cans, aluminum containers, etc.) Organic materials will be transferred to composting facilities in nearby Kamuning. Trained workers will cautiously handle hazardous waste from a few medical clinics and related establishments.

3.6.4 Recycling

- a. **Overview of the component program** – The focus of this program is the collection of recyclable materials at its primary source—the households, offices and business establishments. Sufficient amount of solid wastes will be reduced; target: 80% of reusable and recyclable materials are recycled, or collected and brought to the barangay recycling centers.
- b. **Situation analysis** – Recyclable wastes and reusable materials, such as typewriting papers, newspapers, magazines, directories, glass bottles, metals, tin cans and plastic bottles, are normally sold to “pushcart boys,” roaming the barangay. It is estimated that more than 80% of recyclables end up in the hands of pushcart boys and waste scavengers. The problem of recycling revolves around the intense competition between pushcart boys/scavengers-junkshops, crew (*paleros*) of dump trucks who also collects recyclables and their bulk buyers in the Payatas dump site, and the barangay workers engaged in collecting and selling recyclable materials.
- c. **Program objectives** – The aim of this component is to recycle 80% of reusable and recyclable wastes generated in the barangay by means of an efficient waste segregation with the support and cooperation of the community.
- d. **Action plan** – The steps to be taken in the implementation of the recycling program includes: re-introduction of segregation measures through barangay ordinance which

encourages separation of all reusable and recyclable materials; utilization of the barangay waste collection brigade; upgrading of existing recycling centers and improving its buying and selling operations; and setting up arrangements and procedures for the marketing of reusable and recyclable materials. Incentives, *cash or otherwise*, will be incorporated in the recycling program to provide rewards to residents, establishments and organizations actively participating in the program.

3.6.5 Collection of Organic Materials for Composting

- a. **Overview of the component program** – This program deals with the efficient collection of “compostable” materials. Composting of organic materials will not be undertaken in the barangay. Collected materials will be brought to adjacent barangays with composting equipment and facilities.
- b. **Situation analysis (*addressed by the program*)** – Organic wastes of the barangay are normally mixed with other solid wastes. Organic materials are usually placed in separate plastic bag by residents; while organic materials from restaurants and caterers are usually mixed with food packaging materials, mostly plastics or *styrofoam*. It is expected that the introduction of recycling project will facilitate waste management in the barangay.
- c. **Program objectives** – The purpose of this component is to collect at least 90% of organic materials generated in the barangay and send these materials to a nearby *composting plant* operated by adjacent barangay. The barangay will assist in the immediate operation composting equipment presently assigned to Bgy. Kamuning by Congresswoman Nanette Castelo-Daza. Bgy. Pinagkaisahan will cooperate with Bgy. Kamuning in the proper operation of the composting plant so that health and environmental risks and impact are minimized.
- d. **Action plan** – The implementation of the composting component involves for the selection of appropriate types of organic wastes. Processing of organic materials shall be instituted to make sure that only the acceptable types of organic wastes are brought to the composting plant.

3.6.6 Solid waste facility

- a. **Overview of the component program** – This component intends to upgrade two (2) existing recycling station into a mini-materials recovery facility (MRF) which shall serve as temporary storage of solid wastes, collection points, or transfer station for recyclables.
- b. **Situation analysis** – Barangay Pinagkaisahan has two recycling stations used for the storage of recyclable materials usually consisting of glass, bottles, plastics, plastic packages, papers, corrugated papers, cardboards, tin cans, aluminum containers, etc. However, the recycling stations have limited capacity due to its small area. No other place are available within jurisdiction of the barangay. The only way to resolve the problem is to upgrade the existing facility into a *mini-* or *micro-*MRF. Hence, the barangay has to make arrangements with neighboring barangays or the QC-EPWMD for setting up a common MRF for neighboring barangays.
- c. **Program objectives** – The intention of this component program is to upgrade two (2) existing recycling station into a mini-materials recovery facility (MRF). Waste materials that could not be accommodated in these two recycling stations may be brought to bigger materials recovery facility (MRF).
- d. **Action plan** – First, the barangay will make arrangements with adjacent barangays for sharing waste recovery facility with them. If not possible, or the capacity is not enough, the other option is to secure through an agreement with QC-EPWMD on

available QC-owned MRF or the national MRF that is near the barangay. The last option is through an agreement with a solid waste enterprise.

3.6.7 Education and public information

- a. **Overview of the component program (*program description*)** – A barangay-wide health and environmental education, public information campaign on solid waste management, in general, and waste reduction, segregation and collection, recycling and composting, in particular will be implemented by the barangay.
- b. **Situation analysis** – Education and environmental awareness campaign through letters and written announcements have been undertaken in the barangay. The barangay environment committee is also conducting meetings with community representatives and owners-employees of commercial establishments. These campaigns are relatively effective. A more intensive health education and environmental awareness program is needed to succeed in this undertaking.
- c. **Program objectives** – The objectives of this component are: To set up a well-organized, barangay-wide health and environmental education and public information campaign; and to secure high level of community participation in the management of solid waste collection services, recycling, composting, and proper disposal of household waste and office refuse.
- d. **Action plan** – This component involves the preparation and design of an organized, health and environmental education and public information campaign. Appropriate media such as the use of letters, leaflets, posters, bulletin boards, public announcements and conduct of occasional street meetings and general barangay assembly utilized for this purpose. The barangay will also encourage SWM-environmental lectures, short seminars; and the incorporation of SWM topics in classroom teaching. Separate education and environmental campaign program will be conducted for community organizations as well as occupants/owners-employees of office buildings and commercial establishments.

3.6.8 Special waste

- a. **Overview of the component program** – This component seeks to promote safe handling, storage and transport of hazardous wastes to minimize its health and environmental risks and impact due to improper procedure in handling and disposal of these types of wastes.
- b. **Situation analysis** – More than 95% of the barangay community are not aware of the health and environmental risks involve in the handling, storage and disposal of hazardous wastes. No attention is given to the proper management of hazardous waste, particularly batteries, paints, light bulbs, electronic devices and other materials with heavy metals, and household and industrial chemicals, etc.
- c. **Program objectives** – This component aims to promote awareness about the proper handling, storage, transport and disposal of special (hazardous) wastes in order to minimize health and environmental risks and impact.
- d. **Action plan** – The steps to be taken by the barangay are: Make sure that the barangay residents and the owners and employees of commercial and industrial enterprises are aware of the proper handling, storage, transport and disposal of hazardous household wastes and special wastes, respectively. Information campaign about the identification and description of hazardous wastes as well as the proper procedure in minimizing health and environmental risks and impact shall also be conducted.

3.6.9 Incentive program

- a. **Overview of the component program (*program description*)** – The barangay will initiate special awards which will provide incentives, *cash or otherwise*, to residents, community organizations and business enterprises actively supporting and participating in the solid waste management programs of the barangay.
- b. **Situation analysis (*addressed by the program*)** – No incentive award of any kind for waste management is given to any person, group or organization. The provision of these awards and incentives is expected to encourage participation of all concerned in the SWM programs and projects of the barangay.
- c. **Program objectives** – This component seeks to establish an awards system to provide incentive for participation in the SWM programs and projects of the barangay. It also intends to sanction concerned individuals, groups or organizations for violating enacted ordinances relating to the waste management programs.
- d. **Action plan** – Implementation of this component involves the following: Prepare an awards system that will provide incentives to any person, group or organization who/which participated actively in the solid waste management programs or projects of the barangay. Set up sanctions for violating of the rules and regulations embodied in the barangay ordinance relating to the solid waste management programs or projects shall be strictly enforced.

The DILG memorandum suggests the following rules and regulations: 1) Only segregated waste will be collected; 2) Open burning of garbage is not allowed; 3) No garbage can be displayed along sidewalks, streets, alleys and posts; 4) No hanging of garbage bags on trees, fences and gates. Appropriate sanctions shall be provided in the Barangay Ordinance to be enacted pursuant to the provisions of RA 9003 and the DILG Memorandum Circular No. 2001-38.

3.6.10 Resource requirement and funding

This component will secure adequate resources [human, financial and material] for the implementation of the projects and activities relating to the solid waste management program of the barangay.

- a. **Description of project costs, revenues and revenue sources for implementing SWM program components** –
- b. **Specific projects, activities, equipment and technological requirements needing outside sourcing of funds or materials** –
- c. **Specific uses of resource requirements and estimated costs** –
- d. **Action plan for generating funds for the acquisition of resource requirements** –

Attachment 1

Project: Micropolis

SUMMARY

OF THE

STRATEGIC DEVELOPMENT PLAN OF BARANGAY PINAGKAISAHAN

- 1. Vision of Barangay Development** – Barangay Pinagkaisahan is a high density residential neighborhood surrounded by commercial business enterprises, service institutions and community centers with social amenities and open spaces. It is envisioned to be a clean and beautiful, community that is safe, secured and self contained where commerce is active to provide livelihood to its constituents.
- 2. Barangay Development Strategy** – The fundamental strategy for barangay development are:
 - a) Build of a clean, beautiful and livable community while upgrading the qualities of the barangay's already sound residential areas.
 - b) Develop barangay economy punctuated by commercial business enterprises and service institutions.
 - c) Establish good governance and financially sound system, and providing efficient community management as well as innovative approaches to service delivery.
- 3. Strategic Areas for Development** – The strategic areas for barangay development includes the following:
 - a) Slum upgrading: *Building a barangay without slums*
 - b) Development of high density residential neighborhoods surrounded by commercial business enterprises, service institutions and community centers
 - c) Setting up a healthful urban environment
 - d) Providing health care, education and social support programs
 - e) Improving local governance, financial management, and community development services
- 4. Strategic Development Goals** – The strategic development goals of Barangay Pinagkaisahan are:
 - a) To develop a community that is livable with healthful environment.
 - b) To build a barangay economy characterized by commercial business enterprises and service institutions.
 - c) To establish good governance and improve community management.
 - d) To generate financial capacity of the barangay LGU making it creditworthy to access internal and external resources.
- 5. Strategic Programs and Projects for Barangay Development** – The summary descriptions of the strategic programs for barangay development are described below:
 - a) **Poverty Alleviation (Economic Development & Livelihood Formation)** – Identification of income-earning opportunities; business planning and start-ups of new locally-owned businesses; start job training program and skills upgrading; and making loans and other assistance available.

- b) **Slum Upgrading** (a common project among the pilot barangays of Project: Micropolis) – Involves the delivery of basic services, such as water supply and sanitation, waste management, storm drainage and flood prevention, improvement of roads, enhancement of income-generating enterprises, and construction of medium-rise housing units, community facilities and social amenities; and creating a clean, safe and healthy living environment.
- c) **Solid Waste Management** (a common project among the pilot barangays of Project: Micropolis) – An integrated waste management program which will formulate a “zero-waste” garbage system and install efficient waste management.
- d) **Urban Agriculture** (a common project among the pilot barangays of Project: Micropolis) – Utilization of compost fertilizer from the waste management project for food production at home and the use of available open spaces for small plot urban farming.
- e) **Bernardo Park Development** – Improvement of Bernardo Park and upgrading its facilities and social amenities by establishing a multi-purpose community center for cultural enrichment purposes jointly with Barangay Kamuning.
- f) **Rehabilitation of Lagarian Creek** (a common project of Barangay Kamuning, Pinagkaisahan and Kristong Hari) – Cleaning of the creek, provision of flood control system, and improvement of both sides of the river banks. (The proposed lead non-government organization for this project is the Lagarian Creek Environmental Association, Inc.)

6. Program/Project Action Plan – The summary of action plan for the strategic program is presented below.

Summary of Action Plan for the Strategic Programs and Projects

Programs	2003-2004	2005-2013	2013-2023
1. Poverty alleviation (<i>Economic Development & Livelihood Formation</i>)	Identification of income-earning opportunities; business planning and start-ups of new locally-owned businesses; start job training program and skills upgrading; and making loans and other assistance available.	Continue business planning and start-ups; enhancing growth of employment, incomes and local investment.	Continuing business planning and start-ups; enhancing growth of employment, incomes and local investment.
2. Slum Upgrading	Preliminary studies, community surveys and negotiation of land acquisition; planning for slum improvements.	Physical planning, redevelopment and reconstruction.	Continuing improvements and upgrading of community facilities.
3. Solid Waste Management	Waste segregation and compost making.	Continue improving the management system.	Continuing improvement and upgrading of the management system.
4. Urban Agriculture	Action planning, experimentation and piloting.	Full implementation.	Continuing implementation and program improvements.
5. Bernardo Park Development	Preparatory planning for the improvement of the park.	Reconstruction and upgrading of its facilities and social amenities.	Continuing improvements and upgrading of facilities.
6. Rehabilitation of Lagarian Creek	Preparatory planning and negotiations.	Physical planning, redevelopment and reconstruction.	Continuing improvements and upgrading.

Solid Waste Management Plan for Barangay Kamuning

Solid Waste Management Plan Of Barangay Kamuning

INTRODUCTION

Executive Order No.33 later amended by P.D. 86 and 210, created Barangay Kamuning on February 23, 1939. The present boundaries of the barangay are: Meralco Botocan Transmission line on the north, Epifanio de los Santos Avenue (EDSA) on the east, Lagarian (Diliman) Creek on south-south west, and Tomas Morato street on the north-west.

Land area, population and income. The landscape of the barangay is smoothly undulating with very small portions of flat areas. The barangay has a total land area is 46.9545 hectares. It has 3,562 households with a total population of 17,631 and population density of 375.49 persons/ha. in 2002. Its population is projected to reach 25,939 in 2013 with an estimated 5,240 households. It has an average annual income of PhP800,000 pesos with a total budget of PhP5,255,962.91 in 2000.

Environmental condition. Waste management and sanitation are two of the basic environmental problems of the community. The barangay is taking part in the waste management program led by the Sacred Heart Parish and supported by the city administration. The barangay is setting up an ecology center in support of this program.

The flooding of Lagarian (Diliman) Creek during storms and heavy rainfalls causes flood waters to rise up to the second floor of houses in slum areas along the creek and K-6th street.

Slum areas. The informal settlers are concentrated on the periphery of Bernardo Park, along the Meralco-Botocan Power Line, and along K-6th Street and the riverbanks of Lagarian Creek. The so-called Bernardo Park Compound has 100 families of informal settlers; Meralco Botocan, 40 families; K-6th street, 40 families; and 50 families along the river banks. Much of the informal settler's poverty stems from low wages and outsized families. Poverty stems directly or indirectly from inadequate education and skills. This reflects in part the failure of the country's educational system.

The solid waste management plan. This *Solid Waste Management Plan* (SWMP) was prepared in accordance with the provisions of Republic Act 9003: Ecological Solid Waste Management Act of 2000, and the directive of DILG per Memorandum Circular No. 2001-38. Moreover, this SWMP is part of our cooperative effort in the implementation of the solid waste management project funded by the Swedish International Development Cooperation Agency (SIDA) with Conexor Sensus AB as our foreign consultant. The SWM Project is one of the components of DILG's *Project: Micropolis*, which seeks to transform a cluster of three to five adjacent barangays in Metropolitan Manila into a sustainable urban center and model of good governance.

Part 1: SUMMARY of the Barangay Solid Waste Management Plan

Vision. Barangay Kamuning is a showcase of a God loving and highly civic-spirited community with peaceful, orderly and clean environment. Its residents work together as a team, sharing knowledge and resources, and building capacity for efficient management of its solid wastes and protection of public health.

The vision of clean environment connotes efficient collection, transfer and processing of solid wastes through reuse, recycling and composting. Residents, groups and organizations cooperatively participate in the waste management program of the barangay.

Areas for waste management. The important areas of concern for achieving the stated SWM vision are the following: a) Waste collection and transfer; b) Waste processing and pre-treatment; c) Waste reduction at source; d) Reuse and recycling; e) Composting; f) Solid waste facility or MRF; g) Education and public information; h) Special (hazardous) wastes; i) Funding and resource requirements; and j) Incentive program.

Goals. At the end of the 10-year planned period, the following goals shall have been achieved:

General goal – Lasting improvement of solid waste management system in the barangay.

Specific goals – To improve waste collection, transfer and processing system; to minimize waste generation and increase waste reduction at source through recycling and composting; to establish solid waste facilities or MRF, including a composting facility; to carry out health and environmental education and public information campaign; to provide SWM incentives for deserving individuals, groups or organizations; and to secure necessary resources and funding for waste management programs/projects in the barangay.

Waste management indicators. Indicators of achievement for the successful implementation of the SWM Plan includes:

- a. Efficiency of waste collection and transfer.
- b. Use of processing methods and improvement of facilities for pre-treatment of waste.
- c. Effectiveness of waste reduction at source, particularly segregation and recycling.
- d. Continual improvement of reuse and recycling system.
- e. Installation of composting equipment and production/marketing of compost.
- f. Establishment of solid waste facility or MRF.
- g. Implementation of public health and environmental education, and effectiveness of public information campaign.
- h. Prevention or minimization of health and safety risks in the handling, storage and transport of special (hazardous) wastes, if any.
- i. Institution of incentive programs for residents, community organizations, waste management teams, barangay officials and others.
- j. Provision of appropriate and timely resources – human, financial and material.

Component programs. The ten (10) major components of the Barangay Kamuning SWMP are: 1) Collection and transfer; 2) Waste processing; 3) Source reduction; 4) Recycling; 5) Composting; 6) Solid waste facility or MRF; 7) Education and public information; 8) Special waste; 9) Resource requirement and funding; and 10) Incentive programs.

Part 2: BARANGAY PROFILE & EXISTING SITUATION

2.1 The Barangay Profile

2.1.1 Brief description of the barangay and background information

Description of the Barangay:

Barangay Kamuning was created on February 23, 1939 by Executive Order No.33, later amended by P.D. 86 and 210. The present boundaries of the barangay are: Meralco Botocan Transmission line on the north, Epifanio de los Santos Avenue (EDSA) on the east, Lagarian (Diliman) Creek on south-south west, and Tomas Morato street on the north-west. The barangay has a total land area is 46.9545 hectares.

Kamuning is considered as one of the model barangays of Quezon City. The community is a throbbing, dynamic human manifestation of oneness and fellowship. The barangay, with the assistance of city and national governments, have completed many development projects such as asphaltting of all streets; construction of barangay hall, school buildings, SK gymnasium, day care center, T. Gener bridge, basketball courts, and artesian wells; installation of special electric lamp posts on major roads, playground and sports equipment; purchase of dump truck, garbage equipment; replacement of water distribution pipes; improvement of sewerage system; and establishment of computer training center. In spite of all these encouraging accomplishments, many social and economic problems— usually encountered in highly urbanized areas—remain unresolved.

Barangay finance – Kamuning has an average annual income of PhP800,000.00 pesos; IRA (Internal Revenue Allotment) share, PhP3,078,595.00; and RPT (Real Property Tax) share of PhP1,377,367.91 (see Table 1).

TABLE 1. Average Annual Income, IRA Share and RPT Share (Philippine Peso)

Financial Data	1999	2000	2001	2002	2003
Average annual income	200,000.00	800,000.00			
IRA Share	2,797,033.00	3,078,595.00			
Share in Real Property Tax	1,229,101.68	1,377,367.91			
TOTAL	4,226,134.68	5,255,962.91			

Opportunities for Barangay Development – Barangay Kamuning is mid-way between the Cubao commercial center and the SM City complex and the proposed central business and financial center in western portion of north triangle along EDSA. This offers development opportunities for creating ancillary services to business and financial establishments to be located in these centers.

However, this also imply that waste generation in the community is expected to increase in the near future.

Background Information and General Situation:

Socio-economic situation – A great number of the residents of Barangay Kamuning have low standard of living. The average income of the family is below the poverty threshold, particularly among informal settlers and low-income households. There is an obvious social inequality. Unemployment among the residents is not extensive; however, under-employment is preponderant. To help the unemployed and under-employed, the barangay occasionally sponsors job fairs.

Some 300 retail stores, commercial establishments, service enterprises, and health clinics are found in the barangay. It houses the Kamuning public market with a slaughterhouse, and two private supermarkets.

Social & cultural – Poor health is still prevalent among the poor despite the city's great network of health and hospital facilities. Barangay Kamuning is the home of Delgado Memorial Hospital, a private hospital. It has two public elementary schools and a computer training center administered by the barangay.

Barangay Kamuning occupies the northern portion of Bernardo Park. Nonetheless, cultural and recreational amenities are very limited. Open space in the park has been utilized as basketball court, which also served as venue for community gatherings. Makeshift basketball courts are likewise found in the interior streets of Brgy. Kamuning.

Personal security of the residents are always at risk with regard to petty crimes and occasional violence, and various traffic accidents. Drug addiction is a growing problem although not yet critical. Crime rate in the barangay is estimated at three (3%) percent.

Environmental condition – Waste management and sanitation are two of the basic environmental problems of the community. The barangay is taking part in the waste management program led by the Sacred Heart Parish and supported by the city administration. The barangay is setting up an ecology center in support of this program.

The flooding of Lagarian (Diliman) Creek during storms and heavy rainfalls causes flood waters to rise up to the second floor of houses in slum areas along the creek and K-6th street.

Slum areas – The informal settlers are concentrated on the periphery of Bernardo Park, along the Meralco-Botocan Power Line, and along K-6th Street and the riverbanks of Lagarian Creek. The so-called Bernardo Park Compound has 100 families of informal settlers; Meralco Botocan, 40 families; K-6th street, 40 families; and 50 families along the river banks. Much of the informal settler's poverty stems from low wages and outsized families. Poverty stems directly or indirectly from inadequate education and skills. This reflect in part the failure of the country's educational system.

Physical-spatial features & infrastructures – Kamuning, which has a relatively flat and rolling landform, is a densely populated community. The spatial feature of the barangay is divided into two predominant zones: residential and commercial. However, there is a mix of residential-commercial use in major transport routes.

The barangay has some of the basic social infrastructures like a barangay hall, school buildings, health stations, public market, slaughterhouse and water supply. Kamuning is served only by jeepney transport; few motorized tricycles provide internal transport.

2.1.2 [Estimated population and population projection for a 10-year period](#)

Barangay Kamuning has 3,562 households with a total population of 17,631 and population density of 375.49 persons/ha. in 2002 (see Table 2). Its population is projected to reach 25,939 in 2013 with an estimated 5,240 households.

TABLE 2. Population, Population Density and Number of Households of Bgy. Kamuning

Plan Year	Calendar Year	Present / Projected Population	Population density (Persons/hectare)	Number of Households
	1995	14,637	311.73	2,945
	2000	16,571	352.92	3,350
	2001	17,068	363.50	3,448
	2002	17,631	375.49	3,562
0	2003	18,230	388.25	3,683
1	2004	18,867	401.84	3,812
2	2005	19,547	416.30	3,949
3	2006	20,251	431.29	4,091
4	2007	20,980	446.82	4,238
5	2008	21,735	462.89	4,391
6	2009	22,517	479.55	4,549
7	2010	23,328	496.82	4,713
8	2011	24,168	514.71	4,882
9	2012	25,038	533.24	5,058
10	2013	25,939	552.43	5,240

2.2 Solid Waste Management: Existing Situation in the Barangay

Collection of segregated and non-segregated garbage using open dump trucks (or sometimes, garbage compactors) are undertaken on regular schedules, *Tuesdays* and *Fridays*. The collected solid wastes are brought to the Payatas dumpsite for disposal.

The forthcoming events in waste management in the barangay is the renewed campaign for reduction of waste through segregation at source, reuse and recycling of recyclable wastes, and composting of biodegradable. This method was implemented before but it did not succeed due to poor coordination, partial participation of the community, and lack of operating funds.

2.2.1 Current state and trends of solid waste management in the barangay

Current state. Disposal of solid waste of Barangay Kamuning is undertaken through regular collection of both segregated and non-segregated wastes on Tuesdays and Fridays by dump trucks provided by Environmental Protection and Waste Management Department of Quezon City (QC-EPWMD).

This collection scheme has been instituted since 1950s. Today, however, the efficiency of garbage collection has improved a lot. Although, some residents complain that occasionally trucks are late leaving the garbage hanging on the fences and walls, or remaining on the sidewalks and streets exposed to scrapping by dog and cats. Scavengers and pushcart boys also scour the garbage bag and scatter them on the sidewalks and street pavements.

Waste segregation by residents has been done for several months. Unfortunately, the scheme was not very successful due to inadequate support of residents and lack of funds.

Problems. Presence of stagnant water in garbage dumps has caused various water-borne diseases. The leading problem of the barangay is the throwing of large volume of garbage in the Lagarian creek. It is estimated that more than 50% of solid wastes are thrown away, particularly during rainy days. This habit of residents along K-6th and K-8th streets has been the most difficult problem of the barangay environment team members.

Trends. Reduction of waste at source through reuse and recycling of recyclables, and composting of biodegradable materials is catching the interest of the community. This scheme was tried before in the barangay, but due to renewed interest this could be made successful in the coming days.

2.2.2 Profile of sources of solid wastes

The major sources of solid wastes in the barangay are the residential households, commercial establishments, and small machine shops and trading enterprises. Garden wastes, refuse and rubbish from restaurants, street sweepings, and debris from construction/demolition are also generated in the area.

2.2.3 Estimated solid waste generation and projection and waste characterization

Estimated solid waste generation and projection by source. Waste generation rate has not been recorded in the barangay until the SIDA-assisted project implemented and conducted weighing operations in two waste collection cells sometime in June-August 2003. The total volume of garbage in 2003 is estimated at 9,662 kg/day. The total weight of waste thrown away into the Lagarian creek along K-6th and K-8th streets is estimated at 1,500-2,000 kg/week or more.

The total waste generation of the barangay is projected to increase from an estimated 9,662 kg/day or 3,527 tons in 2003 to 13,748 by 2013 (see Table3 below).

TABLE 3. Projected Waste Generation of Bgy. Kamuning

Plan Year	Calendar Year	Projected Population	Projected Waste Generation	
			Kg/Day	Tons/Year
0	2003	18,230	9,662	3,526.59
1	2004	18,867	10,001	3,649.82
2	2005	19,547	10,360	3,781.37
3	2006	20,251	10,733	3,917.56
4	2007	20,980	11,119	4,058.58
5	2008	21,735	11,520	4,204.64
6	2009	22,517	11,934	4,355.91
7	2010	23,328	12,364	4,512.80
8	2011	24,168	12,809	4,675.30
9	2012	25,038	13,270	4,843.60
10	2013	25,939	13,748	5,017.90

Waste characterization. The barangay produces 40% recyclable, 35% biodegradable materials and 25% of unclassified mixed garbage.

2.2.4 Characteristics and conditions of collection, storage, processing, and disposal

Collection. Like other barangays, the main waste management activity in the barangay is the collection of solid waste by open dump trucks from each individual residential households and commercial establishments.

The barangay is subdivided into four (4) regular collection cells and one (1) special collection cell covering the following streets: 1) K-1st and K-2nd streets from EDSA up to Judge Jimenez street; 2) K-3rd, K-4th and K-5th streets from EDSA up to Judge Jimenez street; 3)) K-1st and K-2nd streets from Judge Jimenez street to K-6th street; 4) K-3rd, K-4th and K-5th streets from Judge Jimenez street to K-6th street, and 5) K-6th, K-7th and K-8th streets from Kamuning Silangan to end of Kamuning Kanluran. Waste are collected twice a week, every Tuesdays and Fridays

Storage and processing. The barangay or city governments do not provide waste containers or receptacles. There is no temporary storage facility or designated collection points in the barangay.

Waste disposal. The collected wastes are hauled to Payatas Dumpsite for disposal.

2.2.5 [Location of waste management facilities](#)

The barangay has designated two areas for pre-treatment of garbage along 5th Street and for composting purposes beside the Kamuning Public Market.

Part 3: BARANGAY SOLID WASTE MANAGEMENT PLAN

3.1 Overview of the Barangay Solid Waste Management Plan

3.1.1 Barangay Solid Waste Management Plan in a nutshell

Vision and strategy. Barangay Kamuning is a showcase of a God loving and highly civic-spirited community with peaceful, orderly and clean environment. Its residents work together as a team, sharing knowledge and resources, and building capacity for efficient management of its solid wastes and protection of public health.

This shall be achieved by means of an efficient waste collection, transfer and processing system; source reduction, recycling and composting; provision of waste facilities or MRF; effective education and information campaign; and providing support and appropriate incentives.

Main areas for waste management. The central areas for achieving the SWM vision and attaining the expected results of the Plan are the following: a) Waste collection and transfer; b) Waste processing and pre-treatment; c) Waste reduction at source, particularly segregation and recycling; d) Reuse and recycling scheme; e) Composting process, production and marketing of compost; f) Solid waste facility or MRF; g) Education and public information; h) Handling, storage and transport of special (hazardous) wastes; i) Incentive programs; and j) Provision of resources – human, financial and material.

Goals. At the end of the 10-year planned period, the following goals shall have been achieved:

General goal – Lasting improvement of solid waste management system in the barangay.

Specific goals – To improve waste collection, transfer and processing system; to minimize waste generation and increase waste reduction at source through recycling and composting; to establish solid waste facilities or MRF, including a composting facility; to carry out health and environmental education and public information campaign; to provide SWM incentives for deserving individuals, groups or organizations; and to secure necessary resources and funding for waste management programs/projects in the barangay.

Major waste management indicators. The major indicators of achievement for the successful implementation of an innovative solid waste management system under this SWM Plan are as follows:

- a. Efficiency of waste collection and transfer.
- b. Use of processing methods and improvement of facilities for pre-treatment of waste.
- c. Effectiveness of waste reduction at source, particularly segregation and recycling.
- d. Continual improvement of reuse and recycling system.
- e. Installation of composting equipment and production/marketing of compost.
- f. Establishment of solid waste facility or MRF.
- g. Implementation of public health and environmental education, and effectiveness of public information campaign.
- h. Prevention or minimization of health and safety risks in the handling, storage and transport of special (hazardous) wastes, if any.
- i. Institution of incentive programs for residents, community organizations, waste management teams, barangay officials and others.
- j. Provision of appropriate and timely resources – human, financial and material.

3.1.2 Summary description of the solid waste management components

RA 9003 defines the major components of the SWMP. These are: Collection and transfer; processing; source reduction, recycling and composting; solid waste facility; education and public information; special waste; resource requirement and funding; incentive programs. The summary descriptions of these components are described below.

- a. **Collection and transfer** – The main purpose of this component program is to improve the efficiency of waste collection and transport of solid waste within the barangay. The targets set are: Reduction of the number of garbage collection trucks from the present five (5) trucks every collection days (Mondays and Thursdays) to three (3) trucks at the end of 2013. Truck itinerary will also be rerouted (current cells will be redesigned) to cover all streets of the barangay.
- b. **Processing** – This component intends to process solid wastes through the *segregation* of different types of solid waste for re-use, recycling and composting. A *recycling center* will be established in K-5th Street and properly designed containers or receptacles will be set up along major roads. No preliminary or intermediate treatment will be undertaken in the barangay. Composting of biodegradables shall be undertaken in the proposed composting facilities of the barangay to be located beside the public market.
- c. **Source reduction** – The barangay will reduce sufficient amount of waste at its primary sources. Waste segregation shall be properly undertaken. The target is to reduce waste by 65%.
- d. **Recycling** – Solid wastes generated in the barangay shall be reduced by means of separating recyclable materials at its source, the households, offices and business premises. Target: 80% of reusable and recyclable materials are recycled, or collected and brought to recycling centers.
- e. **Composting** – To help reduce sufficient amount of waste, organic materials shall be processed into compost. The objective is to produce *compost*, which the barangay can utilize in its urban agriculture, or sell the product to producers of organic fertilizers.
- f. **Solid waste facility** – The barangay shall establish a materials recovery facility (MRF) which shall serve as temporary storage of solid wastes, recycling center, collection points, or transfer station while awaiting collection and transfer to processing sites or to final disposal sites.
- g. **Education and public information** – This component intends to implement a barangay-wide health and environmental education, public information campaign focus on solid waste management, in general, and waste reduction, segregation and collection, recycling and composting, in particular. Education and environmental campaign program will also be conducted for community organizations and owners-employees of buildings and business enterprises.
- h. **Special waste** – This component will promote proper handling, storage and transport of special (hazardous) wastes. The barangay will also promote methods to minimize health and environmental risks and impact of the disposal of these types of wastes.
- i. **Incentive program** – This barangay shall provide incentives, *cash or otherwise*, to encourage participation of residents, community organizations and business enterprises in the solid waste management programs of the barangay. Raffle tickets shall be given to cooperative residents. Monthly raffle winners will be selected, and a grand raffle will be conducted once a year in December.
- j. **Resource requirement and funding** – Adequate resources [human, financial and material] shall be secured by the barangay to implement the component programs and their corresponding projects and activities.

3.2 Vision of Barangay Solid Waste Management

Barangay Kamuning is a showcase of a God loving and highly civic-spirited community with peaceful, orderly and clean environment. Its residents work together as a team, sharing knowledge and resources, and building capacity for efficient management of its solid wastes and protection of public health.

The vision of clean environment connotes efficient collection, transfer and processing of solid wastes through reuse, recycling and composting. Residents, groups and organizations cooperatively participate in the waste management program of the barangay.

3.3 Barangay Solid Waste Management Strategy

The fundamental strategy for solid waste management are:

- a) Providing efficient solid waste management through effective and innovative approaches.
- b) Minimizing waste and reduction of waste at source through reuse, recycling and composting.
- c) Building and continuously upgrading of waste management facilities.
- d) Developing broad-based community participation, including the informal sectors in slums and squatter areas.
- e) Establishing good waste management practices by acquiring know-how, developing skills, improving capabilities, and instituting accountability, integrity and transparency in local governance.
- f) Creating a healthful urban environment and livable barangay community.

3.4 Key Areas for Solid Waste Management and Issue Analysis

3.4.1 Key areas for solid waste management

The central areas for achieving the SWM vision and attaining the expected results of the Plan are the following: a) Waste collection and transfer; b) Waste processing and pre-treatment; c) Waste reduction at source, particularly segregation and recycling; d) Reuse and recycling scheme; e) Composting process, production and marketing of compost; f) Solid waste facility or MRF; g) Education and public information; h) Handling, storage and transport of special (hazardous) wastes; i) Incentive programs; and j) Provision of resources – human, financial and material.

3.4.2 Critical issues

Several issues that affect the efficient implementation of the solid waste management plan have been identified. These are the following:

- a. Maintenance of regular time schedules for garbage collection and transport
- b. Institution of an effective waste segregation, recycling and reduction system
- c. Setting up of an environment-friendly composting facility
- d. Locating or finding an area large enough for building the MRF within the barangay
- e. Mobilization of non-government organizations and people participation in the waste management projects
- f. Development and implementation of an effective education and public information campaign
- g. Managing of the opposing *interest* of the residents, crew (*paleros*) of garbage trucks, barangay waste management team and street sweepers, and the pushcart boys and scavengers on reusable and recyclable materials
- h. Setting up incentives for cooperation and participation in the SWM program of the barangay.

3.5 Solid Waste Management Goals and Objectives

3.5.1 Management indicators for the realization of the vision

The major indicators of achievement for the successful implementation of an innovative solid waste management system under this SWM Plan are as follows:

- a. Efficiency of waste collection and transfer.
- b. Use of processing methods and improvement of facilities for pre-treatment of waste.
- c. Effectiveness of waste reduction at source, particularly segregation and recycling.
- d. Continual improvement of reuse and recycling system.
- e. Installation of composting equipment and production/marketing of compost.
- f. Establishment of solid waste facility or MRF.
- g. Implementation of public health and environmental education, and effectiveness of public information campaign.
- h. Prevention or minimization of health and safety risks in the handling, storage and transport of special (hazardous) wastes, if any.
- i. Institution of incentive programs for residents, community organizations, waste management teams, barangay officials and others.
- j. Provision of appropriate and timely resources – human, financial and material.

3.5.2 Solid waste management goals

In line with the identified indicators of achievements presented above, the goals of this SWM Plan are:

At the end of the 10-year planned period, the following goals shall have been achieved:

General goal:

Lasting improvement of solid waste management system in the barangay.

Specific goals:

- ◆ To improve waste collection, transfer and processing system
- ◆ To minimize waste generation and increase waste reduction at source through recycling and composting
- ◆ To establish solid waste facilities or MRF, including a composting facility
- ◆ To carry out health and environmental education and public information campaign
- ◆ To provide SWM incentives for deserving individuals, groups or organizations
- ◆ To secure necessary resources and funding for waste management programs/projects in the barangay

3.5.3 Objectives

The achievement of the above-stated goals shall be reflected in the attainment of the following objectives:

1. Improved waste collection and transport to disposal station or final disposal sites, efficient crew operations and use of modern transport equipment.
2. Use of safe waste processing and pre-treatment techniques and methods conforming to internationally-accepted standards and other provisions set in local laws and regulations.
3. Waste generation rate minimized, waste at source reduced; use of household, office and building storage containers; refuse management at home, offices, large buildings and commercial premises improved.
4. Large portion of waste generated are reused and recycled.
5. Composting equipment installed and operational with minimum health and environmental risks and impact, and effective marketing and disposal of compost are set up.

6. Barangay MRF for solid wastes – storage containers, collection points or transfer station – established.
7. Well-organized health and environmental education, public information campaign and high level of community participation accomplished.
8. Improved handling, storage and transport of special wastes, health and environmental risks and impact minimized.
9. Incentive program for waste management set up.
10. Adequate resources [human, financial and material] provided.

3.6 Solid Waste Management Component Programs and Action Plan

3.6.1 Collection and transfer

- a. **Overview of the component program** – The main purpose of this component program is to improve the efficiency of waste collection and transport of solid waste within the barangay. The targets set are: Reduction of the number of garbage collection trucks from the present five (5) trucks every collection days (Mondays and Thursdays) to three (3) trucks at the end of 2013. Truck itinerary will also be rerouted (current cells will be redesigned) to cover all streets of the barangay.
- b. **Situation analysis** – Waste collection at present uses five (5) dump trucks. Four (4) trucks covers the regular street-cells of the barangay and one (1) small dump truck; cover the small streets, these are K-6th, K-7th and K-8th streets from Kamuning Silangan to end of Kamuning Kanluran. Garbage collection in the regular streets have minimal problems such late arrival of dump trucks.
- c. **Program objectives** – At the end of 2013, the barangay intends to attain 100% garbage collection and transport all these wastes to disposal station or final disposal sites using only three (3) modern waste collection trucks. The barangay seeks to own its modern transport equipment in order to improve crew operations.
- d. **Action plan** – The geographic subdivisions of waste collection cells shall be redesigned in line with the schedule of waste reduction at source. Segregation of different types of solid waste for re-use, recycling and composting will be introduced beginning 2004 with the enforcement of existing barangay ordinance on solid waste management. The same ordinance will also be updated to comply with the provisions of RA 9003 and the DILG memorandum circular. The rule that “only segregated waste will be collected” will be strictly enforced. The barangay will also establish strategic *collection points* for the temporary storage of solid waste while awaiting collection and transfer to processing sites or to final disposal sites. Properly designed containers or receptacles will be provided in these collection stations. The barangay will buy its own transport equipment beginning 2006 with one (1) truck, then one (1) truck each in 2009 and 2012.

3.6.2 Processing

- a. **Overview of the component program** – This component intends to process solid wastes through the *segregation* of different types of solid waste for re-use, recycling and composting. A *recycling center* will be established in K-5th Street and properly designed containers or receptacles will be set up along major roads. No preliminary or intermediate treatment will be undertaken in the barangay. Composting of biodegradables shall be undertaken in the proposed composting facilities of the barangay to be located beside the public market.

- b. **Situation analysis** – Waste produced in the barangay are usually mixed in plastic bags or household waste containers. These garbage bags and containers are collected individually from the household and business premises during collection days on Mondays and Thursdays by five dump trucks. Processing or pre-treatment is not done in the barangay. Segregation program was initiated sometime ago, but it did not succeed due to poor collection system and lack of cooperation of the community. Residents stopped segregating their garbage because only one truck collects both the recyclables and biodegradables.
- c. **Program objectives** – At the end of 2013, solid wastes in the barangay shall be efficiently processed through a segregation system. Safe waste processing and pre-treatment techniques and methods conforming with internationally-acceptable and other standards set in other laws and regulations shall be introduced in the barangay MRF.
- d. **Action plan** – The barangay will issue an updated barangay ordinance on solid waste management following the provisions of RA 9003 and the directive of the DILG on this matter. Beginning 2004, the barangay will strictly enforce the waste segregation system to minimize garbage to be collected by dump trucks. Recyclables shall be collected by the barangay collection brigades and brought to the collection stations.

3.6.3 Source reduction

- a. **Overview of the component program** – The barangay will reduce sufficient amount of waste at its primary sources. Waste segregation shall be properly undertaken. The target is to reduce waste by 65%.
- b. **Situation analysis** – The barangay generates an estimated 9,662 tons of wastes in year 2003. Approximately the generation of wastes in 2004 is 9,999 tons, it will reach 13,748 tons by year 2013. Organic materials are habitually mixed up with reusables and recyclables.
- c. **Program objectives** – The main objective is to minimize waste generation rate and reduce waste at source by means of *waste segregation* in combination with reuse, recycling and composting. The barangay will encourage effective refuse management at home, offices, buildings and business premises. The barangay is targeting a reduction of 25% in the first three years of the planned period, another 15% during the following three years, and finally 20% in the last four years, for a total of 60% reduction of waste.
- d. **Action plan** – The barangay will campaign for reducing the volume of waste generated at source is through segregation of wastes, mainly into reusables, recyclables and compostables. The segregated wastes shall be collected by barangay collection brigades from the households and offices, and brought to the barangay collection stations where the improperly separated wastes are properly segregated and manually classified further into different types (e.g. metals, glass, bottles, plastics, plastic packages, papers, corrugated papers, cardboards, tin cans, aluminum containers, etc.) The collection station gathers buying prices and evaluates rate structures, then markets in bulk the recyclable materials to bulk buyers or junk shops offering higher prices. Organic materials will be handled with care and brought to composting stations in nearby barangays with composting facilities. Hazardous waste from medical clinics and related establishments will be cautiously handled trained workers using environment-friendly methods.

3.6.4 Recycling

- a. **Overview of the component program** – Sufficient amount of the solid wastes generated in the barangay shall be reduced by means of separating recyclable

materials at its source, the households, offices and business premises. Target: 80% of reusable and recyclable materials are recycled, or collected and brought to recycling centers.

- b. **Situation analysis** – Recyclable materials such as white papers, newspapers, magazines, directories, glass bottles, metals, tin cans and plastic bottles, are traditionally sold to “pushcart boys;” It is estimated that more than 90% of recyclables in the barangay end up in the hands of pushcart boys and waste scavengers roaming the community. Like all other barangays, the problem of recycling revolves around the intense competition between pushcart boys/scavengers-junkshops, crew (*paleros*) of dump trucks who also collects recyclables and their bulk buyers in the Payatas dump site, and the barangay workers engaged in collecting and selling recyclable materials.
- c. **Program objectives** – The aim of this component is to recycle 80% of reusable and recyclable wastes generated in the barangay by means of a systematic method of waste segregation and supporting the interest of the community.
- d. **Action plan** – The first step is the Institution of segregation measures through barangay ordinance will encourages separation of all reusable and recyclable materials for collection by the barangay garbage brigade. This will be followed by: supervision of the segregation/recycling program; formation and training of recyclable collection brigade; establishing of collection stations or recycling centers together with its buying and selling system; and setting up arrangements and procedures for the marketing of reusable and recyclable materials. Appropriate incentives, *cash or otherwise*, shall also be incorporated in the recycling program to provide rewards to residents, establishments and organizations actively participating.

3.6.5 Composting

- a. **Overview of the component program** – To help reduce sufficient amount of waste, organic materials shall be processed into compost. The objective is to produce *compost*, which the barangay can utilize in its urban agriculture, or sell the product to producers of organic fertilizers.
- b. **Situation analysis** – Organic wastes of the barangay are generally mixed with other solid wastes. Some organic materials are separated by residents; while organic materials from restaurants and caterers are usually mixed with food packaging materials, mostly plastics or *styrofoam*.
- c. **Program objectives** – This component aims is to collect at least 90% of organic materials generated in the barangay and send these materials to the *composting plant* to be operated by the barangay. The barangay will install composting equipment, which has already been purchased and already assigned by Congresswoman Nanette Daza to the barangay. The barangay shall operate the composting plant to market and dispose compost materials. The composting plant shall be operated with minimum health and environmental risks and impact.
- d. **Action plan** – The implementation of the composting component calls for the selection of appropriate types of organic wastes. Appropriate methods shall be instituted to determine the categories of wastes to be diverted to the composting plant. Careful selection and installation of composting equipment shall also be undertaken to make sure that health and environmental impacts are prevented.

3.6.6 Solid waste facility

- a. **Overview of the component program** – The barangay shall establish a materials recovery facility (MRF) which shall serve as temporary storage of solid wastes,

recycling center, collection points, or transfer station while awaiting collection and transfer to processing sites or to final disposal sites.

- b. **Situation analysis** – There are available space for setting up a materials recovery facility (MRF), particularly for a small composting plant. In selected streets of the barangay, *mini-* or *micro-*MRF will also be established with very limited capacity.
- c. **Program objectives** – The objective is to set up a barangay-based materials recovery facility (MRF), with a small composting plant. *Mini-* or *micro-*MRF will be set up at strategic locations in the barangay.
- d. **Action plan** – The first step to be taken by the barangay is to install the composting equipment, already purchased, in the designated area beside the Kamuning Public Market.

3.6.7 Education and public information

- a. **Overview of the component program** – This component intends to implement a barangay-wide health and environmental education, public information campaign focus on solid waste management, in general, and waste reduction, segregation and collection, recycling and composting, in particular. Education and environmental campaign program will also be conducted for community organizations and owners-employees of buildings and business enterprises.
- b. **Situation analysis** – The barangay has been conducting education and environmental awareness campaign through letters and written announcements as well broadcast from barangay vehicle. The barangay environment committee is also conducting meetings with community representatives and owners-employees of commercial establishments. These campaigns are relatively effective. On the other hand, a more systematic health education and environmental awareness program is necessary to succeed in this campaign.
- c. **Program objectives** – The objectives of this component are: To set up a well-organized health and environmental education and public information campaign; and to secure high level of community participation in the management of solid waste collection services, recycling, composting, and proper disposal of household waste and office refuse.
- d. **Action plan** – The implementation of these component involves the preparation and design of a well-organized health and environmental education and public information campaign; the selection of suitable media to conduct the campaign. Special education and environmental campaign program will be conducted for community organizations as well as occupants/owners-employees of commercial and office buildings.

3.6.8 Special waste

- a. **Overview of the component program** – This component will promote proper handling, storage and transport of special (hazardous) wastes. The barangay will also promote methods to minimize health and environmental risks and impact of the disposal of these types of wastes.
- b. **Situation analysis** – Less than 5% in the barangay are aware of the health and environmental risks involve in the handling, storage and disposal of hazardous wastes. Hence, the barangay will introduce a system for the management of hazardous waste such as batteries, paints, light bulbs, electronic devices and other materials with heavy metals, and household and industrial chemicals, etc.

- c. **Program objectives** – This component aims to promote awareness about the proper handling, storage, transport and disposal of special (hazardous) wastes in order to minimize health and environmental risks and impact.
- d. **Action plan** – Information campaign about the identification and description of hazardous wastes as well as the proper procedure in minimizing health and environmental risks and impact shall also be conducted by the barangay. Through this component, the barangay will make sure that the residents and the owners and employees of commercial and industrial enterprises are aware of the proper handling, storage, transport and disposal of hazardous household wastes and special wastes, respectively.

3.6.9 Incentive program

- a. **Overview of the component program (program description)** – This barangay shall provide incentives, *cash or otherwise*, to encourage participation of residents, community organizations and business enterprises in the solid waste management programs of the barangay. Raffle tickets shall be given to cooperative residents. Monthly raffle winners will be selected, and a grand raffle will be conducted once a year in December.
- b. **Situation analysis (addressed by the program)** – As of today, incentive awards are not given to any person, group or organization in the barangay. The provision of these awards and incentives is expected to deeply encourage participation of all concerned in the barangay SWM programs and projects.
- c. **Program objectives** – This component aims to establish an awards system to provide incentive for participation in the SWM programs and projects of the barangay. Accordingly, sanctions will be given to concerned individuals, groups or organizations for violating ordinances, rules and regulations relating to the implementation of the waste management programs.
- d. **Action plan** – The initial activity will be the development of an awards system that will provide incentives to any person, group or organization who/which participated actively in the solid waste management programs or projects of the barangay. System for different types of sanctions for violating of the rules and regulations embodied in the barangay ordinance relating to the solid waste management programs or projects shall also be developed and strictly enforced.

The barangay will adopt the rules and regulations suggested by DILG Memorandum Circular No. 2001-38, such as: 1) Only segregated waste will be collected; 2) Open burning of garbage is not allowed; 3) No garbage can be displayed along sidewalks, streets, alleys and posts; 4) No hanging of garbage bags on trees, fences and gates.

3.6.10 Resource requirement and funding

Adequate resources [human, financial and material] shall be secured by the barangay to implement the component programs and their corresponding projects and activities.

- a. **Description of project costs, revenues and revenue sources for implementing SWM program components** –
- b. **Specific projects, activities, equipment and technological requirements needing outside sourcing of funds or materials** –
- c. **Specific uses of resource requirements and estimated costs** –
- d. **Action plan for generating funds for the acquisition of resource requirements** –

Project: Micropolis

SUMMARY

OF THE

STRATEGIC DEVELOPMENT PLAN OF BARANGAY KAMUNING

1. **Vision of Barangay Development** – Barangay Kamuning is a high density residential community with humanly scaled neighborhoods combined with small commercial areas and essential service industries. It is a God loving and highly civic-spirited community with peaceful, orderly and clean environment. Its residents—working together as a team, sharing knowledge and resources, and building capacity—are endowed with healthy mind and body due to high level of education and exceptional skills contributing to its well managed service-oriented enterprises.
2. **Barangay Development Strategy** – The fundamental strategy for barangay development are:
 - a) Build of livable community.
 - b) Develop broad-based barangay economy.
 - c) Institute good governance and community management.
 - d) Create a bankable barangay LGU.
3. **Strategic Areas for Development** – The strategic areas for barangay development includes the following:
 - a) Slum upgrading: *Building a barangay without slums*
 - b) Development of humanly scaled neighborhoods
 - c) Improving basic infrastructures, community facilities and social amenities
 - d) Creating a healthful urban environment
 - e) Improving access to health care, education and social support services
 - f) Enhancement of income-earning opportunities
 - g) Instituting local governance, community management and maintenance
 - h) Stimulating growth of local service-oriented enterprises and transforming strategically located sari-sari stores into small shopping markets.
4. **Strategic Development Goals** – The strategic development goals of Barangay Kamuning are:
 - a) To build a livable community with healthful environment.
 - b) To develop a broad-based barangay economy with locally-owned service-oriented enterprises and strategically located mini-shopping centers.
 - c) To institute good governance and improve community management.
 - d) To create financial capacity of the barangay LGU to become sufficiently creditworthy to access capital markets.
5. **Strategic Programs and Projects for Barangay Development** – Several development programs and projects have been identified by the barangay. These include the following:

- a) **Poverty Alleviation (Barangay Livelihood & Economic Development)** – Jobs must be the keystone of community revitalization, thus private enterprise must play the major role in this job development.

This program shall institute job training programs, skills upgrading, and higher vocational education; forming of locally-owned business enterprises; loans from low interest enterprise development impact program; investment by commercial banks; technical assistance including a staff man on call to help out at any time; and various other aids for livelihood development and job creation.

- b) **Slum Upgrading** (a common project among the pilot barangays of Project: Micropolis) – Involves the provision of the most basic services: i.e., water and sanitation, waste management, storm drainage and flood prevention, mitigation of environmental hazards, rehabilitation of circulation by providing roads, footpaths, electricity and security lighting, accompanied by enhancement of income-earning opportunities, regularizing security of tenure and construction of medium-rise housing units, community facilities and social amenities; implementation of home improvement program; improving access to health care and education; and creating a clean, safe and healthy living environment.

Main feature: Construction of self-supporting medium-rise commercial-residential building for the informal sectors of the barangay.

- c) **Solid Waste Management** (a common project among the pilot barangays of Project: Micropolis) – Introduction of waste segregation at source, installation of waste collection system, institution of compost making centers within the barangay, and setting up of an ecology center as the central waste management unit.
- d) **Urban Agriculture** (a common project among the pilot barangays of Project: Micropolis) – Utilization of compost fertilizer from the waste management project for food production at home and for community-based agricultural farms along the Meralco-Botocan power line and other available open spaces within the barangay.
- e) **Public Market Redevelopment** – Improvement of the existing public market and slaughter house, mitigation of environmental problems, and improvement of market management and administration, including provision of micro-finance and credit facilities for staff holders and market vendors.
- f) **Bernardo Park Development** – Improvement of Bernardo Park and upgrading its facilities and social amenities by establishing a multi-purpose community center for cultural and recreational purposes jointly with Barangay Pinagkaisahan.
- g) **Rehabilitation of Lagarian Creek** (a common project of Barangay Kamuning, Pinagkaisahan and Kristong Hari) – Cleaning of the creek, provision of flood control system, and improvement of both sides of the river banks. (The proposed lead non-government organization for this project is the Lagarian Creek Environmental Association, Inc.)
- h) **Barangay Hall Reconstruction** – Upgrading or reconstruction of multi-purpose barangay hall.
- i) **Kamuning Medical Center** – Upgrading of existing Kamuning Lying Clinic into a secondary public hospital to provide health services to the people of Kamuning and nearby barangays.

6. Program Action Plan

The summary of action plan for the implementation of strategic programs and projects of the barangay is presented below.

Summary of Action Plan for the Strategic Programs and Projects

Programs	2004-2005	2006-2008	2009-2013
1. Poverty alleviation (<i>Barangay Livelihood & Economic Development</i>)	Identification of income-earning opportunities; business planning and start-ups of new locally-owned businesses; start job training program and skills upgrading; and making loans and other assistance available.	Continue business planning and start-ups; enhancing growth of employment, incomes and local investment.	Continuing business planning and start-ups; enhancing growth of employment, incomes and local investment.
2. Slum Upgrading	Preliminary studies, community surveys and negotiation of land acquisition; planning for slum improvements.	Physical planning, redevelopment and reconstruction.	Continuing improvements and upgrading of community facilities.
3. Solid Waste Management	Waste segregation and compost making.	Continue improving the waste management system.	Continuing improvement and upgrading of the management system.
4. Urban Agriculture	Action planning, experimentation and piloting.	Full implementation.	Continuing implementation and program improvements.
5. Public Market Redevelopment	Preparatory planning and negotiations.	Physical planning, redevelopment and reconstruction.	Continuing improvements and upgrading.
6. Bernardo Park Development	Preparatory planning for the improvement of the park.	Reconstruction and upgrading of its facilities and social amenities.	Continuing improvements and upgrading of facilities.
7. Rehabilitation of Lagarian Creek	Preparatory planning and negotiations.	Physical planning, redevelopment and reconstruction.	Continuing improvements and upgrading.
8. Barangay Hall Reconstruction	Preparatory planning for reconstruction.	Reconstruction and upgrading.	Continuing improvements and upgrading.
9. Kamuning Medical Center	Preliminary studies for upgrading of existing Kamuning Lying Clinic into a secondary public hospital.	Upgrading of existing Kamuning Lying Clinic into a secondary public hospital.	Continuing improvements and upgrading of hospital facilities.

Solid waste management action plan.

The general action plan for the implementation of solid waste management program is presented below.

Planned Period	Action Plan	Results
2004-2005	<p>Develop solid waste management projects focused on waste reduction through re-use, recycling, composting, and setting up of MRF as crucial strategy.</p> <p>Start building capacity of barangay waste management action team for program/ project implementation.</p> <p>Launch health and environmental education, and public information campaign. Provide residents with basic information on solid waste management.</p> <p>Set up scheme for community participation in waste management projects.</p> <p>Initiate solid waste management projects in selected puroks (neighborhood areas) of the barangay improving the waste collection and transfer system.</p> <p>Start setting up of incentive program.</p> <p>Begin establishment of MRF for solid wastes – storage containers, collection points or transfer station.</p> <p>Study handling, storage and transport of special wastes.</p> <p>Mobilize adequate resources [human, financial and material] for SWM projects.</p>	<p><i>Improvements in solid waste management underway in the barangay</i></p>
2006-2008	<p>Solid waste management projects underway in all neighborhood areas of the barangay improving the waste collection and transfer system, and solid waste management facilities.</p> <p>Continue building capacity for full implementation of solid waste management program.</p> <p>Step up health and environmental education, and public information campaign.</p> <p>Beef up incentive programs.</p> <p>Fully establish MRF for solid wastes – storage containers, collection points or transfer station.</p> <p>Improved handling, storage and transport of special wastes.</p> <p>Secure sufficient resources [human, financial and material] for SWM projects.</p>	<p><i>Solid waste management improved.</i></p>

<p>2009-2013</p>	<p>Continue implementing the solid waste management plan with more improvements in waste collection and transfer system, and upgrading of solid waste management facilities.</p> <p>Continue building capacity for specialized solid waste management projects.</p> <p>Strengthen health and environmental education, and public information campaign.</p> <p>Firm up incentive programs.</p> <p>Fully establish MRF for solid wastes – storage containers, collection points or transfer station.</p> <p>Improved handling, storage and transport of special wastes.</p> <p>Sufficient resources [human, financial and material] adequately provided to SWM projects.</p>	<p><i>Solid waste management greatly improved.</i></p>
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Solid Waste Management Plan for Barangay Kristong Hari

Solid Waste Management Plan Of Barangay Kristong Hari

INTRODUCTION

Barangay Kristong Hari was created on May 14, 1972 as a civic barrio. Executive Order No.35 recognized it as a barangay on June 23, 1975. Its present boundaries are the following: Lagarian (Diliman) creek on the north, Judge Jimenez St. on the east, E. Rodriguez Sr. Ave. on the south, and Doña Juana Rodriguez St. on the west. It has a total land area of 33.5914 hectares divided into seven neighborhood areas known as *sitios*.

Land area, population and income. The terrain of the barangay along E. Rodriguez Ave., from east to west, is gently rolling. The topography is sloping down from south (the length of E. Rodriguez Ave.) to north towards Lagarian creek. In 2003, the barangay has as estimated 1,294 households, an average of 4.69 persons/HH, with a total population is 6,068, accounting for a population density of 182.89 persons/ha. In year 2000, the barangay has an average annual income of 200,000 pesos; IRA share, PhP974,539.00; and RPT share of PhP1,371,751.46 for a total budget of PhP2,546,290.46.

Environmental condition. The barangay has a relatively small population, but it faces critical problems in waste management and sanitation particularly in the areas of the informal settlers. Added to this is the seasonal heavy flooding of Lagarian (Diliman) Creek during storms and heavy rainfalls. In fact, floodwaters rise up to the second floor of houses along the creek. This is aggravated by garbage thrown by people upstream and carried inside the houses by floodwaters.

Slum areas. Majority of the residents of the barangay are informal settlers. Almost 1,000 households reside in slum areas of the barangay consisting of approximately 400 households (HH) in Broadway-Dona Juana Rodriguez, one hectare in size; 220 HH in Hemady Street Interior, half hectare; 180 HH in Tomas Morato Interior, 1500 sq.m.; and almost 120 HH in the surrounding areas of SVD Seminary compound.

The solid waste management plan. This *Solid Waste Management Plan* (SWMP) adheres to the provisions of Republic Act 9003: Ecological Solid Waste Management Act of 2000, and the directive of DILG per Memorandum Circular No. 2001-38. More especially, the preparation of this SWMP is in keeping with the solid waste management component of the DILG *Project: Micropolis* funded by the Swedish International Development Cooperation Agency (SIDA), with Conexor Sensus AB as foreign consultant.

Part 1: SUMMARY of the Barangay Solid Waste Management Plan

Vision. Barangay Kristong Hari is envisioned to be a community with exceptionally clean environment due to efficient management of its solid wastes making it highly conducive to economic growth and development.

Areas for waste management. Following the provisions of RA 9003, the areas of concern for achieving the stated SWM vision are the following: a) Waste collection and transfer; b) Waste processing and pre-treatment; c) Waste reduction at source; d) Reuse and recycling; e) Composting; f) Solid waste facility or MRF; g) Education and public information; h) Special (hazardous) wastes; i) Funding and resource requirements; and j) Incentive program.

Goals. At the end of the 10-year planned period, Barangay Kristong Hari seeks to attain the following goals:

General goal – Sustained improvement of solid waste management system in the barangay.

Specific goals – To improve waste collection, transfer and processing system; to minimize waste generation and increase waste reduction at source through recycling; to establish mini solid waste facilities (or mini-MRF); to carry out public information campaign, and health and environmental education; to provide SWM incentives to individuals, groups or organizations supporting the SWM campaign; and to secure necessary resources and funding for barangay environmental programs/projects.

Waste management indicators. The indicators for the successful implementation of this SWM Plan includes the achievement of the following:

- a. Efficient waste collection and transfer.
- b. Use of processing methods and improved facilities for pre-treatment of waste.
- c. Effective waste reduction at source, particularly segregation and recycling.
- d. Installation of composting equipment and production/marketing of compost.
- e. Small solid waste facility or mini-MRF established.
- g. Public health and environmental education, and effective public information campaign.
- h. Prevent or minimize health and safety risks in the handling, storage and transport of hazardous wastes.
- i. Institute incentive programs for residents, community organizations, waste management teams, barangay officials and others.
- j. Appropriate and timely resources – human, financial and material are provided.

Component programs. In line with RA 9003, the ten (10) major components of the Barangay Kristong Hari SWMP are: 1) Collection and transfer; 2) Waste processing; 3) Source reduction; 4) Recycling; 5) Composting; 6) Small solid waste facility or mini-MRF; 7) Education and public information; 8) Special waste; 9) Resource requirement and funding; and 10) Incentive programs.

Part 2: BARANGAY PROFILE & EXISTING SITUATION

2.1 The Barangay Profile

2.1.1 Brief description of the barangay and background information

Description of the Barangay:

Barangay Kristong Hari was created on May 14, 1972 as a civic barrio. Executive Order No.35 recognized it as a barangay on June 23, 1975. Its present boundaries are the following: Lagarian (Diliman) creek on the north, Judge Jimenez St. on the east, E. Rodriguez Sr. Ave. on the south, and Doña Juana Rodriguez St. on the west. It has a total land area of 33.5914 hectares.

The barangay is divided into seven neighborhood areas known as *sitios*. Sitio 1, the lower part of Doña Juana Rodriguez St.; Sitio 2, middle part of Doña Juana Rodriguez St.; Sitio 3, upper part of Doña Juana Rodriguez St. and Sunnyside; Sitio 4, Hemady and Albama streets; Sitio 5, Tomas Morato Interior; Sitio 6, Hemady St., and Christ the King compound; and Sitio 7, E.Rodriguez and Judge Jimenez streets.

Barangay finance – In year 2000, the barangay has an average annual income of 200,000 pesos; IRA share, PhP974,539.00; and RPT share of PhP1,371,751.46 for a total budget of PhP2,546,290.46 (Table 1).

TABLE 1. Average Annual Income, IRA Share and RPT Share (Philippine Peso)

Financial Data	1999	2000	2001	2002	2003
Average annual income	53,000.00	200,000.00			
IRA Share	890,544.00	974,539.00			
Share in Real Property Tax	1,223,995.84	1,371,751.46			
TOTAL	2,167,539.84	2,546,290.46			

Background Information and General Situation:

Socio-economic situation – A great majority of the barangay residents are informal settlers with makeshift house and no land of their own. The families have limited means of livelihood to satisfy their daily needs. There are too many out-of-school youths who are unable to continue schooling due to poverty. Many of the youth are addicted to gambling, drinking and drugs causing violence within the barangay.

Environmental condition – Even if the barangay has a relatively small population, it faces critical problems in waste management and sanitation particularly in the areas of the informal settlers. Added to this is the seasonal heavy flooding of Lagarian (Diliman) Creek during storms and torrential rainfalls. In fact, floodwaters rise up to the second floor of houses along

the creek. This is aggravated by garbage thrown by people upstream and carried inside the houses by floodwaters.

Slum areas – As noted above, majority of the inhabitants of the barangay are informal settlers. Almost 1,000 households reside in slum areas of the barangay consisting of approximately 400 households (HH) in Broadway-Dona Juana Rodriguez, one hectare in size; 220 HH in Hemady Street Interior, half hectare; 180 HH in Tomas Morato Interior, 1500 sq.m.; and almost 120 HH in the surrounding areas of SVD Seminary compound.

Physical-spatial features & infrastructures – The terrain of the barangay along E. Rodriguez Ave., from east to west, is gently rolling. The topography is sloping down from south (the length of E. Rodriguez Ave.) to north towards Lagarian creek. Small flat areas may be found in the Christ the King seminary compound and the residential subdivisions along Hemady and Albama streets.

The slum communities have narrow roads and footpaths. Small stores and extended houses occupy the sidewalks.

2.1.2 Estimated population and population projection for a 10-year period

The barangay has 1,294 households, an average of 4.69 persons/HH, with a total population is 6,068 in 2003, accounting for a population density of 182.89 persons/ha. (see Table 2). The estimated population is 6,432 in 2004 and projected to reach 9,704 by 2013.

TABLE 2. Population, Population Density and Number of Households of Bgy. Kristong Hari

Plan Year	Calendar Year	Present / Projected Population	Population density (Persons/hectare)	Number of Households
	1995	3,602	108.56	768
	2000	5,033	151.69	1,073
0	2003	6,068	182.89	1,294
1	2004	6,432	193.86	1,371
2	2005	6,802	205.01	1,450
3	2006	7,176	216.28	1,530
4	2007	7,553	227.64	1,610
5	2008	7,931	239.04	1,691
6	2009	8,308	250.40	1,771
7	2010	8,661	261.04	1,847
8	2011	9,007	271.47	1,920
9	2012	9,367	282.32	1,997
10	2013	9,704	292.47	2,069

2.2 Solid Waste Management: Existing Situation in the Barangay

2.2.1 Current state and trends of solid waste management in the barangay

Current state. Like all other barangays in Quezon City, the Environmental Protection and Waste Management Department (QC-EPWMD) undertakes garbage collection in Barangay Kristong Hari twice a week (Wednesdays and Saturdays) in coordination with eco-aids and the environment and waste management committee of the barangay council. Four (4) dump trucks (2 big and 2 small trucks) collect the garbage every week. The garbage collected is unloaded at the Payatas Dumpsite.

In line with the program of QC-EPWMD, waste segregation at household level was tried. The method was not very effective due to lack of understanding and inadequate support of majority of the residents.

Problems. Previously, the barangay provided garbage boxes in three strategic locations, Doña Juana Rodriguez, Sunny Side and Hemady streets. Unfortunately, when the boxes are full, the residents continue to dump garbage beside the boxes making it a virtual dumpsite and creating health risks to the people. Other problems are the pushcart boys who collect recyclables at night and allow the waste to be scattered on the streets and sidewalks; lack of discipline and non-cooperation of barangay residents in waste segregation; and no space for waste collection stations.

Trends. The participation of the barangay in the SIDA-funded solid waste management project has created some interest in improving waste management, particularly the concept of waste reduction at home through reuse, recycling and composting of organic matters.

2.2.2 Profile of sources of solid wastes

The main sources of solid wastes in the barangay are the households in the informal settlements and residential subdivisions, and the commercial establishments along the major thoroughfares. Garden wastes from subdivision areas and street litters are also generated in the barangay.

2.2.3 Estimated solid waste generation and projection, and waste characterization

Estimated solid waste generation and projection by source. At present, two dump trucks (1 big and 1 small) collect solid waste in the barangay with an estimated capacity of 3,200 kg/truck and 2,500 kg/truck, respectively, for a total of 11,400 kg/week or approximately 1,628.57 kg/day, equivalent to 594.43 tons/year. This means that approximately 800 kg/day are thrown in the Lagarian Creek. Waste generation of the barangay is estimated at 3,216.04 kg/day or 1,173.85 tons in 2003 to 5,143.12 kg/day or 1,877.24 tons by 2013 (see Table3 below).

TABLE 3. Projected Waste Generation of Bgy. Kristong Hari

Plan Year	Calendar Year	Projected Population	Projected Waste Generation	
			Kg/Day	Tons/Year
0	2003	6,068	3,216	1,173.85
1	2004	6,432	3,409	1,244.27
2	2005	6,802	3,605	1,315.84
3	2006	7,176	3,803	1,388.20
4	2007	7,553	4,003	1,461.13
5	2008	7,931	4,203	1,534.25
6	2009	8,308	4,403	1,607.18
7	2010	8,661	4,590	1,675.47
8	2011	9,007	4,774	1,742.04
9	2012	9,367	4,965	1,812.05
10	2013	9,704	5,143	1,877.24

Waste characterization. The barangay produces approximately 40% recyclable, 50% biodegradable materials and 10% mixed wastes including residuals equivalent to an average of 3,409 kg of solid wastes a day, or an estimated 1,244.27 kg of solid waste materials per year.

2.2.4 Characteristics and conditions of collection, storage, processing, and disposal

Collection. The collection of solid waste by open dump trucks from each individual residential households and commercial establishments is the major waste management activity in the barangay. However, the collection system (every Wednesdays and Saturdays) is inefficient. Around 20-30% are usually uncollected because the dump trucks cannot go inside the residential areas due to very narrow streets, which are good only for small vehicles and pedestrian traffic.

The barangay is subdivided into two (2) collection cells covering the following streets: 1) Broadway street including woodside area; and 2) Alabama, Hemady and Balite Drive Ext. streets. Waste are collected twice a week, every Wednesdays and Saturdays. Collection of waste along E. Rodriguez Avenue is undertaken by MMDA.

Storage and processing. The Barangay provided receptacles in a two strategic places for temporary storage of wastes. Unfortunately, these areas became dumping site for most solid wastes of barangay residents. This practice was stopped immediately. Processing of waste for segregation is not undertaken.

Waste disposal. The collected wastes hauled by dump trucks are transported to Payatas Dumpsite.

2.2.5 Location of waste management facilities

The Barangay has no solid waste management facilities. As noted above, receptacles were provided in two strategic locations in the barangay. However, when the receptacles at filled up, the residents continued to dump the garbage beside the receptacles, in effect became a small "dump site" on the sidewalks.

Part 3: BARANGAY SOLID WASTE MANAGEMENT PLAN

3.1 Overview of the Barangay Solid Waste Management Plan

3.1.1 Barangay Solid Waste Management Plan in a nutshell

Vision and strategy. Barangay Kristong Hari is envisioned to be a community with exceptionally clean environment due to efficient management of its solid wastes making it highly conducive to economic growth and development. The basic strategy is to implement an efficient solid waste management system.

Main areas for waste management. Following the provisions of the Solid Waste Management Act (RA 9003), the areas of concern for achieving the stated SWM vision are the following: a) Waste collection and transfer; b) Waste processing and pre-treatment; c) Waste reduction at source; d) Reuse and recycling; e) Composting; f) Solid waste facility or MRF; g) Education and public information; h) Special (hazardous) wastes; i) Funding and resource requirements; and j) Incentive program.

Goals. At the end of the 10-year planned period, Barangay Kristong Hari seeks to attain the following goals:

General goal – Sustained improvement of solid waste management system in the barangay.

Specific goals – To improve waste collection, transfer and processing system; to minimize waste generation and increase waste reduction at source through recycling; to establish mini solid waste facilities (or mini-MRF); to carry out public information campaign, and health and environmental education; to provide SWM incentives to individuals, groups or organizations supporting the SWM campaign; and to secure necessary resources and funding for barangay environmental programs/projects.

Major waste management indicators. The indicators for the successful implementation of this SWM Plan includes the achievement of the following:

- a. Efficient waste collection and transfer.
- b. Use of processing methods and improved facilities for pre-treatment of waste.
- c. Effective waste reduction at source, particularly segregation and recycling.
- d. Installation of composting equipment and production/marketing of compost.
- e. Small solid waste facility or mini-MRF established.
- g. Public health and environmental education, and effective public information campaign.
- h. Prevent or minimize health and safety risks in the handling, storage and transport of hazardous wastes.
- i. Institute incentive programs for residents, community organizations, waste management teams, barangay officials and others.
- j. Appropriate and timely resources – human, financial and material are provided.

Component programs. In line with RA 9003, the ten (10) major components of the Barangay Kristong Hari SWMP are: 1) Collection and transfer; 2) Waste processing; 3) Source reduction; 4) Recycling; 5) Composting; 6) Small solid waste facility or mini-MRF; 7) Education and public information; 8) Special waste; 9) Resource requirement and funding; and 10) Incentive programs.

3.1.2 Summary description of the solid waste management components

The major components of the SWMP are: Collection and transfer; processing; source reduction, recycling and composting; solid waste facility; education and public information; special waste; resource requirement and funding; incentive programs. These components are described below.

- a. **Collection and transfer** – This component program aims to improve the efficiency of waste collection and transport of solid waste within the barangay. Its target is to reduce the number of collection trucks from the present two (2) trucks every collection days (Wednesdays and Saturdays) to one (1) truck, or two (2) trucks per week at the end of 2013. A single truck itinerary will be designed to cover all streets of the barangay at the beginning of 2006 with garbage segregation.
- b. **Processing** – This component intends to process solid wastes through the *segregation* of different types of solid waste for re-use and recycling. This component will focus on the processing of wastes through the *segregation* of different types of solid wastes. Small *recycling centers* provided with receptacles will be established in strategic locations in the informal settlements. Composting of biodegradables shall be arranged with adjacent barangays with composting facilities.
- c. **Source reduction** – The barangay will reduce sufficient amount of waste at its source, the households and commercial/business premises through waste segregation. Recyclables shall be brought to a collection station for re-use and recycling, while organic materials will be brought to adjacent barangays with composting facilities. Target: 65% reduction of waste by end of 2013.
- d. **Recycling** – Sufficient amount of the solid wastes generated shall be reduced by means of a segregation program which separates recyclable materials at its primary source, the households, offices and business premises. Target: 80% of reusable and recyclable materials are recycled or collected and brought to recycling centers.
- e. **Collection of organic materials for composting** – The barangay has no space for setting up composting facilities, thus this component intends to collect organic materials to help reduce sufficient amount of waste. The main activity of the barangay will be the gathering of organic wastes for transfer and processing into compost by nearby barangay with composting facilities.
- f. **Solid waste facility** – This component seeks to establish a small materials recovery facility (mini-MRF) which shall serve as temporary storage of segregated solid wastes. All recyclable materials shall be transferred or brought to nearby buying stations.
- g. **Education and public information** – This component will set up a barangay-wide public health and environmental education campaign on solid waste management, in general, and waste reduction, segregation and collection, and recycling, in particular. Community organizations and owners-employees of buildings and business enterprises will be provided with separate education and environmental campaign program.
- h. **Special waste** – This component involves the promotion of proper handling, storage and transport of hazardous wastes. It will also introduce methods to minimize health and environmental risks and impact of the disposal of these types of wastes.
- i. **Incentive program** – Incentives, *cash or otherwise*, to encourage participation of residents, community organizations and business enterprises in the solid waste management programs of the barangay shall be instituted.
- j. **Resource requirement and funding** – Resources [human, financial and material] shall be provided by the barangay from its development funds. Since this will not be enough additional funds shall be solicited from different sources government and private.

3.2 Vision of Barangay Solid Waste Management

Barangay Kristong Hari is envisioned to be a compact mixed-used, medium density neighborhood punctuated by pedestrian-friendly medium rise residential buildings with the amenities of open spaces. It is a community that is free from flood, poverty, drug abuse and criminality. A community with exceptionally clean environment due to efficient management of its solid wastes making it highly conducive to economic growth and development

3.3 Barangay Solid Waste Management Strategy

The fundamental strategies for solid waste management are as follows:

- a) Minimizing waste and reduction of waste at source through reuse, recycling and composting.
- b) Building and continuously upgrading of waste management facilities.
- c) Developing broad-based community participation, particularly the informal sectors in slums and squatter areas.
- d) Establishing good waste management practices by acquiring know-how, developing skills, improving capabilities, and instituting accountability, integrity and transparency in local governance.
- e) Developing broad-based community participation, including the informal sectors in slums and squatter areas.
- f) Establishing good waste management practices by acquiring know-how, developing skills, improving capabilities, and instituting accountability, integrity and transparency in local governance.

3.4 Key Areas for Solid Waste Management and Issue Analysis

3.4.1 Key areas for solid waste management

The strategic areas for achieving the SWM vision and attaining the expected results of the Plan have been identified in the Solid Waste Management Act of 2000 (RA 9003). For Bgy. Kristong Hari, these include the following:

- a. Waste collection and transfer
- b. Waste processing and pre-treatment
- c. Waste reduction at source, particularly segregation and recycling
- d. Reuse and recycling scheme
- e. Solid waste facility or mini-MRF
- f. Education and public information
- g. Handling, storage and transport of hazardous wastes
- h. Provision of resources – human, financial and material
- i. Incentive programs.

3.4.2 Critical issues

Considerable issues could affect the implementation of the solid waste management plan. The most critical issues are, among others, the following:

- a. Regular time schedules for garbage collection and transport
- b. Effective waste segregation, recycling and reduction system
- c. Establishing an environment-friendly composting facility
- d. Area large enough for building the MRF within the barangay
- e. Participation of residents and non-government organizations in the waste management program
- f. Effective education and public information campaign
- g. Incentives for cooperation and participation in the SWM program of the barangay.

3.5 Solid Waste Management Goals and Objectives

3.5.1 Management indicators for the realization of the vision

The indicators for the achievement of the SWM plan are the following:

- a. Institution of an efficient of waste collection and transfer;
- b. Utilization of methods and setting up of facilities for processing and pre-treatment of waste;
- c. Amount of waste reduction at source, particularly segregation and recycling;
- d. Improvement of reuse and recycling system;
- e. Establishment of solid waste facility or MRF;
- g. Implementation of public health and environmental education, and public information campaign;
- h. Prevention of health and safety risks in the handling and transport of hazardous wastes;
- i. Provision of appropriate and timely resources – human, financial and material; and
- j. Appropriate incentive programs for residents, community organizations, waste management teams, barangay officials and others.

3.5.2 Solid waste management goals

Considering the identified indicators of achievements set above, the goals of this SWM Plan are:

At the end of the 10-year planned period, the following goals shall have been achieved:

General goal:

Sustained improvement of solid waste management system in the barangay.

Specific goals:

- ◆ Improve waste collection, transfer and processing system
- ◆ Minimize waste generation and increase waste reduction at source through recycling
- ◆ Establish small solid waste facilities (or mini-MRF)
- ◆ Carry out public information campaign and health and environmental education
- ◆ Provide SWM incentives to individuals, groups or organizations supporting the SWM campaign
- ◆ Secure necessary resources and funding for barangay environmental programs/projects

3.5.3 Objectives

The achievement of these goals shall be reflected in the attainment of the following objectives:

1. Improved waste collection and transport to disposal station or final disposal sites, efficient crew operations and use of modern transport equipment.
2. Waste generation rate minimized, waste at source reduced; use of household, office and building storage containers; refuse management at home, offices, large buildings and commercial premises improved.
4. Seventy (70) percent of waste generated are reused and recycled.
5. Small MRF for solid wastes – storage containers, collection points or transfer station – in strategic locations in the informal settlements are established.
6. Health and environmental education program and public information campaign implemented with community participation.
7. Handling, storage and transport of hazardous wastes improved, and health and environmental risks and impact minimized.

9. Incentive program for waste management established.
10. Adequate resources [human, financial and material] provided.

3.6 Solid Waste Management Component Programs and Action Plan

3.6.1 Collection and transfer

- a. **Overview of the component program** – This component program aims to improve the efficiency of waste collection and transport of solid waste within the barangay. The target is to reduce the number of collection trucks from the present two (2) trucks every collection days (Wednesdays and Saturdays) to one (1) truck, or two (2) trucks per week at the end of 2013. A single truck itinerary will be designed to cover all streets of the barangay at the beginning of 2006 with garbage segregation.
- b. **Program objectives** – At the end of 2013, the barangay intends to attain 95% garbage collection all wastes and transported to disposal station or final disposal site. The target is to reduce the number of collection trucks from the present four (4) trucks two (2) trucks per week.
- c. **Action plan** – The waste collection cells shall be redesigned as a single itinerary. Segregation of different types of solid waste for re-use, recycling and composting will be introduced beginning 2005. Correspondingly, a barangay ordinance on solid waste management shall be issued. Only segregated waste will be collected. The barangay will establish strategic *collection points* for the temporary storage of solid waste while awaiting collection and transfer to processing sites or to final disposal sites. Properly designed containers or receptacles will be provided in these collection stations.

3.6.2 Processing

- a. **Overview of the component program** – This component intends to process solid wastes through the *segregation* of different types of solid waste for re-use and recycling. This component will focus on the processing of wastes through the *segregation* of different types of solid wastes. Small *recycling centers* provided with receptacles will be established in strategic locations in the informal settlements. Composting of biodegradables shall be arranged with adjacent barangays with composting facilities.
- b. **Program objectives** – At the end of 2013, solid wastes in the barangay shall be efficiently processed through a segregation system and a small *recycling centers* shall be established.
- c. **Action plan** – The barangay will issue an ordinance on solid waste management following the provisions of RA 9003 and the directive of the DILG on this matter. Beginning 2005, the barangay will strictly enforce the waste segregation system to minimize garbage to be collected by dump trucks. Recyclables shall be collected by the barangay collection brigades and brought to the collection stations.

3.6.3 Source reduction

- a. **Overview of the component program** – The barangay will reduce sufficient amount of waste at its source, the households and commercial/business premises through waste segregation. Recyclables shall be brought to a collection station for re-use and recycling, while organic materials will be brought to adjacent barangays with composting facilities. Target: 65% reduction of waste by end of 2013.
- b. **Program objectives** – The objective is to minimize waste generation rate and reduce waste at source by means of *waste segregation* in combination with reuse and recycling.

- c. **Action plan** – The reduction of waste generation shall be carried out by careful segregation of wastes, mainly into reusables, recyclables and compostables. The segregated wastes shall be collected by barangay collection brigades from the households and offices, and brought to the barangay collection stations or *recycling centers* where the improperly separated wastes are properly segregated and manually classified further into different types (e.g. metals, glass, bottles, plastics, plastic packages, papers, corrugated papers, cardboards, tin cans, aluminum containers, etc.)

3.6.4 Recycling

- a. **Overview of the component program** – Sufficient amount of the solid wastes generated shall be reduced by means of a segregation program which separates recyclable materials at its primary source, the households, offices and business premises. Target: 80% of reusable and recyclable materials are recycled or collected and brought to recycling centers.
- b. **Program objectives** – The purpose of this component is to recycle 80% of reusable and recyclable wastes generated in the barangay by means of waste segregation.
- c. **Action plan** – The barangay shall institute segregation measures through barangay ordinance which will encourage separation of all reusable and recyclable materials for collection by the barangay garbage brigade. The barangay will also establish collection stations or recycling centers and set up buying and selling system. Incentives, *cash or otherwise*, shall also be incorporated in the recycling program.

3.6.5 Collection of organic materials for composting

- a. **Overview of the component program** – The barangay has no space for setting up composting facilities, thus this component intends to collect organic materials to help reduce sufficient amount of waste. The main activity of the barangay will be the gathering of organic wastes for transfer and processing into compost by nearby barangay with composting facilities..
- b. **Program objectives** – The aim of this component is to collect at least 85% of organic materials generated in the barangay and send these materials to a nearby *composting plant* operated by adjacent barangay.
- c. **Action plan** – The barangay has no place to set up composting facility. The plan is simply to collect the organic materials and bring these to adjacent barangay with *composting plant*.

3.6.6 Solid waste facility

- a. **Overview of the component program** – This component seeks to establish a small materials recovery facility (mini-MRF), which shall serve as temporary storage of segregated solid wastes. All recyclable materials shall be transferred or brought to nearby buying stations.
- b. **Program objectives** – The objective is to set up a small barangay-based materials recovery facility (MRF) that can accommodate the amount of waste materials generated by the community.
- c. **Action plan** – The barangay shall select, with the participation of the residents, a few strategic areas where a micro-MRF shall be established. Waste materials that are improperly segregated shall be properly separated and manually classified further into different types (e.g. metals, glass, bottles, plastics, plastic packages, papers, corrugated papers, cardboards, tin cans, aluminum containers, etc.)

3.6.7 Education and public information

- a. **Overview of the component program (*program description*)** – This component will set up a barangay-wide public health and environmental education campaign on solid waste management, in general, and waste reduction, segregation and collection, and recycling, in particular. Community organizations and owners-employees of buildings and business enterprises will be provided with separate education and environmental campaign program.
- b. **Program objectives** – The objectives of this component to organize a barangay-wide health and environmental education and public information campaign.
- c. **Action plan** – The component shall be implemented through the selection of appropriate media and conduct occasional street meetings and general barangay assembly. The barangay shall encourage the conduct of SWM-environmental lectures, teach-ins, half-day seminars; and incorporation of SWM topics in classroom teaching.

3.6.8 Hazardous waste

- a. **Overview of the component program** – This component involves the promotion of proper handling, storage and transport of hazardous wastes. It will also introduce methods to minimize health and environmental risks and impact of the disposal of these types of wastes.
- b. **Program objectives** – The objective is to promote awareness about the proper handling, storage, transport and disposal of hazardous wastes in order to minimize health and environmental risks and impact.
- c. **Action plan** – This component will make sure that the barangay residents and the owners and employees of commercial and industrial enterprises are aware of the proper handling, storage, transport and disposal of hazardous household wastes. Information campaign about the identification and description of hazardous wastes as well as the proper procedure in minimizing health and environmental risks and impact shall also be conducted.

3.6.9 Incentive program

- a. **Overview of the component program (*program description*)** – Incentives, *cash or otherwise*, to encourage participation of residents, community organizations and business enterprises in the solid waste management programs of the barangay shall be instituted.
- b. **Program objectives** – This component aims to establish an awards system to provide incentive for participation in the SWM programs and projects of the barangay. Enforcement of existing laws and ordinances shall also be strictly implemented.
- c. **Action plan** – The activities under this component include the following: Developing an incentive awards system to any person, group or organization who/which participated actively in the solid waste management programs or projects of the barangay.

3.6.10 Resource requirement and funding

- a. **Description of project costs, revenues and revenue sources for implementing SWM program components** –
- b. **Specific projects, activities, equipment and technological requirements needing outside sourcing of funds or materials** –

- c. Specific uses of resource requirements and estimated costs –
- d. Action plan for generating funds for the acquisition of resource requirements –

Project: Micropolis

SUMMARY

OF THE

STRATEGIC DEVELOPMENT PLAN OF BARANGAY KRISTONG HARI

1. **Vision of Barangay Development** – Barangay Kristong Hari is envisioned to be a compact mixed-used, medium density neighborhoods punctuated by pedestrian-friendly medium rise residential buildings with the adequate amenities and ample open spaces. It is a community that is free from flood, poverty, drug abuse and criminality. A community, without slums, living in an atmosphere of harmonious relationship. A community with healthy environment for physical growth and development
2. **Barangay Development Strategy** – The fundamental strategy for barangay development are:
 - a) Create a community that is livable with a healthful urban environment.
 - b) Develop a community with broad economic base, providing on-the-job training for local residents, and reducing poverty and social inequity.
 - c) Establish good governance and effective community management by instituting accountability, integrity, and transparency of local government.
3. **Strategic Areas for Development** – The strategic areas for barangay development includes the following:
 - a) Slum upgrading: *Building a barangay without slums*
 - b) Building social infrastructures and community amenities
 - c) Developing access to education and health care
 - d) Instituting local governance and community management
4. **Strategic Development Goals** – The strategic development goals of Barangay Kristong Hari are as follows:
 - a) To build a compact mixed-used, medium density neighborhoods punctuated by pedestrian-friendly medium rise residential buildings with healthful environment.
 - b) To develop barangay-based enterprises and strategic small-and medium-industries.
 - c) To institute good governance.
5. **Strategic Programs and Projects for Barangay Development** – The summary descriptions of the major strategic programs and projects for barangay development are presented below:
 - a) **Poverty alleviation (Barangay Livelihood & Economic Promotion)** – This program shall provide livelihood training programs, upgrading of technical skills; organization of locally-owned business enterprises; low interest loan program for small enterprises; encouragement of business sectors from outside to invest in economic enterprises in the barangay; and “requesting” business establishments within the community to employ local residents.

b) **Solid waste management** (a common project among the pilot barangays of Project: Micropolis) – An integrated waste management program using waste segregation at home, improvement of waste collection system, production of compost within the barangay, and setting up of a central waste management in the office of the barangay chairman.

c) **Slum upgrading** – It deals with the provision of the basic services such as water supply and sanitation, waste management, storm drainage and flood prevention, rehabilitation of Lagarian Creek, improvement roads and footpaths, and installation of street lighting.

Development of livelihood projects, solving the security of land tenure, and construction of social amenities; implementation of health care and education programs; and making a clean, safe and healthy living environment.

Main feature: Construction of self-supporting medium-rise residential building for the informal sectors of the barangay.

d) **Urban Agriculture** – Utilization of compost fertilizer from the waste management project for food production at home and utilization of open spaces for communal urban farming.

e) **Rehabilitation of Lagarian Creek** (a common project of barangays of Kamuning, Pinagkaisahan and Kristong Hari) – Cleaning of the creek, provision of flood control system, and improvement of both sides of the river banks. Design and construction Lagarian Park & Recreation Center at the Balite Drive Ext. and providing play structures and recreational facilities and other social amenities. (The proposed lead non-government organization for this project is the Lagarian Creek Environmental Association, Inc.)

f) **Scholarship program** – Setting up of scholarship programs for deserving students. Upgrading of technical skills of workers and employees

6. Program/Project Action Plan – The summary of action plan for the strategic programs is presented below.

Summary of Action Plan for the Strategic Programs and Projects

Programs	2003-2004	2005-2013	2013-2023
1. Poverty alleviation (Barangay Livelihood & Economic Promotion)	Identification of income-earning opportunities; business planning and start-ups of new locally-owned businesses; start job training program and skills upgrading; and making loans and other assistance available.	Continue business planning and start-ups; enhancing growth of employment, incomes and local investment.	Continuing business planning and start-ups; enhancing growth of employment, incomes and local investment.
2. Slum Upgrading	Preliminary studies, community surveys and negotiation of land acquisition; planning for slum improvements.	Physical planning, redevelopment and reconstruction.	Continuing improvements and upgrading of community facilities.
3. Solid Waste Management	Waste segregation and compost making.	Continue improving the management system.	Continuing improvement and upgrading of the management system.

4. Urban Agriculture	Action planning, experimentation and piloting.	Full implementation.	Continuing implementation and program improvements.
5. Rehabilitation of Lagarian Creek	Preparatory planning and negotiations Preliminary planning and design of the park and recreation center at Balite Drive Ext.	Physical planning, redevelopment and reconstruction Construction of the park and recreation center, its facilities and social amenities.	Continuing improvements and upgrading.
6. Scholarship Program	Preparatory studies on educational needs and requirements; start the scholarship program.	Continuing expansion and upgrading of the scholarship program.	Continuing innovations on the scholarship program.

Solid Waste Management Plan for Barangay Sacred Heart

Solid Waste Management Plan Of Barangay Sacred Heart

Barangay Sacred Heart was created in 1975. Its boundaries are Timog Avenue on the north, EDSA on the east, Meralco-Botocan power line on the south, and Tomas Morato St. on the west.

Barangay Sacred Heart is a medium density residential community surrounded by business establishments (mostly restaurants, banks, videoke bars or night spots) along its boundaries. Majority of the residents are working outside the barangay.

Land area, population and income. The barangay has a total land area of 54.088 hectares. Its terrain is generally flat except for a gently rolling portion in the south at the Meralco-Botocan power line, along its boundary with Barangay Kamuning. It has 1,744 households with a total population of 8,628 and a density of 159.51 persons/ha. It has an average annual income of PhP650,478.00 pesos; IRA (Internal Revenue Allotment) share, PhP1,932,852.00; and RPT (Real Property Tax) share of PhP1,567,148.00. The total budget of the barangay is PhP4,150,478.00 for year 2000.

Environmental condition. The barangay has a *fairly* clean environment. However, solid waste are sometimes scattered along many streets, particularly before waste collection days. The usual problems are the scavengers who spread out all types of wastes along the streets, making it difficult to collect. In spite of its relatively flat topography, there are still a few flood prone areas such as Scout Torillo Street and Scout Fernandez Street corner Tomas Morato Avenue.

Slum areas. The barangay has 277 families living in seven slum areas located along EDSA corner Timog Avenue, Scout Limbaga Street, 11th Jamboree Street, Scout de Guia corner Scout Torillo Streets, Scout Delgado Street, Scout Fuentebella Ext. Street, and Scout Rallos Street. These small, dispersed squatter areas have no basic services. Most of the slum dwellers are employed or work as taxi driver, garbage collector, carpenter, plumber, mason, laborer, laundrywomen, etc.

The solid waste management plan. This *Solid Waste Management Plan* (SWMP) was prepared in line with the provisions of Republic Act 9003: Ecological Solid Waste Management Act of 2000, and the directive of DILG per Memorandum Circular No. 2001-38. The preparation of this SWMP is in keeping with our participation in the DILG *Project: Micropolis*, particularly the solid waste management project funded by the Swedish International Development Cooperation Agency (SIDA), with Conexor Sensus AB as our foreign consultant.

Part 1: SUMMARY of the Barangay Solid Waste Management Plan

Vision. Barangay Sacred Heart envisions a community that is zero in crime, zero in waste, zero in cases of preventable diseases, and physically modern, clean and beautiful community.

Areas for waste management. The areas for achieving the SWM vision and attaining the expected results of the Plan are the following: a) Waste collection and transfer; b) Waste processing and pre-treatment; c) Waste reduction at source, particularly segregation and recycling; d) Reuse and recycling scheme; e) Composting process, production and marketing of compost; f) Solid waste facility or MRF; g) Education and public information; h) Handling, storage and transport of special (hazardous) wastes; i) Provision of resources – human, financial and material; and j) Incentive programs.

Goals. At the end of the 10-year planned period, the following goals shall have been achieved:

General goal – Continuously improving solid waste management system in the barangay.

Specific goals – Improve waste collection, transfer and processing system; minimize waste generation and increase waste reduction at source through recycling and reuse; construct solid waste facilities or MRF; carry out health and environmental education and public information campaign; regularize valuable SWM incentive program; and provide required resources and funding for waste management programs/projects in the barangay.

Waste management indicators. The major indicators of achievement for the successful implementation of the Bgy. Sacred Heart SWM Plan are:

- a. Efficiency of waste collection and transfer.
- b. Utilization of methods and improvement of facilities for processing and pre-treatment of waste.
- c. Effectiveness of waste reduction at source, particularly segregation and recycling.
- d. Continuous improvement of reuse and recycling scheme.
- e. Installation of composting equipment and production/marketing of compost.
- f. Establishment of solid waste facility or MRF.
- g. Execution of public health and environmental education, and effectiveness of public information campaign.
- h. Prevention or minimization of health and safety risks in the handling, storage and transport of special (hazardous) wastes, if any.
- i. Setting up of incentive programs for residents, community organizations, waste management teams, barangay officials and others.
- j. Provision of appropriate and timely resources – human, financial and material.

Component programs. The SWMP of Barangay Sacred Heart consists of 10 major components. These are: 1) Collection and transfer; 2) Waste processing; 3) Source reduction; 4) Recycling; 5) Composting; 6) Solid waste facility or MRF; 7) Education and public information; 8) Special waste; 9) Resource requirement and funding; and 10) Incentive programs.

Solid waste management action plan. The general action plan for the implementation of solid waste management plan is presented on the following page.

Part 2: BARANGAY PROFILE & EXISTING SITUATION

2.1 The Barangay Profile

2.1.1 Brief description of the barangay and background information

Description of the Barangay:

Barangay Sacred Heart was created in 1975. Its boundaries are Timog Avenue on the north, EDSA on the east, Meralco-Botocan power line on the south, and Tomas Morato St. on the west. Its total area is 54.088 hectares.

Barangay Sacred Heart is a medium density residential community surrounded by business establishments (mostly restaurants, banks, videoke bars or night spots) along its boundaries. Majority of the residents are working outside the barangay.

Barangay finance – It has an average annual income of PhP650,478.00 pesos; IRA (Internal Revenue Allotment) share, PhP1,932,852.00; and RPT (Real Property Tax) share of PhP1,567,148.00. The total budget of the barangay is PhP4,150,478.00 for year 2000.

TABLE 1. Average Annual Income, IRA Share and RPT Share (Philippine Peso)

Financial Data	1999	2000	2001	2002	2003
Average annual income	642,223.75	650,478.00			
IRA Share	1,758,873.00	1,932,852.00			
Share in Real Property Tax	1,424,595.81	1,567,148.00			
TOTAL	3,825,692.56	4,150,478.00			

Background Information and General Situation:

Socio-economic situation – There are 500 business establishments of various kinds, mostly found along Timog Avenue, Tomas Morato Avenue and EDSA. The barangay houses two public schools considered among the best in academic standards nationally. These are the Quezon City High School and the Kamuning Elementary School.

Slum areas – The barangay has 277 families living in seven slum areas located along EDSA corner Timog Avenue, Scout Limbaga Street, 11th Jamboree Street, Scout de Guia corner Scout Torillo Streets, Scout Delgado Street, Scout Fuentebella Ext. Street, and Scout Rallos Street. These small, dispersed squatter areas have no basic services.

Poverty in the squatter areas is patent. Many of the slum dwellers are employed or work as taxi driver, garbage collector, carpenter, plumber, mason, laborer, laundrywomen, etc.

Physical-spatial features & infrastructures – It has a relatively flat topography with a few flood prone areas such as Scout Torillo Street and Scout Fernandez Street corner Tomas Morato Avenue.

2.1.2 Estimated population and population projection for a 10-year period

It has 1,744 households with a total population of 8,628 and a density of 159.51 persons/ha.

TABLE 2. Population, Population Density and Number of Households of Bgy. Sacred Heart

Plan Year	Calendar Year	Present / Projected Population	Population density (Persons/hectare)	Number of Households
	1995	8,628	159.51	1,744.00
	2000	10,295	190.30	2,101.02
0	2003	11,448	211.61	2,336.33
1	2004	11,860	219.22	2,420.41
2	2005	12,287	227.12	2,507.55
3	2006	12,729	235.29	2,597.76
4	2007	13,187	243.75	2,691.22
5	2008	13,662	252.53	2,788.16
6	2009	14,154	261.63	2,888.57
7	2010	14,664	271.05	2,992.65
8	2011	15,192	280.81	3,100.41
9	2012	15,739	290.92	3,212.04
10	2013	16,306	301.41	3,327.76

2.2 Solid Waste Management: Existing Situation in the Barangay

2.2.1 Current state and trends of solid waste management in the barangay

Current state. The existing solid waste management system in the barangay is very simple: Garbage are collected regularly on *Mondays and Thursdays* using open dump trucks. Garbage collection is undertaken by the Environmental Protection and Waste Management Department of Quezon City (QC-EPWMD). The collected solid wastes, normally unsegregated are disposed at the Payatas dumpsite.

Occasionally trucks are late letting the garbage hanging on the fences and walls, or remaining on the sidewalks. Waste segregation at household level was implemented before. However, the scheme was not very successful due to poor collection system.

Problems. Pushcart boys who collects recyclables from plastic bags containing solid waste and leave the waste scattered on the streets and sidewalks as well as in open spaces. The residents are also at risk due to the presence of various garbage-borne diseases like respiratory complications.

Trends. The current trend in the barangay is the reduction of waste at source through reuse and recycling of recyclable wastes. This scheme, as noted above, was tried before in the barangay, but it did not succeed due to the lack of operating funds and personnel.

2.2.2 Profile of sources of solid wastes

The regular sources of solid wastes in the barangay are the residential households, commercial establishments, institutional offices and big restaurants and karaoke bars. Garden wastes, street sweepings and debris from construction/demolition activities are also generated in the barangay.

2.2.3 Estimated solid waste generation and projection and waste characterization

Estimated solid waste generation and projection by source. There is no official record of waste generation in the barangay. The Clean & Green Committee of the Barangay Council estimates the volume of garbage at 6,067 kg/day or an average of 2,214.62 tons/year.

The waste generation of the barangay is projected to increase greatly by 2013 (see Table3 below).

TABLE 3. Projected Waste Generation of Bgy. Sacred Heart

Plan Year	Calendar Year	Projected Population	Projected Waste Generation	
			Kg/Day	Tons/Year
0	2003	11,448	6,067	2,214.62
1	2004	11,860	6,286	2,294.32
2	2005	12,287	6,512	2,376.92
3	2006	12,729	6,746	2,462.43
4	2007	13,187	6,989	2,551.03
5	2008	13,662	7,241	2,642.91
6	2009	14,154	7,502	2,738.09
7	2010	14,664	7,772	2,836.75
8	2011	15,192	8,052	2,938.89
9	2012	15,739	8,342	3,044.71
10	2013	16,306	8,642	3,154.40

Waste characterization. The barangay produces 40-45% recyclable, 45-55% biodegradable materials and 5-10% residuals.

2.2.4 Characteristics and conditions of collection, storage, processing, and disposal

Collection. The collection of solid waste by open dump trucks from each individual residential households and commercial establishments is done every Mondays and Thursdays.

The barangay is subdivided into three (3) collection cells covering the following streets: 1) Scouts Rallos, Limbaga, Fernandez and Fuentebella streets; 2) Scout Gandia and all adjacent streets near the boundary of Kamuning; and 3) Scouts De Guia cor. Torillo, Fuentebella Exr., Rallos Ext., and Limbaga Ext. streets.

Storage and processing. No waste containers or receptacles for temporary storage are provided by the barangay; hence, there are no designated collection points in the area. Processing of waste for segregation is not undertaken.

Waste disposal. The collected wastes are hauled to Payatas Dumpsite for disposal.

2.2.5 Location of waste management facilities

There are no existing solid waste management facilities in the barangay.

Part 3: BARANGAY SOLID WASTE MANAGEMENT PLAN

3.1 Overview of the Barangay Solid Waste Management Plan

3.1.1 Barangay Solid Waste Management Plan in a nutshell

Vision and strategy. Barangay Sacred Heart envisions a community that is zero in crime, zero in waste, zero in cases of preventable diseases, and physically modern, clean and beautiful community.

Main areas for waste management. The areas for achieving the SWM vision and attaining the expected results of the Plan are the following: a) Waste collection and transfer; b) Waste processing and pre-treatment; c) Waste reduction at source, particularly segregation and recycling; d) Reuse and recycling scheme; e) Composting process, production and marketing of compost; f) Solid waste facility or MRF; g) Education and public information; h) Handling, storage and transport of special (hazardous) wastes; i) Provision of resources – human, financial and material; and j) Incentive programs.

Goals. At the end of the 10-year planned period, the following goals shall have been achieved:

General goal – Continuously improving solid waste management system in the barangay.

Specific goals – Improve waste collection, transfer and processing system; minimize waste generation and increase waste reduction at source through recycling and reuse; construct solid waste facilities or MRF; carry out health and environmental education and public information campaign; regularize valuable SWM incentive program; and provide required resources and funding for waste management programs/projects in the barangay.

Major waste management indicators. The major indicators of achievement for the successful implementation of the solid waste management system under this SWM Plan are as follows:

- a. Efficiency of waste collection and transfer.
- b. Utilization of methods and improvement of facilities for processing and pre-treatment of waste.
- c. Effectiveness of waste reduction at source, particularly segregation and recycling.
- d. Continuous improvement of reuse and recycling scheme.
- e. Installation of composting equipment and production/marketing of compost.
- f. Establishment of solid waste facility or MRF.
- g. Execution of public health and environmental education, and effectiveness of public information campaign.
- h. Prevention or minimization of health and safety risks in the handling, storage and transport of special (hazardous) wastes, if any.
- i. Provision of appropriate and timely resources – human, financial and material.
- j. Setting up of incentive programs for residents, community organizations, waste management teams, barangay officials and others.

Component programs. The SWMP of Barangay Sacred Heart consists of 10 major components as provided in RA 9003. These are: 1) Collection and transfer; 2) Waste processing; 3) Source reduction; 4) Recycling; 5) Composting; 6) Solid waste facility or MRF; 7) Education and public information; 8) Special waste; 9) Incentive programs; and 10) Resource requirements and funding.

3.1.2 Summary description of the solid waste management components

- a. **Collection and transfer** – This component program is to improve waste collection and transport of solid waste within the barangay. The targets set are: Reduction of the number of garbage collection trucks from the present six (5) trucks every collection days (Mondays and Thursdays) to four (4) trucks at the end of 2013. Truck itinerary will also be rerouted (current cells will be redesigned) to cover all streets of the barangay.
- b. **Processing** – Processing of solid wastes by means of *segregation* of different types of solid waste for re-use, recycling and composting. A *recycling center* will be established and properly designed containers or receptacles will be set up along major roads.
- c. **Source reduction** – The barangay will reduce the amount of waste at its primary sources. Waste segregation shall be properly undertaken. The target is to reduce waste by 75%.
- d. **Recycling** – The barangay shall reduce waste generation by means of separating recyclable materials at its source, the households, offices and business premises. Target: 85% of reusable and recyclable materials are recycled, or brought to recycling centers.
- e. **Composting** – This component will help reduce the amount of waste by segregating organic materials. The objective is to collect and bring to Kamuning composting plant all organic wastes.
- f. **Solid waste facility** – The barangay intends to establish a small materials recovery facility (MRF) which shall serve as temporary storage of solid wastes, recycling center, collection points, or transfer station while awaiting collection and transfer to processing sites or to final disposal sites.
- g. **Education and public information** – This component will implement a barangay-wide health and environmental education, public information. Education and environmental campaign program will also be conducted for community organizations and owners-employees of buildings and business enterprises.
- h. **Special waste** – This component will promote proper handling, storage and transport of special (hazardous) wastes. The barangay will also promote methods to minimize health and environmental risks and impact of the disposal of these types of wastes.
- i. **Incentive program** – This barangay shall provide incentives, *cash or otherwise*, to encourage participation of residents, community organizations and business enterprises in the solid waste management programs of the barangay.
- j. **Resource requirement and funding** – Adequate resources [human, financial and material] shall be secured by the barangay to implement these component programs.

3.2 Vision of Barangay Solid Waste Management

Barangay Sacred Heart envisions a community that is zero in crime, zero in waste, zero in cases of preventable diseases, and physically modern, clean and beautiful community.

3.3 Barangay Solid Waste Management Strategy

The fundamental strategy for solid waste management are:

- a) Provide efficient solid waste management through effective and innovative approaches.
- b) Minimize waste and reduction of waste at source through reuse, recycling and composting.
- c) Build and continuously upgrade waste management facilities.

- d) Develop community participation, including the informal sectors in slums and squatter areas.
- e) Establish good waste management practices by acquiring know-how, developing skills, improving capabilities, and instituting accountability, integrity and transparency in local governance.
- f) Create a healthful urban environment and livable barangay community.

3.4 Key Areas for Solid Waste Management and Issue Analysis

3.4.1 Key areas for solid waste management

The most important areas for achieving the SWM vision and attaining the expected results of the Plan have been identified in the Solid Waste Management Act of 2000 (RA 9003). For Bgy. South Triangle, these include the following:

- a. Waste collection and transfer
- b. Waste processing and pre-treatment
- c. Waste reduction at source, particularly segregation and recycling
- d. Reuse and recycling scheme
- e. Composting process, production and marketing of compost
- f. Solid waste facility or MRF
- g. Education and public information
- h. Handling, storage and transport of special (hazardous) wastes
- i. Provision of resources – human, financial and material
- j. Incentive programs.

3.4.2 Critical issues

The critical issues that could affect the implementation of the solid waste management plan are the following:

- a. Maintenance of regular time schedules for garbage collection and transport
- b. Institution of an effective waste segregation, recycling and reduction system
- c. Setting up of an environment-friendly composting facility
- d. Locating or finding an area large enough for building the MRF within the barangay
- e. Mobilization of non-government organizations and people participation in the waste management projects
- f. Development and implementation of an effective education and public information campaign
- g. Managing of the opposing *interest* of the residents, crew (*paleros*) of garbage trucks, barangay waste management team and street sweepers, and the pushcart boys and scavengers on reusable and recyclable materials
- h. Setting up incentives for cooperation and participation in the SWM program of the barangay.

3.5 Solid Waste Management Goals and Objectives

3.5.1 Management indicators for the realization of the vision

The management indicators for the achievement of the SWM vision are defined as follows:

- a. Efficient waste collection and transfer;
- b. Utilize methods and improve the facilities for processing and pre-treatment of waste;
- c. Waste reduction at source, particularly segregation and recycling;
- d. Continuously improve reuse and recycling system;
- e. Establish solid waste facility or MRF;
- f. Implement public health and environmental education, and effectiveness of public information campaign;

- g. Minimize health and safety risks in the handling, storage and transport of special (hazardous) wastes, if any;
- h. Provide appropriate and timely resources – human, financial and material; and
- i. Set up of incentive programs for residents, community organizations, waste management teams, barangay officials and others.

3.5.2 Solid waste management goals

In line with the identified indicators of achievements presented above, the goals of this SWM Plan are:

At the end of the 10-year planned period, the following goals shall have been achieved:

General goal – Continuously improving solid waste management system in the barangay.

Specific goals – Improve waste collection, transfer and processing system; minimize waste generation and increase waste reduction at source through recycling and reuse; construct solid waste facilities or MRF; carry out health and environmental education and public information campaign; regularize valuable SWM incentive program; and provide required resources and funding for waste management programs/projects in the barangay.

3.5.3 Objectives

The achievement of these goals shall be reflected in the attainment of the following objectives:

1. Improved waste collection and transport to disposal station or final disposal sites, efficient crew operations and use of modern transport equipment.
2. Use of safe waste processing and pre-treatment techniques and methods conforming to internationally-accepted standards and other provisions set in local laws and regulations.
3. Waste generation rate minimized, waste at source reduced; use of household, office and building storage containers; refuse management at home, offices, large buildings and commercial premises improved.
4. Large portion of waste generated are reused and recycled.
5. Composting equipment installed and operational with minimum health and environmental risks and impact, and effective marketing and disposal of compost are set up.
6. Barangay MRF for solid wastes – storage containers, collection points or transfer station – established.
7. Well-organized health and environmental education, public information campaign and high level of community participation accomplished.
8. Improved handling, storage and transport of special wastes, health and environmental risks and impact minimized.
9. Incentive program for waste management set up.
10. Adequate resources [human, financial and material] provided.

Project: Micropolis

SUMMARY

OF THE

STRATEGIC DEVELOPMENT PLAN OF BARANGAY SACRED HEART

1. **Vision of Barangay Development** – Barangay Sacred Heart envisions a community that is zero in crime, zero in waste, zero in cases of preventable diseases, and physically modern, clean and beautiful.
2. **Barangay Development Strategy** – The fundamental strategy for barangay development are:
 - a) Building of livable community
 - b) Developing broad-based barangay economy
 - c) Instituting good governance and community management.
 - d) Creating a bankable barangay LGU.
3. **Strategic Areas for Development** – The identified strategic areas for barangay development are as follows:
 - a) Slum upgrading: *Building a barangay without slums.*
 - b) Constructing basic infrastructures, community facilities and social amenities.
 - c) Establishing access to health care, education and other social services.
 - d) Developing new economic enterprises.
 - e) Instituting local governance.
4. **Strategic Development Goals** – The strategic development goals and long-term objectives are:
 - a) To develop a livable community with healthful environment.
 - b) To stimulate the creation of broad-based economic enterprises.
 - c) To set up good governance system.
 - d) To institute health care, improve educational facilities and provide basic services.
5. **Strategic Programs and Projects for Barangay Development** – The summary descriptions of the strategic programs and projects for barangay development are discussed below:
 - a) **Poverty Alleviation (Barangay Livelihood Development)** – This program shall generate employment by instituting livelihood training programs, upgrading of technical skills, and forming new economic enterprises.
 - b) **Slum Upgrading** (*a common project among the pilot barangays of Project: Micropolis*) – This program intends to provide basic services such as water supply and sanitation, waste management, storm drainage and flood prevention, improvement of roads and footpaths, installation of street lighting and community facilities. Medium-rise residential building for the informal settlers of the barangay shall be constructed.

c) **Solid Waste Management** (a common project among the pilot barangays of Project: Micropolis) – Introduction of efficient waste management system using waste segregation at home, improved waste collection system, and production of compost.

d) **Urban Agriculture** (a common project among the pilot barangays of Project: Micropolis) – The compost fertilizer produced by the waste management project shall be utilized for food production at home and urban farming in available open spaces.

6. **Program/Project Action Plan** – The summary of action plan for the strategic programs and projects is presented below.

Summary of Action Plan for the Strategic Programs and Projects

Programs	2003-2004	2005-2013	2013-2023
1. Poverty alleviation (<i>Barangay Livelihood Development</i>)	Identification of income-earning opportunities; business planning and start-ups of new locally-owned businesses; start job training program and skills upgrading; and making loans and other assistance available.	Continue business planning and start-ups; enhancing growth of employment, incomes and local investment.	Continuing business planning and start-ups; enhancing growth of employment, incomes and local investment.
2. Slum Upgrading	Preliminary studies, community surveys and negotiation of land acquisition; planning for slum improvements.	Physical planning, redevelopment and reconstruction.	Continuing improvements and upgrading of community facilities.
3. Solid Waste Management	Waste segregation and compost making.	Continue improving the management system.	Continuing improvement and upgrading of the management system.
4. Urban Agriculture	Action planning, experimentation and piloting.	Full implementation.	Continuing implementation and program improvements.

Solid Waste Management Plan for Barangay South Triangle

Solid Waste Management Plan Of Barangay South Triangle

INTRODUCTION

Barangay South Triangle is one of the fastest developing urban centers in Quezon City. It is the focal point of a vigorously growing neighborhood with high-rise commercial-residential buildings. Strategically located in the southwestern part of the city, it houses the two largest television and radio networks in the Philippines, namely ABS-CBN and GMA-7 broadcasting systems. The barangay is also the home of many movie and recording companies like Star Cinema, Viva Films, M-zet, and Octoarts. Most of the well-known food establishments in Metro-Manila have set up branches along the three border avenues of the barangay.

Land area, population and income. The barangay has a gently rolling terrain with a total land area of 112.6045 hectares. Its total population is 7,817 in year 2000 accounting for a population density of 69.42 persons/ha. There are 1,884 households with an average of 4.15 members per household. It has an average annual income of PhP107,500 pesos. Its total annual fund in year 2000 amounts to PhP 5,730,093.01

Environmental condition. The streets and sidewalks of the barangay are *fairly* clean; however, solid waste are sometimes scattered along many streets, particularly before waste collection days. Scavengers spread out all types of wastes along the streets, as there are no garbage bins, making it difficult to collect. Some streets of the barangay are flooded during heavy rains.

Slum areas. The slum areas, located along Mother Ignacia Ave., Scout Tuazon, and Scout Borromeo, are the depressed parts of the barangay where housing is appallingly poor and living condition is squalid. These slum areas are miserably depressing with unhealthy and unsafe environment.

The solid waste management plan. The Quezon City Government has embarked on a massive environmental protection and solid waste management program. In pursuit of this program, Barangay South Triangle prepared a strategic *Solid Waste Management Plan* (SWMP) in line with the provisions of Republic Act 9003: Ecological Solid Waste Management Act of 2000, and the directive of DILG per Memorandum Circular No. 2001-38. Aside from these reasons, the preparation of this SWMP is in keeping with our participation in the DILG *Project: Micropolis*, particularly the solid waste management project funded by the Swedish International Development Cooperation Agency (SIDA), with Conexor Sensus AB as our foreign consultant.

Part 1: SUMMARY of the Barangay Solid Waste Management Plan

Vision. Barangay South Triangle envisions a clean, orderly and safe environment for all its residents transients and visitors.

Areas for waste management. The important areas of concern for achieving the stated SWM vision are the following: a) Waste collection and transfer; b) Waste processing and pre-treatment; c) Waste reduction at source; d) Reuse and recycling; e) Composting; f) Solid waste facility or MRF; g) Education and public information; h) Special (hazardous) wastes; i) Funding and resource requirements; and j) Incentive program.

Goals. At the end of the 10-year planned period, the following goals shall have been achieved:

General goal – Sustained implementation of an innovative solid waste management system in the barangay.

Specific goals – Improvement of waste collection, transfer and processing system; minimization of waste generation and reduction of waste at source through recycling and composting; construct solid waste facilities or MRF; carrying out of health and environmental education and public information campaign; regularization of valuable SWM incentive program; and provision of required resources and funding for waste management programs/projects in the barangay.

Waste management indicators. The major indicators of achievement for the successful implementation of the Bgy. South Triangle SWM Plan are:

- a. Efficiency of waste collection and transfer.
- b. Utilization of methods and improvement of facilities for processing and pre-treatment of waste.
- c. Effectiveness of waste reduction at source, particularly segregation and recycling.
- d. Continuous improvement of reuse and recycling scheme.
- e. Installation of composting equipment and production/marketing of compost.
- f. Establishment of solid waste facility or MRF.
- g. Execution of public health and environmental education, and effectiveness of public information campaign.
- h. Prevention or minimization of health and safety risks in the handling, storage and transport of special (hazardous) wastes, if any.
- i. Setting up of incentive programs for residents, community organizations, waste management teams, barangay officials and others.
- j. Provision of appropriate and timely resources – human, financial and material.

Component programs. The SWMP of Barangay South Triangle consists of 10 major components. These are: 1) Collection and transfer; 2) Waste processing; 3) Source reduction; 4) Recycling; 5) Composting; 6) Solid waste facility or MRF; 7) Education and public information; 8) Special waste; 9) Resource requirement and funding; and 10) Incentive programs.

Solid waste management action plan. The general action plan for the implementation of solid waste management plan is presented on the following page.

Solid Waste Management: General Action Plan

2004-2005	2006-2008	2009-2013
<p>Complete details of barangay-wide solid waste management plan with waste reduction through re-use, recycling, composting, and setting up of MRF as central element of waste management strategies in the barangay.</p> <p>Start building capacity of barangay waste management action team for program/project implementation.</p> <p>Launch health and environmental education, and public information campaign.</p> <p>Set up scheme for community participation in waste management projects.</p> <p>Initiate solid waste management projects in areas of the barangay.</p> <p>Start setting up of incentive programs.</p> <p>Begin establishment of MRF station.</p> <p>Mobilize adequate resources for SWM projects.</p>	<p>Solid waste management programs and projects underway in all puroks (neighborhood areas) of the barangay improving the waste collection and transfer system, and setting up solid waste management facilities.</p> <p>Continue building capacity for full implementation of solid waste management program.</p> <p>Step up education, and public information campaign.</p> <p>Beef up incentive programs.</p> <p>Fully establish MRF station.</p> <p>Secure sufficient resources for SWM projects.</p>	<p>Continue implementing the solid waste management plan with more improvements in waste collection and transfer system, and step up upgrading of solid waste management facilities.</p> <p>Continue building capacity for specialized solid waste management projects.</p> <p>Strengthen education, and public information campaign.</p> <p>Firm up incentive programs.</p> <p>Fully establish MRF station.</p> <p>Sufficient resources adequately provided to SWM projects.</p>
<p><i>Improvements in solid waste management underway in the barangay.</i></p>	<p><i>Solid waste management improved.</i></p>	<p><i>Solid waste management greatly improved.</i></p>

Part 2: BARANGAY PROFILE & EXISTING SITUATION

2.1 Barangay Profile

2.1.1 Brief description of the barangay and background information

Description of the Barangay:

Barangay South Triangle is strategically located in the southwestern part of Quezon City. Its boundary on the north is Quezon Avenue; on the east, Epifanio de los Santos Avenue (a.k.a. EDSA), and on southwest, Timog Avenue, three of the busiest roadways in the city.

It is one of the fastest growing residential-commercial centers in the Quezon City. It houses the two largest television and radio networks in the Philippines, namely ABS-CBN and GMA-7 broadcasting systems. The barangay is also the home of many movie and recording companies like Star Cinema, Viva Films, M-zet, and Octoarts. Most of the well-known food establishments in Manila have set up branches along the three border avenues of the barangay.

The total land area of the barangay is 112.6045 hectares.

Barangay finance – It has an average annual income of PhP107,500 pesos; IRA (Internal Revenue Allotment) share, PhP1,931,708.00; and RPT (Real Property Tax) share of PhP3,690,885.01 (see Table1).

TABLE 1. Average Annual Income, IRA Share and RPT Share (Philippine Peso)

Financial Data	1999	2000	2001	2002	2003
Average annual income	97,500.00	107,500.00			
IRA Share	1,757,836.00	1,931,708.00			
Share in Real Property Tax	3,332,271.17	3,690,885.01			
TOTAL	5,187,607.17	5,730,093.01			

Background Information and General Situation:

Barangay South Triangle is a vigorously developing urban center with high-rise commercial-residential buildings. It is comparatively a peaceful and progressive community.

Socio-economic situation – It houses many business establishments such as 47 restaurants, 13 local branches of government and commercial banks, 6 supermarkets, and several government offices. It has 13 videoke bars and night spots. Internal transport within the barangay is provided by motorized tricycles.

Social & cultural – The community has no primary and secondary educational institutions, both public and private. It has no permanent barangay hall needed for efficient management of local governmental affairs. It has no parks and social amenities or community facilities.

Environmental condition – Most of the streets and sidewalks in the barangay are *fairly* clean; however, solid waste are sometimes scattered along many streets, particularly before waste collection days. Scavengers spread out all types of wastes along the streets, as there are no garbage bins, making it difficult to collect. The slum areas are neglected parts of barangay where housing and living conditions are appallingly poor and squalid condition.

Waste water is disposed of through storm drains, while sewerage are disposed by way of communal septic tanks with a total capacity of 400,000 gallons a day; the sewers, however, are drained directly to the San Juan river untreated which finally empties into Manila Bay adding to its seriously polluted condition.

Slum areas – The barangay has three depressed areas located along Mother Ignacia Ave., Scout Tuazon, and Scout Borromeo. These slum areas are miserably depressing with unhealthy and unsafe environment. The informal settlers are exposed to disease and crime. They are vulnerable to natural disasters. They are marginalized and largely disenfranchised, with no personal security.

Physical-spatial features & infrastructures – The barangay has a gently rolling terrain. It is home to 47 restaurants and commercial establishments. As noted earlier, it houses the biggest broadcasting networks in the country. The distribution antenna of television Channels 2 & 23, 9 and 13 are also located in its vicinity. The mass railway transit passes through its boundary on EDSA. There are no vacant lots in the area.

2.1.2 Estimated population and population projection for a 10-year period

In year 2000, the total population of the barangay is 7,817 (NSO) with 7,799 considered as *permanent* residents, accounting for a population density of 69.42 persons/ha. There are 1,884 households with an average of 4.15 members per household. The average growth rate of Quezon City in 2000 is estimated at 3.6%, thus the projected population of the barangay are 8,944 in 2004, 10,140 in 2008 and 12,102 by 2013.

TABLE 2. Population, Population Density and Number of Households of Bgy. South Triangle

Plan Year	Calendar Year	Present / Projected Population	Population density (Persons/hectare)	Number of Households
	2000	7,817	69.42	1,884
	2001	8,099	71.92	1,952
	2002	8,280	73.53	1,995
0	2003	8,662	76.92	2,087
1	2004	8,944	79.43	2,155
2	2005	9,225	81.92	2,223
3	2006	9,507	84.43	2,291
4	2007	9,788	86.92	2,359
5	2008	10,140	90.05	2,443
6	2009	10,505	93.29	2,531
7	2010	10,883	96.65	2,622
8	2011	11,275	100.13	2,717
9	2012	11,681	103.73	2,815
10	2013	12,102	107.47	2,916

2.2 Solid Waste Management: Existing Situation in the Barangay

2.2.1 Current state and trends of solid waste management in the barangay

Current state. At present, disposal of the solid waste of Barangay South Triangle is through the collection of garbage undertaken by the Environmental Protection and Waste Management Department of Quezon City (QC-EPWMD). This simply means the collection of solid waste through a time schedule collection (Mondays and Thursdays) of either segregated and non-segregated waste and dumping it to the Payatas Dumpsite.

This collection system has been used in the barangay for the past four decades or more. The only variance is the efficiency of garbage collection during the scheduled day and time. The residents claim that there is regularity and effectiveness in garbage collection today. Although, they also noted that occasionally trucks are very late letting the garbage hanging on the fences and walls, or remaining on the sidewalks and streets exposed and ready for scavenging by pushcart boys, or scraping by dogs and cats.

Waste segregation at household level has been implemented before. However, the scheme was not very successful due to lack of funds and cooperation of residents.

Problems. Poor waste management is a health risk. The presence of various garbage-borne diseases like respiratory complications have been noted in the barangay. Pushcart boys collect recyclables from plastic bags containing solid waste and leave the waste scattered on the streets and sidewalks as well as in open spaces.

Trends. The emerging trend in waste management in the barangay is the reduction of waste at source through reuse and recycling of recyclable wastes, and composting of biodegradables. This scheme was tried before in the barangay, but it did not succeed due to the lack of operating funds and personnel.

2.2.2 Profile of sources of solid wastes

The regular sources of solid wastes in the barangay are the residential households, commercial establishments, and institutional offices. Garbage from restaurants, garden wastes, street sweepings, and debris from construction/demolition activities within the barangay are also generated in the area.

2.2.3 Estimated solid waste generation and projection and waste characterization

Estimated solid waste generation and projection by source. There is no official record of waste generation in the barangay. The Clean & Green, Environmental Protection and Waste Management Committee of the Barangay Council estimates the volume of garbage for 2003 at 4,591 kg/day or an average of 1,675,715 kg/year.

This means that the barangay contributes a mere 0.31% of the total garbage volume of Quezon City estimated at 1,500 tons/day (est.) or an average of 547,500 tons/year (approx).

The waste generation of the barangay is projected to increase from an estimated 4,740 kg/day or 1,730.22 tons in 2004 to 6,414 kg/day or 2,341.13 tons by 2013 (see Table3 on next page).

Waste characterization. The barangay produces 50% recyclable and 50% biodegradable materials equivalent to an average of 2,826 kg of biodegradable waste a day and the same amount of recyclables, or an estimated 1,032,585 kg each of biodegradable and recyclables materials per year.

TABLE 3. Projected Waste Generation of Bgy. South Triangle

Plan Year	Calendar Year	Projected Population	Projected Waste Generation	
			Kg/Day	Tons/Year
0	2003	8,662	4,591	1,675.72
1	2004	8,944	4,740	1,730.22
2	2005	9,225	4,889	1,784.58
3	2006	9,507	5,039	1,839.13
4	2007	9,788	5,188	1,893.49
5	2008	10,140	5,374	1,961.58
6	2009	10,505	5,568	2,032.19
7	2010	10,883	5,768	2,105.32
8	2011	11,275	5,976	2,181.15
9	2012	11,681	6,191	2,259.69
10	2013	12,102	6,414	2,341.13

2.2.4 Characteristics and conditions of collection, storage, processing, and disposal

Collection. The major waste management activity in the barangay is the collection of solid waste by open dump trucks from each individual residential households and commercial establishments.

The barangay is subdivided into four (4) collection cells covering the following streets: 1) Samar and E. Lopez streets; 2) Scout Borromeo street; 3) Scout Madrinan street; and 4) Scout Bayoran street. Waste are collected twice a week, every Mondays and Thursdays

In other streets of the barangay not covered by the regular cells, solid wastes are collected by dump trucks cutting across streets in two or three adjacent barangays. These are the following streets: Panay ave. from EDSA to Roces ave. in Bgy. Paligsahan; Mo. Ignacia ave. also from EDSA to Roces ave. in Bgy. Laging Handa; and Scout Ybardaloza street in Barangay Sacred Heart to Bohol ave.

Storage and processing. No waste containers or receptacles for temporary storage are provided by the barangay; hence, there are no designated collection points in the area. Processing of waste for segregation is not undertaken.

Waste disposal. The collected wastes are hauled to Payatas Dumpsite for disposal.

2.2.5 Location of waste management facilities

There are no existing solid waste management facilities in the barangay. Some time ago, waste containers or receptacles were provided in strategic locations in the barangay. However, when the containers at filled up to the top, the residents continued to dump the garbage beside the receptacles which created more problems – the location of the receptacles, in effect, became a small “dump site.”

Part 3: BARANGAY SOLID WASTE MANAGEMENT PLAN

3.1 Overview of the Barangay Solid Waste Management Plan

3.1.1 Barangay Solid Waste Management Plan in a nutshell

Vision and strategy. Barangay South Triangle envisions a clean, orderly and safe environment for all its residents through a functioning solid waste management system. This shall be achieved by means of an efficient waste collection, transfer and processing system; source reduction, recycling and composting; provision of waste facilities or MRF; effective education and information campaign; and providing support and appropriate incentives.

Main areas for waste management. The important areas for achieving the SWM vision and attaining the expected results of the Plan are the following: a) Waste collection and transfer; b) Waste processing and pre-treatment; c) Waste reduction at source, particularly segregation and recycling; d) Reuse and recycling scheme; e) Composting process, production and marketing of compost; f) Solid waste facility or MRF; g) Education and public information; h) Handling, storage and transport of special (hazardous) wastes; i) Provision of resources – human, financial and material; and j) Incentive programs.

Goals. At the end of the 10-year planned period, the following goals shall have been achieved:

General goal – Sustained implementation of an innovative solid waste management system in the barangay.

Specific goals – Improve waste collection, transfer and processing system; decrease waste generation and increase waste reduction at source through recycling and composting; construct solid waste facilities or MRF; carry out health and environmental education and public information campaign; regularize valuable SWM incentive program; and provide required resources and funding for waste management programs/projects in the barangay.

Major waste management indicators. In harmony with the identified result areas, the major indicators of achievement for the successful implementation of an innovative solid waste management system under this SWM Plan are as follows:

- a. Efficiency of waste collection and transfer.
- b. Utilization of methods and improvement of facilities for processing and pre-treatment of waste.
- c. Effectiveness of waste reduction at source, particularly segregation and recycling.
- d. Continuous improvement of reuse and recycling scheme.
- e. Installation of composting equipment and production/marketing of compost.
- f. Establishment of solid waste facility or MRF.
- g. Execution of public health and environmental education, and effectiveness of public information campaign.
- h. Prevention or minimization of health and safety risks in the handling, storage and transport of special (hazardous) wastes.
- i. Provision of appropriate and timely resources – human, financial and material.
- j. Setting up of incentive programs for residents, community organizations, waste management teams, barangay officials and others.

Component programs. The SWMP of Barangay South Triangle consists of 10 major components. These are: 1) Collection and transfer; 2) Waste processing; 3) Source reduction; 4) Recycling; 5) Composting; 6) Solid waste facility or MRF; 7) Education and

public information; 8) Special waste; 9) Incentive programs; and 10) Resource requirements and funding.

Solid waste management action plan.

The general action plan for the implementation of solid waste management program is presented below.

Solid Waste Management: General Action Plan

2004-2005	2006-2008	2009-2013
<p>Complete details of barangay-wide solid waste management plan with waste reduction through re-use, recycling, composting, and setting up of MRF as central element of waste management strategies in the barangay.</p> <p>Design specific solid waste management programs/projects, and prepare detailed activity plan for project implementation.</p> <p>Start building capacity of barangay waste management action team for program/project implementation.</p> <p>Launch health and environmental education, and public information campaign. Provide residents with basic information on solid waste management.</p> <p>Set up scheme for community participation in waste management projects.</p> <p>Initiate solid waste management projects in selected puroks (neighborhood areas) of the barangay improving the waste collection and transfer system.</p> <p>Start setting up of incentive programs.</p> <p>Begin establishment of MRF for solid wastes – storage containers, collection points or transfer station.</p> <p>Study handling, storage and transport of special wastes.</p> <p>Mobilize adequate resources [human, financial and material] for SWM projects.</p>	<p>Solid waste management programs and projects underway in all puroks (neighborhood areas) of the barangay improving the waste collection and transfer system, and solid waste management facilities.</p> <p>Continue building capacity for full implementation of solid waste management program.</p> <p>Step up health and environmental education, and public information campaign.</p> <p>Beef up incentive programs.</p> <p>Fully establish MRF for solid wastes – storage containers, collection points or transfer station.</p> <p>Improved handling, storage and transport of special wastes.</p> <p>Secure sufficient resources [human, financial and material] for SWM projects.</p>	<p>Continue implementing the solid waste management plan with more improvements in waste collection and transfer system, and upgrading of solid waste management facilities.</p> <p>Continue building capacity for specialized solid waste management projects.</p> <p>Strengthen health and environmental education, and public information campaign.</p> <p>Firm up incentive programs.</p> <p>Fully establish MRF for solid wastes – storage containers, collection points or transfer station.</p> <p>Improved handling, storage and transport of special wastes.</p> <p>Sufficient resources [human, financial and material] adequately provided to SWM projects.</p>
<i>Improvements in solid waste management underway in the barangay.</i>	<i>Solid waste management improved.</i>	<i>Solid waste management greatly improved.</i>

3.1.2 Summary description of the solid waste management components

As provided for in RA 9003, the major components of the SWMP are: Collection and transfer; processing; source reduction, recycling and composting; solid waste facility; education and public information; special waste; resource requirement and funding; incentive programs. The summary descriptions of these components are described below.

- a. **Collection and transfer** – This component program intends to improve the efficiency of waste collection and transport of solid waste within the barangay. It targets is to reduce the number of garbage collection trucks from the present seven (7) trucks every collection days (Mondays and Thursdays) to four (4) trucks at the end of 2013. Truck itinerary will

also be rerouted (current cells will be redesigned) to cover all streets of the barangay. *[It should be pointed out that currently three (3) trucks collect in two other adjacent barangays.]*

- b. **Processing** – This component focuses on the processing of wastes simply through the *segregation* of different types of solid waste for re-use, recycling and composting. This simple processing method will be strictly implemented. A *recycling center* will be established and properly designed containers or receptacles will be set up. No preliminary or intermediate treatment will be undertaken in the barangay. Composting of biodegradables shall be arranged with adjacent barangays with composting facilities.
- c. **Source reduction** – The barangay intends to reduce sufficient amount of waste at its source, the households and commercial/business premises. This will be done through waste segregation so that all recyclables and compostables are properly separated at source to be brought to a collection station for re-use, recycling and composting. Target: 55% reduction of waste by end of 2013.
- d. **Recycling** – Sufficient amount of the solid wastes generated in the barangay shall be reduced by means of separating recyclable materials at its primary source, the households, offices and business premises. Target: 70% of reusable and recyclable materials are recycled, or collected and brought to recycling centers.
- e. **Collection of organic materials for composting** – The purpose of this component is to help reduce sufficient amount of waste by collecting compostable materials. The barangay will gather organic wastes to be transferred and processed into compost by nearby barangay with composting facilities.
- f. **Solid waste facility** – The purpose of this component is to establish a materials recovery facility (MRF) which shall serve as temporary storage of solid wastes, recycling center, collection points, or transfer station while awaiting collection and transfer to processing sites or to final disposal sites.
- g. **Education and public information** – This component will implement a well-organized, barangay-wide health and environmental education, public information campaign focus on solid waste management, in general, and waste reduction, segregation and collection, recycling and composting, in particular. Special education and environmental campaign program will be conducted for community organizations and owners-employees of large buildings and commercial enterprises.
- h. **Special waste** – This component involves the promotion of appropriate handling, storage and transport of special (hazardous) wastes, and how to minimize health and environmental risks and impact of the disposal of these types of wastes.
- i. **Incentive program** – This component provides incentives, *cash or otherwise*, to encourage participation of residents, community organizations and business enterprises in the solid waste management programs of the barangay.
- j. **Resource requirement and funding** – Adequate resources [human, financial and material] provided to the implementation of the component programs and their corresponding projects and activities

3.2 Vision of Barangay Solid Waste Management

Barangay South Triangle envisions a clean and beautiful, orderly and safe environment for all its residents, transients and visitors through a functioning solid waste management system.

The barangay is visually configured so that the streets are tidy, unpolluted, safe, comfortable, and interesting to the pedestrian to encourage walking and enable neighbors to know each other, keep a healthful environment and protect their communities.

The barangay has mini-resource centers (micro-MRF) or small enterprises for recyclable materials and reuse as resources.

It showcases different designs for scenic urban micro-parks, water spots and greenery. It has improved sewerage system and flood control safety installations.

This vision shall be achieved through an efficient waste collection, transfer and processing system; reduction of waste at source (household and commercial premises), recycling and composting; establishment of waste facilities; effective education and information campaign; and granting appropriate incentives to residents, groups and organizations and business enterprises for active participation in the waste management.

3.3 Barangay Solid Waste Management Strategy

The fundamental strategies and implementing approaches for solid waste management are as follows:

- a) Providing efficient solid waste management through effective and innovative approaches.
- b) Minimizing waste and reduction of waste at source through reuse, recycling and composting.
- c) Building and continuously upgrading of waste management facilities.
- d) Developing broad-based community participation, including the informal sectors in slums and squatter areas.
- e) Establishing good waste management practices by acquiring know-how, developing skills, improving capabilities, and instituting accountability, integrity and transparency in local governance.
- f) Creating a healthful urban environment and livable barangay community.

3.4 Key Areas for Solid Waste Management and Issue Analysis

3.4.1 Key areas for solid waste management

The most important areas for achieving the SWM vision and attaining the expected results of the Plan have been identified in the Solid Waste Management Act of 2000 (RA 9003). For Bgy. South Triangle, these include the following:

- a. Waste collection and transfer
- b. Waste processing and pre-treatment
- c. Waste reduction at source, particularly segregation and recycling
- d. Reuse and recycling scheme
- e. Composting process, production and marketing of compost
- f. Solid waste facility or MRF
- g. Education and public information
- h. Handling, storage and transport of special (hazardous) wastes
- i. Provision of resources – human, financial and material
- j. Incentive programs.

3.4.2 Critical issues

Several issues could affect the efficient implementation of the solid waste management plan. The most critical issues are, among others, the following:

- a. Maintenance of regular time schedules for garbage collection and transport
- b. Institution of an effective waste segregation, recycling and reduction system
- c. Setting up of an environment-friendly composting facility
- d. Locating or finding an area large enough for building the MRF within the barangay
- e. Mobilization of non-government organizations and people participation in the waste management projects

- f. Development and implementation of an effective education and public information campaign
- g. Managing of the opposing *interest* of the residents, crew (*paleros*) of garbage trucks, barangay waste management team and street sweepers, and the pushcart boys and scavengers on reusable and recyclable materials
- h. Setting up incentives for cooperation and participation in the SWM program of the barangay.

3.5 Solid Waste Management Goals and Objectives

3.5.1 Management indicators for the realization of the vision

In harmony with the identified result areas, the overall management indicators for achieving the vision of the barangay concerning solid waste management is the *real* cleanliness, beautiful surroundings, orderly community, and healthful and safe environment for all barangay residents, transients and visitors.

More specifically, management indicators for the achievement of the SWM vision are defined as follows:

- a. Efficiency of waste collection and transfer;
- b. Utilization of methods and improvement of facilities for processing and pre-treatment of waste;
- c. Effectiveness of waste reduction at source, particularly segregation and recycling;
- d. Continuous improvement of reuse and recycling scheme;
- e. Installation of composting equipment and production/marketing of compost;
- f. Establishment of solid waste facility or MRF;
- g. Execution of public health and environmental education, and effectiveness of public information campaign;
- h. Prevention or minimization of health and safety risks in the handling, storage and transport of special (hazardous) wastes, if any;
- i. Provision of appropriate and timely resources – human, financial and material; and
- j. Setting up of incentive programs for residents, community organizations, waste management teams, barangay officials and others.

3.5.2 Solid waste management goals

In line with the identified indicators of achievements presented above, the goals of this SWM Plan are:

At the end of the 10-year planned period, the following goals shall have been achieved:

General goal:

Sustained implementation of an innovative solid waste management system in the barangay.

Specific goals:

- ◆ Improve waste collection, transfer and processing system
- ◆ Decrease in waste generation and increase in waste reduction at source through recycling and composting
- ◆ Construct solid waste facilities or barangay MRF
- ◆ Carry out health and environmental education and public information campaign
- ◆ Regularize valuable SWM incentive program
- ◆ Provide required resources and funding for waste management programs/projects in the barangay.

3.5.3 Objectives

The achievement of these goals shall be reflected in the attainment of the following objectives:

1. Improved waste collection and transport to disposal station or final disposal sites, efficient crew operations and use of modern transport equipment.
2. Use of safe waste processing and pre-treatment techniques and methods conforming to internationally-accepted standards and other provisions set in local laws and regulations.
3. Waste generation rate minimized, waste at source reduced; use of household, office and building storage containers; refuse management at home, offices, large buildings and commercial premises improved.
4. Large portion of waste generated are reused and recycled.
5. Barangay MRF for solid wastes – storage containers, collection points or transfer station – established.
6. Well-organized health and environmental education, public information campaign and high level of community participation accomplished.
7. Improved handling, storage and transport of special wastes, health and environmental risks and impact minimized.
8. Incentive program for waste management set up.
9. Adequate resources [human, financial and material] provided.

3.6 Solid Waste Management Component Programs

3.6.1 Collection and transfer

- a. **Overview of the component program** – This component program intends to improve the efficiency of waste collection and transport of solid waste within the barangay. It targets the reduction of the number of garbage collection trucks from the present seven (7) trucks every collection days (Mondays and Thursdays) to four (4) trucks at the end of 2013. Truck itinerary will also be rerouted (current cells will be redesigned) to cover all streets of the barangay.
- b. **Situation analysis** – Waste collection at present uses seven (7) dump trucks. Four (4) trucks covers the regular street-cells of the barangay; however, three (3) of the dump trucks are collecting routes in two adjacent barangays (cf. para. 2.2.4). With collection routes cutting across two adjacent barangays, garbage collection cannot be correctly monitored by the Clean and Green committee of the barangay.
- c. **Program objectives** – At the end of 2013, the barangay intends to attain 90% garbage collection and transport all these wastes to disposal station or final disposal sites using only four (4) modern waste collection trucks. The barangay seeks to own its modern transport equipment in order to improve crew operations.
- d. **Action plan** – The geographic subdivisions of waste collection cells shall be redesigned in line with the schedule of waste reduction at source (households). Segregation of different types of solid waste for re-use, recycling and composting will be introduced beginning 2004 with the re-issuance and enforcement of updated barangay ordinance on solid waste management. Only segregated waste will be collected. The barangay will establish strategic *collection points* for the temporary storage of solid waste while awaiting collection and transfer to processing sites or to final disposal sites. Properly designed containers or receptacles will be provided in these collection stations. The barangay will buy its own transport equipment beginning 2007 with one (1) truck, then one (1) truck each in 2010 and 2013.

3.6.2 Processing

- a. **Overview of the component program** – This component focuses on the processing of wastes simply through the *segregation* of different types of solid waste for re-use, recycling and composting. This simple processing method will be strictly implemented. A *recycling center* will be established to process unsegregated or wrongly segregated wastes and market recyclable materials; hence, properly designed containers or receptacles will be set up. No preliminary or intermediate treatment will be undertaken in the barangay. Composting of biodegradables shall be arranged with adjacent barangays with composting facilities.
- b. **Situation analysis** – Waste produced in the barangay are usually placed unsegregated and mixed-up in plastic bags or household waste containers. These are collected individually from the household during collection days (Mondays and Thursdays) by dump trucks. Therefore no processing ever happened in the household nor in any place within the barangay. Segregation program was initiated sometime ago, but it did not succeed due to poor collection system. Residents stopped segregating their garbage because only one truck collects both the recyclables and biodegradables. The people find no reason to segregate their wastes since they are all mixed-up in the garbage truck.
- c. **Program objectives** – At the end of 2013, solid wastes in the barangay shall be efficiently processed through a segregation system. No garbage xxx Use of safe waste processing and pre-treatment techniques and methods conforming with internationally-acceptable and other standards set in other laws and regulations;
- d. **Action plan** – The barangay will re-issue an updated barangay ordinance on solid waste management following the provisions of RA 9003 and the directive of the DILG on this matter. Beginning 2004, the barangay will strictly enforce the waste segregation system to minimize garbage to be collected by dump trucks. Recyclables shall be collected by the barangay collection brigades and brought to the collection stations.

3.6.3 Source reduction

- a. **Overview of the component program** – The barangay intends to reduce sufficient amount of waste at its source, the households and commercial/business premises. This will be done through waste segregation so that all recyclables and compostables are properly separated at source to be brought to a *collection station* for re-use, recycling and composting.
- b. **Situation analysis** – The barangay will generate an estimated 2,065.17 tons of wastes in year 2003. The Clean & Green and Environmental Management Committee of South Triangle calculates approximately the generation of wastes at 2,325.44 tons for 2004, it will reach 6,656.10 tons by year 2013. [*It should be noted that these estimates are quite low compared to the data generated by the JICA research and the recent SIDA studies in Barangays Kamuning and Pinagkaisahan.*] Organic materials are usually mixed up with reusables and recyclables.
- c. **Program objectives** – The main objective is to minimize waste generation rate and reduce waste at source by means of *waste segregation* in combination with reuse, recycling and composting. This component also seeks to encourage of the use of household, office and building storage containers and introduce effective refuse management at home, offices, large buildings and commercial premises. The barangay is targeting a reduction of 25% in the first three years of the planned

period, another 15% during the following three years, and finally 15% in the last four years, for a total of 55% reduction of waste.

- d. **Action plan** – The basic approach in reducing the volume of waste generated at source is through careful segregation of wastes, mainly into reusables, recyclables and compostables. The segregated wastes shall be collected by barangay collection brigades from the households and offices, and brought to the barangay collection stations or *recycling centers* where the improperly separated wastes are properly segregated and manually classified further into different types (e.g. metals, glass, bottles, plastics, plastic packages, papers, corrugated papers, cardboards, tin cans, aluminum containers, etc.) The *recycling center* gathers buying prices and evaluates rate structures, then markets in bulk the recyclable materials to bulk buyers or junk shops offering higher prices. Organic materials will be handled with care and brought to composting stations in nearby barangays with composting facilities. Hazardous waste from medical clinics and related establishments will be cautiously handled trained workers using environment-friendly methods.

3.6.4 Recycling

- a. **Overview of the component program** – Sufficient amount of the solid wastes generated in the barangay shall be reduced by means of separating recyclable materials at its primary source—the households, offices and business premises. Target: 70% of reusable and recyclable materials are recycled or collected and brought to collection stations or recycling centers.
- b. **Situation analysis** – Recyclable wastes and reusable materials, particularly typewriting papers, newspapers, magazines, directories, glass bottles, metals, tin cans and plastic bottles, are traditionally sold to “pushcart boys,” these are roving buyers dealing with or under the administration of junkshops located in the barangay or nearby barangays. It is estimated that more than 80% of recyclables end up in the hands of pushcart boys and waste scavengers roaming the barangays, more often than not, before garbage collection time. The problem of recycling revolves around the intense competition between pushcart boys/scavengers-junkshops, crew (*paleros*) of dump trucks who also collects recyclables and their bulk buyers in the Payatas dump site, and the barangay workers engaged in collecting and selling recyclable materials.
- c. **Program objectives** – The aim of this component is to recycle 70% of reusable and recyclable wastes generated in the barangay by means of a systematic method of waste segregation and supporting the interest of the community.
- d. **Action plan** – The major steps in implementing the recycling program are: institution of segregation measures through barangay ordinance which encourages separation of all reusable and recyclable materials for collection by the barangay garbage brigade; supervision of the segregation/recycling program; formation and training of recyclable collection brigade; establishing of collection stations or recycling centers together with its buying and selling system; and setting up arrangements and procedures for the marketing of reusable and recyclable materials. Appropriate incentives, *cash or otherwise*, shall also be incorporated in the recycling program to provide rewards to residents, establishments and organizations actively participating.

3.6.5 Collection of organic materials for composting

- a. **Overview of the component program** – The purpose of this component is to help reduce sufficient amount of waste by collecting compostable materials. The barangay will gather organic wastes to be transferred and processed into compost by nearby barangay with available composting facilities.

- b. **Situation analysis (*addressed by the program*)** – Organic wastes of the barangay are normally mixed with other solid wastes. By and large, some compostable materials are separated by residents; while organic materials from restaurants and caterers are usually mixed with food packaging materials, mostly plastics or *styrofoam*.
- c. **Program objectives** – The aim of this component is to collect at least 75% of compostable materials generated in the barangay and send these materials to a nearby *composting plant* operated by adjacent barangay. In this connection, the barangay will make a joint project agreement with neighboring barangay to install composting equipment and make operational a small composting plant to market and dispose compost materials.
- d. **Action plan** – The implementation of the composting component calls for the selection of appropriate types of compostable wastes. Appropriate methods shall be instituted to determine the categories of wastes to be diverted to the composting plant. Carefull selection and installation of composting equipment shall also be undertaken to make sure that health and environmental impacts are prevented.

3.6.6 Solid waste facility

- a. **Overview of the component program** – The purpose of this component is to establish a materials recovery facility (MRF) which shall serve as temporary storage of solid wastes, recycling center, collection points, or transfer station while awaiting collection and transfer to processing sites or to final disposal sites.
- b. **Situation analysis** – There has never been a space available for setting up a materials recovery facility (MRF). The real problem is that there is vacant lot within the barangay; in fact, the barangay itself has no land to build its office building inspite of having available funds for the purpose. But many streets of the barangay are wide enough for a *mini-* or *micro-*MRF. Hence, the barangay can only set up this very small type of waste recovery facility with very limited capacity. Definitely, the barangay has to make arrangements with neighboring barangays for setting up a common MRF.
- c. **Program objectives** – The objective is not to set up a barangay-based materials recovery facility (MRF), but to partner with neighboring, preferably adjacent, barangays that can accommodate the amount of disposal capacity generated by Bgy. South Triangle. *Mini-* or *micro-*MRF will be set up at strategic locations in the barangay.
- d. **Action plan** – The first step to be taken by the barangay is to make arrangements with adjacent barangays for sharing waste recovery facility with them. If not possible, or the capacity is not enough, the other option is to secure through an agreement with QC-EPWMD on available QC-owned MRF or the national MRF that is near Bgy. South Triangle. The last option is through an agreement with a solid waste enterprise. However, the barangay will set up *mini-* or *micro-*MRF at strategic locations within the barangay.

3.6.7 Education and public information

- a. **Overview of the component program (*program description*)** – This component will implement a well-organized, barangay-wide health and environmental education, public information campaign focus on solid waste management, in general, and waste reduction, segregation and collection, recycling and composting, in particular.
- b. **Situation analysis** – The barangay has been conducting education and environmental awareness campaign through letters and written announcements. The

barangay environment committee is also conducting meetings with community representatives and owners-employees of commercial establishments. These campaigns are relatively effective. On the other hand, a more regular and systematic health education and environmental awareness program is needed to succeed in this endeavor.

- c. **Program objectives** – The objectives of this component are: To set up a well-organized, barangay-wide health and environmental education and public information campaign; and to secure high level of community participation in the management of solid waste collection services, recycling, composting, and proper disposal of household waste and office refuse.
- d. **Action plan** – The implementation of this component involves the preparation and design of a well-organized, barangay-wide health and environmental education and public information campaign; the selection of appropriate media such as the use of letters, leaflets, posters, bulletin boards, public announcements and conduct of occasional street meetings and general barangay assembly; conduct of SWM-environmental lectures, teach-ins, short-term seminars; and incorporation of SWM topics in classroom teaching. Special education and environmental campaign program will be conducted for community organizations as well as occupants/owners-employees of large buildings and commercial enterprises.

3.6.8 Special waste

- a. **Overview of the component program** – This component involves the promotion of appropriate handling, storage and transport of special (hazardous) wastes, and how to minimize health and environmental risks and impact in the disposal of these types of wastes.
- b. **Situation analysis** – Almost every person in the barangay are not aware of the health and environmental risks involve in the handling, storage and disposal of hazardous wastes. In spite of the passage of Republic Act 6969 – Toxic Substances and Hazardous and Nuclear Waste Control Act in 1990s, the management of hazardous waste have improved a little, particularly batteries, paints, light bulbs, electronic devices and other materials with heavy metals, and household and industrial chemicals, etc.
- c. **Program objectives** – The objective of this component is to promote awareness about the proper handling, storage, transport and disposal of special (hazardous) wastes in order to minimize health and environmental risks and impact.
- d. **Action plan** – This component will make sure that the barangay residents and the owners and employees of commercial and industrial enterprises are aware of the proper handling, storage, transport and disposal of hazardous household wastes and special wastes, respectively. Information campaign about the identification and description of hazardous wastes as well as the proper procedure in minimizing health and environmental risks and impact shall also be conducted.

3.6.9 Incentive program

- a. **Overview of the component program (program description)** – This component provides incentives, cash or otherwise, to encourage participation of residents, community organizations and business enterprises in the solid waste management programs of the barangay.
- b. **Situation analysis (addressed by the program)** – No specific awards nor any kind of incentive is currently being given to any person, group or organization in the

barangay. It is assumed that the provision of these awards and incentives will encourage participation of all concerned in the SWM programs and projects.

- c. **Program objectives** – The aim of this component is to establish an awards system to provide incentive for participation in the SWM programs and projects of the barangay. It also intends to sanction concerned individuals, groups or organizations for violating enacted ordinances relating to the waste management programs.
- d. **Action plan** – This component will be implemented by: Developing an awards system that will provide incentives to any person, group or organization who/which participated actively in the solid waste management programs or projects of the barangay. Sanctions for violating of the rules and regulations embodied in the barangay ordinance relating to the solid waste management programs or projects shall be strictly enforced.

The rules and regulations include the following: 1) Only segregated waste will be collected; 2) Open burning of garbage is not allowed; 3) No garbage can be displayed along sidewalks, streets, alleys and posts; 4) No hanging of garbage bags on trees, fences and gates. Appropriate sanctions shall be provided in the Barangay Ordinance to be enacted pursuant to the provisions of RA 9003 and the DILG Memorandum Circular No. 2001-38.

3.6.10 Resource requirement and funding

Adequate resources [human, financial and material] shall be provided to the implementation of the component programs and their corresponding projects and activities. These are described in the following sub-sections.

- a. **Description of project costs, revenues and revenue sources for implementing SWM program components** –
- b. **Specific projects, activities, equipment and technological requirements needing outside sourcing of funds or materials** –
- c. **Specific uses of resource requirements and estimated costs** –
- d. **Action plan for generating funds for the acquisition of resource requirements** –

Project: Micropolis

SUMMARY
OF THE
STRATEGIC DEVELOPMENT PLAN OF BARANGAY SOUTH TRIANGLE

- 1. Vision of Barangay Development** – Mission-vision statement: A model barangay in governance, leadership and service of high ethical standards in partnership with its people to build a quality, peaceful, progressive and livable community.

More specifically, Barangay South Triangle is envisioned to be a *living form of vertical urbanism* characterized by high-rise residential-commercial and corporate buildings along with broad-based economic enterprises.

The people of the barangay aspires for affordable and decent housing, with sustainable livelihood programs, and having harmonious relationship to God, self and others.

The Barangay aims to achieve a healthful and dignified living standard that permit them to share the resources of society, reduce poverty and social inequity, and develop personal security.

It seeks to develop an inclusive system of legal protection and political representation of community members to maximize their participation in the development process.

It strives for the provision of cultural and recreational amenities, social services and economic growth.

It desires to create a clean, orderly and safe environment for all.

- 2. Barangay Development Strategy** – The fundamental strategy for barangay development are:

- a) Creating of livable community, particularly the slums and squatter areas.
- b) Developing broad-based economic enterprises.
- c) Implementing good governance and community management.

- 3. Strategic Areas for Development** – The strategic areas for barangay development includes the following:

- a) Slum upgrading: *Building a barangay without slums*
- b) Improving basic infrastructures and constructing community facilities and social amenities
- c) Developing a healthful urban environment
- d) Facilitating access to health care, education and other social services
- e) Creating income-generating enterprises
- f) Improving local governance and community development

- 4. Strategic Development Goals** – The strategic development goals and long-term objectives are:

- a) To set up a livable community with healthful environment.
- b) To build a broad-based economic enterprises.

c) To institute good governance and improve community management services.

5. Strategic Programs and Projects for Barangay Development –

- a) **Poverty Reduction (Employment Generation & Economic Development)** – This program intends to provide job training and skills upgrading, and higher vocational education. It will establish locally-owned business enterprises; provide loan assistance at low interest rate for barangay-based entrepreneurs; and other support for livelihood development and job formation.
- b) **Slum Upgrading** (a common project among the pilot barangays of Project: Micropolis) – Involves the delivery of basic services, such as water supply and sanitation, waste management, storm drainage and flood prevention, improvement of roads, enhancement of income-generating enterprises, and construction of medium-rise housing units, community facilities and social amenities; and creating a clean, safe and healthy living environment.
- c) **Solid Waste Management** (a common project among the pilot barangays of Project: Micropolis) – An integrated waste management program which will formulate and install efficient waste management system.
- d) **Urban Agriculture** (a common project among the pilot barangays of Project: Micropolis) – Utilization of compost fertilizer from the waste management project for food production at home and the use of available open spaces for small plot urban farming.
- e) **Small Parks Development** – Development of Small Parks with enough community facilities and social amenities.
- f) **Barangay Hall Construction** – Construction of multi-purpose barangay hall.

6. Program/Project Action Plan – The summary of action plan for the strategic programs and projects is presented below.

Summary of Action Plan for the Strategic Programs and Projects

Programs	2003-2004	2005-2013	2013-2023
1. Poverty reduction (<i>Employment Generation & Economic Development</i>)	Identification of income-earning opportunities; business planning and start-ups of new locally-owned businesses; start job training program and skills upgrading; and making loans and other assistance available.	Continue business planning and start-ups; enhancing growth of employment, incomes and local investment.	Continuing business planning and start-ups; enhancing growth of employment, incomes and local investment.
2. Slum Upgrading	Preliminary studies, community surveys and negotiation of land acquisition; planning for slum improvements.	Physical planning, redevelopment and reconstruction.	Continuing improvements and upgrading of community facilities.
3. Solid Waste Management	Waste segregation and compost making.	Continue improving the management system.	Continuing improvement and upgrading of the management system.

4. Urban Agriculture	Action planning, experimentation and piloting.	Full implementation.	Continuing implementation and program improvements.
5. Small Parks Development	Preparatory planning for the selection and design of small parks Construction of the small parks.	Upgrading of facilities and social amenities of small parks.	Continuing improvements and upgrading of facilities of small parks.
6. Barangay Hall Construction	Preparatory planning for the construction of the Barangay Hall.	Upgrading of the Barangay Hall.	Continuing improvements and upgrading of the Barangay Hall.

3.6.10 Resource requirement and funding

Adequate resources [human, financial and material] shall be provided to the implementation of the component programs and their corresponding projects and activities. These are described in the following sub-sections.

- a. **Description of project costs, revenues and revenue sources for implementing SWM program components** – The waste
- b. **Specific projects, activities, equipment and technological requirements needing outside sourcing of funds or materials** – The waste
- c. **Specific uses of resource requirements and estimated costs** – The waste
- d. **Action plan for generating funds for the acquisition of resource requirements** – The waste

Indicate if certain resource requirements are being or will be sourced from fees, grants, donations, local funding and other means.]

The plan shall indicate specific projects, activities, equipment and technological requirements for which outside sourcing of funds or materials may be necessary to carry out the specific components of the plan. It shall define the specific uses for its resource requirements and indicate its costs. The plan shall likewise indicate how the province, city or municipality intends to generate the funds for the acquisition of its resource requirements. It shall also indicate if certain resource requirements are being or will be sourced from fees, grants, donations, local funding and other means.

- a) 80% waste collection and transport to disposal station or final disposal sites, improved crew operations and use of modern transport equipment;
- b) Use of safe waste processing and pre-treatment techniques and methods conforming with internationally-acceptable and other standards set in other laws and regulations;
- c) Minimize waste generation rate, reduced waste at source; use of household, office and building storage containers; refuse management at home, offices, large buildings and commercial premises;
- d) 70% of waste generated are reused and recycled;
- e) Installation of composting equipment with minimum health and environmental risks and impact, marketing and disposal of compost;
- f) Establishment of MRF for solid wastes – storage containers, collection points or transfer station;

- g) Well-organized health and environmental education, public information campaign and high level of community participation;
- h) Improved handling, storage and transport of special wastes;
- i) Setting up of incentive programs;
- j) Adequate resources [human, financial and material] provided.

Programming Goal: Sustained increases in income of grains dependent rural communities.

Project Purpose: Improved grains productivity.

The achievement of this purpose shall be indicated as follows:

For rice – Average increase of one ton per hectare resulting to PhP7,600 increase per hectare for hybrid rice; and 0.3 ton per hectare during wet season among users of bacterial leaf blight / rice tungro virus (BLB/RTV) resistant inbred rice equivalent to PhP2,000 per hectare increase in income of farmers. *Target area for rice:* 210,000 hectares with 200,000 farmer-beneficiaries.

For corn – Yield increase of 0.84 ton per hectare planted to white corn and increase in net income of PhP3,300 per hectare per year. *Target area for corn:* 180,000 hectares with 140,000 farmer-beneficiaries.

Principal Outputs: The major end-of-project outputs of GSDP are as follows:

1. Selected National Irrigation Systems (NISs) and Communal Irrigation Systems (CISs) improved.
2. R&D capabilities of the grains sector strengthened.
3. Enhanced capabilities of extension services for grains sector.
4. Agricultural training centers upgraded.
5. Soils and water laboratory facilities and services upgraded.
6. Strengthened institutional capacity for grains sector statistics.
7. Strengthened capacity for grains sector policy, planning and project development.
8. Efficient program management.