Annex J

Collection Route Improvement

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J Collection Route Improvement

J.1 Objectives

The objectives of this pilot project were as follows:

- Technology transfer,
- The creation of a manual that shows how to improve the collection route, and
- Data gathering to apply them to the M/P.

Since the main objective was technology transfer and the adapting of a methodology, it was imperative to explain some concepts that the users of such methodology had to know, given the heterogeneity of the group. Such elements were measure conversions and this objective was achieved through expositions, tutorship and field practices.

Technology transfer was conducted throughout the project between the counterpart and the Study Team through joint work. In total 12 meetings of 3 hours each were held, using half of this time to review the progress and clarifications; the second half was devoted to teach step by step the use of the formularies to gather the information. Likewise, 28 tutorships of 2 hours each were given, and at least 14 field visits were conducted.

This technology transfer came from the Study Team to the counterpart and vice versa, since the experiences and knowledge that the counterpart members acquired through daily work were crucial to the collection route improvement.

On the other hand, with the information and experience obtained through the pilot project a Collection Route Improvement Manual was formulated, which will systematize the methodology applied throughout the project in order to provide a tool for the users to apply such methodology by themselves.

Also, the efficiency and effectiveness of the collection route improvement through the data obtained during the pilot project were assessed.

J.2 Selection of Target Route

14 collection routes were selected for this pilot project. The requirements for a target route to be accepted were the following:

- The municipalities should appoint a person for this pilot project who knew the waste collection and haulage tasks from his corresponding municipality.
- The proposal of 2 routes per municipality.
- Besides, it was preferable to have the data on the collection amount from a weighbridge, in order to evaluate the pilot project.

As previously mentioned, the Study Team requested the counterpart members that each municipality presented two collection routes for this pilot project. The location of the municipality, i.e., the target routes being evenly distributed over the Study Area, was to be taken into account.

The participating municipalities, counterpart members and routes were as follows:

Municipality	Representative	Route
San Salvador (SS)	Manuel de Jesús Olivares Geronimo Macario Pérez	Participation without routes
Mejicanos (MJ)	José Gonzalo Castillo	12 and 13
Ciudad Delgado (CD)	Luis Alonso Ramírez	01 and 02
Cuscatancingo (CT)	Mario Edgardo Aguilar José Manuel Ramírez	Participation without routes
San Marcos (SM)	Mauricio Antonio Balcaceres	07 and 08
Nueva San Salvador (ST)	Miguel Ángel Gutiérrez Víctor Manuel Mejia	02 and 04
Soyapango (Sy)	Héctor Nahun Martines Jorge Schafik Handal Vega	05 and 11
Ilopango (IL)	Francisco Cruz Sorto	Participation without routes
San Martín (SMT)	Pedro Arnulfo Casco David Fernando Cruz	03 and 05
Apopa (AP)	Luis Alberto Romero	04 and 05
Nejapa (NJ)	Eduardo Alfredo Cruz	Participation without routes

11 municipalities participated, which sent 16 participants and a total of 14 routes were analyzed.

J.3 Formulation of the Implementation Plan

The plan was developed during the period from March 4th and June 15th 2000.

On March 4th, the representatives from the 14 municipalities of AMSS were explained what the pilot project was about and the requirements to participate directly in the plan. They were also explained that 14 routes would be analyzed, which would be used to jointly develop the route improvement methodology.

It was then asked that each municipality proposed two routes that they were more interested in to improve them.

Finally, seven municipalities responded to the request. The pilot project began on April 26th with the presentation of the program of activities to be executed. Programming was as follows:

Timetable of the Pilot Project

Step	Activities	Week 1	2	3	4	5	6
1	Presentation of the plan						
1	Observation of the current route						
1	Information survey from the collection area						
	Time and Motion before changing collection route						
2	Analysis of the current situation						
2	Application of indicators and formulation of proposal						
3	Implementation of proposal						
	Time and Motion after changing collection route						
4	Analysis and evaluation						

Figure J-1 explains the scheme on how was this pilot project conducted.

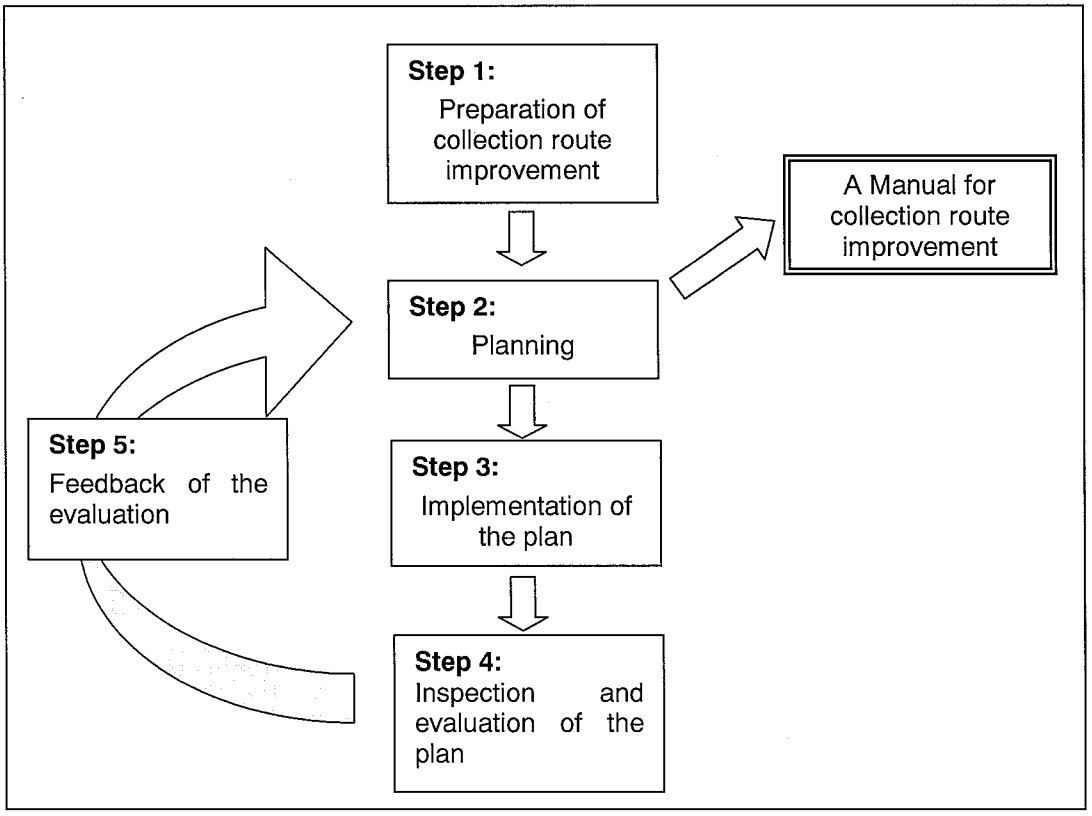

Figure J-1: Implementation Plan of Collection Route Improvement

Step 1:Preparation of collection route improvement

The step one consists of two parts:

- Adding information on current collection area and route map for planning a collection route improvement; and

- Gathering information for evaluating the plan.

Adding information on current collection area and route map for planning a collection route improvement

In order to plan a collection route improvement, the Study Team provided to the municipalities' counterparts maps of the collection areas, in a size of 11 x 17 inches, to copy and identify the following information:

- Number of houses, small businesses, schools, markets and those activities in general that may have a direct impact on the generation of wastes in order to calculate the collection amount.
- Road conditions, such as one-way streets, traffic jams due to a market, etc.

With this information the following maps will be produced:

Map 1: which shows the name of neighborhood, residential complexes, avenues, streets and all those important places.

Map 2: which shows current land use.

Map 3 which indicates the number of houses to be served, in front of each street, as well as the topographical features, also showing one-way streets and road troubles to be taken into account.

Gathering information for evaluating the plan

For evaluating the plan, the C/Ps gathered current data of:

- collection amount (weight in pounds or kg) of the target route,
- number of trip,
- collection and haulage time,
- collection and haulage distance,
- fuel consumption, and
- number of collection workers.

To gather such information, the Team provided them with the following formularies:

Formulary for on-route observation of times and kilometer, whose objective was to obtain the information that allowed us to evaluate time and motion in its most basic way day by day.

Formulary for route observation two times per week. The objective of this table was to consolidate and enter the information from the previous formulary, in order to perceive what is the behavior of the collection work.

Map 4 The person responsible for the service traced, along with the driver, the route currently followed by the collection truck in order to identify the trip and all the streets by which the truck passes by.

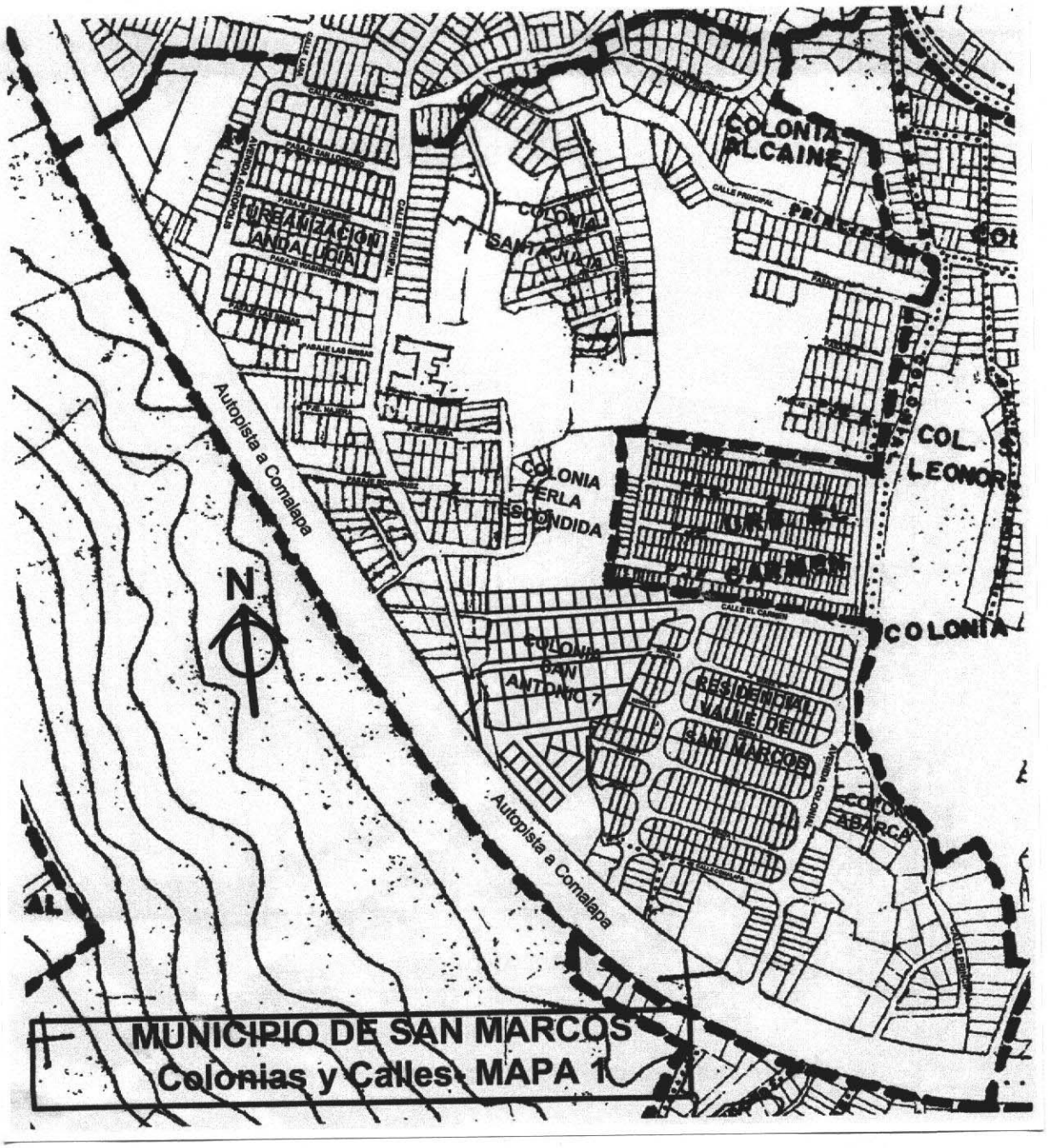

Figure J-2: Collection Route Improvement Map 1

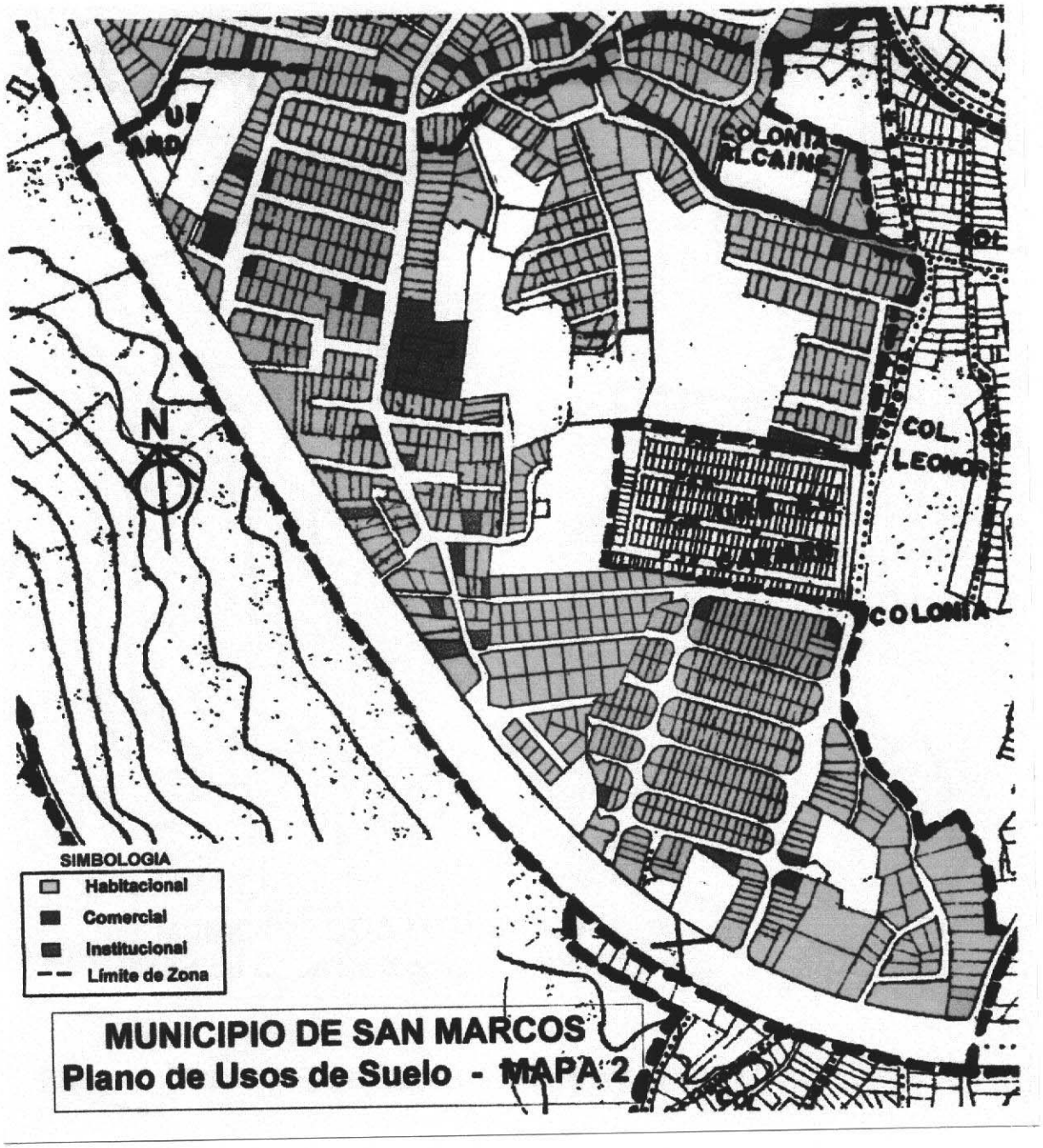

Figure J-3: Collection Route Improvement Map 2

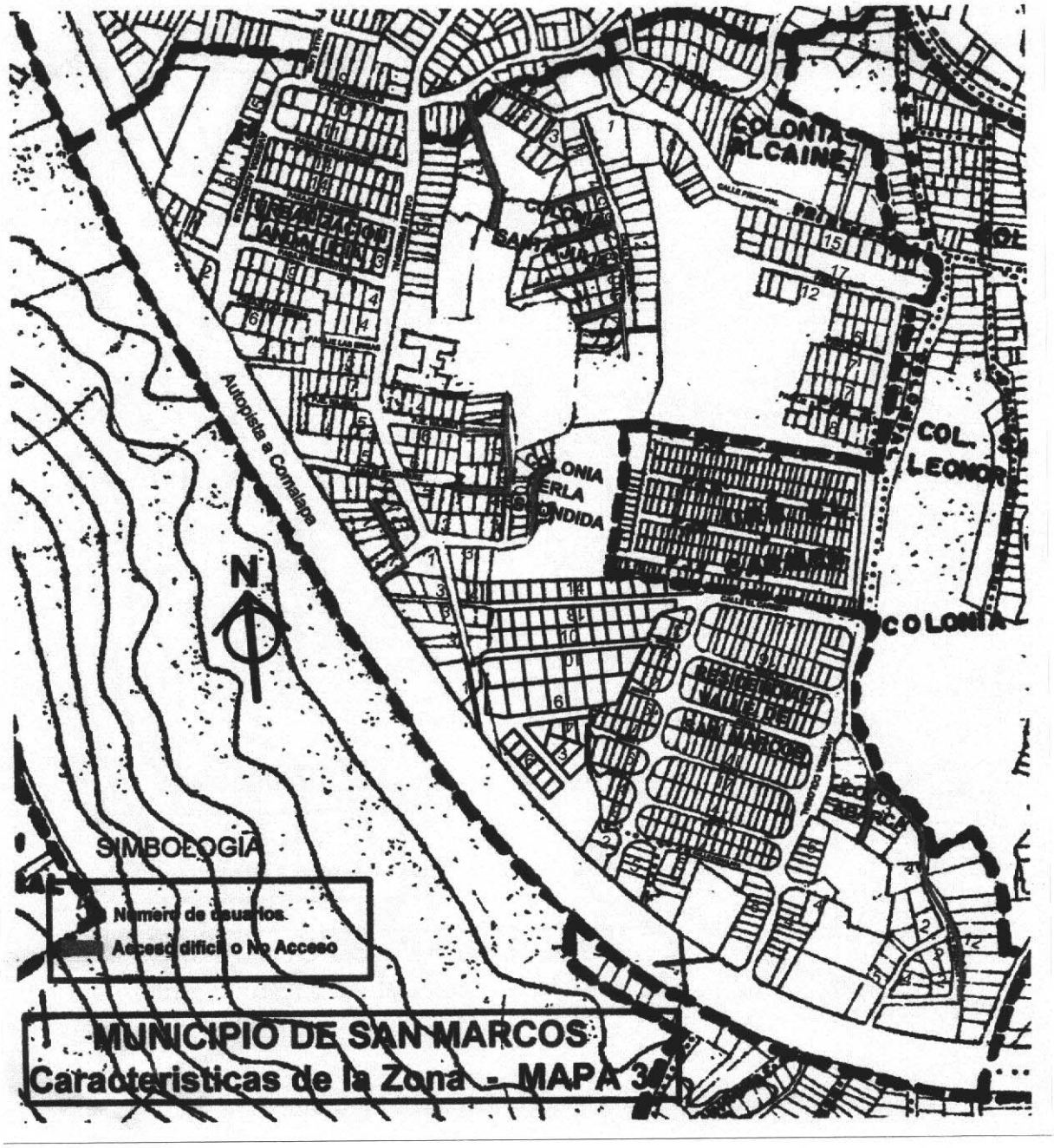

Figure J-4: Collection Route Improvement Map 3