

CHAPTER VII

GENERAL COMMENTS ABOUT SANITATION OF CAMPS LOCATED IN GUATEMALA CITY

This chapter, which constitutes the second part of the study, attempts to describe some of the characteristics and conditions of sanitation at the emergency camps located in Guatemala City during the days following the earthquake of February 4, 1976. It discusses the sanitation practiced in the camps with the largest number of persons, both those organized by the Red Cross as well as the unorganized settlements made up of individuals squatting on private and state lands. A situation that gave rise to many legal problems.

The work of these camps started two days after the earthquake hit. The Faculty of Engineering organized the Emergency Engineering Committee which delegated the problems of general sanitation to the Regional School of Sanitary Engineering (ERIS). This school organized, with the help of professors and others, a number of brigades to dig latrines at the camps, to locate sources of water and determine supply points, and to perform other essential duties.

Those who worked directly in these activities were the following :

- Dr. Luis GARCIA
- Dr. Carlos MUNOZ
- Guillermo GUZMAN Ch., an engineer
- Juan Jose Victoria, engineer
- Mario OCHEITA, engineer
- Roger BLADIZON, engineer
- Julio MORATAYA, engineer

The engineering students brigades used the following form to organize their work :

Brigade N°.

Location

Number of persons to assist

Number of latrines to build

Number of latrines to build initially

Person in charge of brigade

Participating students

Brigade equipment

5 pickaxes, 5 shovels and 1 digging iron

General instructions :

- a. Find an appropriate place for the latrine (see map)
- b. Lay out a rectangle 0.80 by 10 meters
- c. Make 3 groups of 5 students each
- d. Start digging, with each group taking turns, until a depth of 1.5 meters is reached.
- e. Once the ditch is dug, report to ERIS so that it can send the latrines

The brigade members were trained to build latrines designed for their work.

For the ditching, Mario OCHEITA, Julio MORATAYA and four students were in charge of running a backhoe. It took eight days to dig the ditches for almost all the camps. Roger BALDIZON was in charge of sending the prefabricated latrines owned by DIS to the ditches. This way latrines were dug throughout the entire city. The people living in the camps were put in charge of covering the latrines with roofs and lids but this was only done at some of the camps because only a few people participated in some of the camps or others did not have enough wood or other materials to do this work.

The other tasks carried out by ERIS are described in special reports filed at the office of the director.

The following camps were analyzed :

1. Camp A : Hacienda Guard
2. Camp B : Beltway Entrance
3. Camp C : Bethania Fields
4. Camp D : 4th of February Colony
5. Camp E : Teodoro Palacios Flores High School
6. Camp F : Marte Fields
7. Camp G : Asuncion Gardens
8. Camp H : Roosevelt Temporary Housing.

The locations of these camps can be seen on the attached city map.

The camps were studied during regular visits to them, as well as direct conversations with the person in charge of them. The discussions covered the ideas and problems of the victims and others. Photographs were taken and some advice was given to the organizing committees. Water from sources of suspicious origin underwent sanitary chemical analysis as well as bacteriological analysis. This work was done under the advice of Dr. Alba T. de Abreu and Sonia Flores. Camp H, installed by the government (the National Reconstruction Committee) six months after the earthquake, was a temporary facility to provide lodging for persons for two to three years. Periodic visits were made to this camp. Another form was developed and a survey taken in August, 1976. That form is included below. The survey covered only 10 % of the total camp population.

Also given below is a detailed description of all the parameters analyzed and the different emergency camps.

In studying Camp D, the Faculty of Medicine and Engineering helped to improve the sanitary conditions, to the extent that the economic possibilities of the University of San Carlos allowed. The faculty participated in developing solutions for some of the serious problems found in this camp. A survey worksheet was drafted and passed from site to site for the purpose of determining certain sanitation aspects in them and to gather personal data about the inhabitants, their social background and special data for sick persons.

SPECIAL PAPER - SANITATION OF EMERGENCY CAMPS SURVEY N°1.

1. Residence before the earthquake ;
2. House was owned, rented, other
3. Description of house before earthquake :
 - construction material
 - water was piped, carried, other
 - had toilet or latrine
 - did house have drainage ?
 - Have many flies ?

- Where was the garbage thrown ;
- Problems with cockroaches, mosquitoes, mice ;
- 4. Conditions of present housing ;
 - Does roof leak when it rains ;
 - Any problems with using latrines ;
 - Any problems with showers ;
 - Any problems with using sinks ;
 - Any problems with neighbours during the day ; what problems
 - Any problems with neighbours at night ; what problems
 - Are family members living far from work ; state location of work ;
 - Are children attending school
 - Are children sick frequently ; describe symptoms briefly ;
- 5. What big problem do you have ;

What do you need

Other information

JULIO C. MORATAYA J.
Student, Regional Sanitary
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Several types of forms had to be drafted before a good working form was developed. Field tests had to be taken to see they worked. Another control factor was that the form had to contain the largest possible number of questions on a letter-size piece of paper since the number of persons to be interviewed was approximately 20,000 located at 4,000 different sites (see survey form and instructions). It was later decided by Faculty of Medicine authorities that the survey would be taken by third-year students, under the direction of professors of medicine. There 20 work groups composed of 1 professor and 30 students each. These were organized into 4 sectors, each of which had an assistant director, all of whom were under the leadership of Dr. Guillermo Urrutia who was helped directly by Julio Morataya.

The survey was conducted on October 14, and 15, after two months of coordinated work by the two academic groups.

In all, 36 professors from the Faculty of Medicine and 650 students participated. The large number of interviewers or survey guides, and the good organization shown in the field made it possible to complete the field work on October 14 and the correction and checking work on October 15.

At this time, the data are being processed by the Faculty of Engineering computer. After they are processed, the necessary correlations can be made for the parameters studied and then the study can continue in an effort to find better solutions.

ORGANIZATION TABLE OF SURVEY STAFF
4th OF FEBRUARY COLONY, OCTOBER 1976

Sector 1	Sector 2	Sector 3	Sector 4
Dr. O. Menendez	Dr. R. Molina	J. Quan	Dr. C. Waldheim
Dr. Bolaños Groups 3 to 5	Dr. J. Castillo Groups 9 to 11	Dr. De Ochaeta Groups 21 to 23	Dr. Van Totlen Groups 36 to 38
Dr. Luna Groups 6 to 8	Dr. Gonzalez Groups 12 to 14	Dr. Garcia Mano Groups 24 to 26	Dr. Leiva Groups 38 to 44
	Dr. S. Lopez Groups 15 to 17	Dr. Sierra Groups 27 to 29	Dr. Arreaga Groups 45 to 47
	Dr. Arteaga Groups 18 to 20	Dr. Chapeton Groups 30 to 32	J. Zex Groups 48 to 50
		Dr. De Samayoa Groups 33 to 35	Dr. Garcia Noval Groups 51 to 53
			Dr. J. V. Ordonez Groups 53 to 56
			Dr. Aguilar Groups 42 to 44
			Dr. Oscar Sacahui Groups 51 to 54
			Dr. De Arreaga Groups 60 to 62
Sector 1: Dr. F. Bendfeldt			
Sector 2: Dr. O. Mazariegos			
Sector 3: Dr. F. Orla			
Sector 4: Dr. R. Kepfer - Dr. C. Rosal			

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Sector 4: Dr. R. Kepfer - Dr. C. Rosal

D. Ponce - M. Maesicovetere

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FACULTIES OF MEDICINE AND ENGINEERING

Control No.

Form no. , Identification No.

1.1 Site identification No.

1.2 Name of head of family or family name:

1.3 No. of persons living in the camp:

SANITATION OF CAMPS:

1.4 Overall aspect of site: 1 good, 2 average, 3 poor

1.5 Source of water: 1 tank 2 tank truck

3 carried in barrel 4 all of the above

1.6 Is water bought: 1 yes 2 no 3 sometimes

1.7 How much water does family consume 1 less than 10 gallons

2 from 10 to 54 gallons

3 more than 54 gallons

1.8 How far away is latrine 1 less than 50 meters

2 50 to 100 meters

3 more than 100 meters

1.9 Is closed container available for garbage: 1 yes 2 no

3 no container

1.10 Any pets: 1 yes, 2 no

1.11 Any rodents or insects such as 1 flies 2 cockroaches

3 mosquitoes 4 rats 5 all of the above

PERSONAL BACKGROUND

2.1 Age

1 less than 1 year

2 between 1 and 4 years

3 between 5 and 9 years

4 between 10 and 19 years

5 between 20 and 59 years

6 older than 60 years

2.2 Sex

1 male

2 female

2.3 Health-Illnesses

1 healthy

2 ill

2.4 Place of Origin: 1 Capital City

2 Department of Guatemala

3 Other department

4 Other country

SOCIAL DATA

- 3.1 Know how to read and write : 1 yes, 2 no, 3 younger than 7 years of age.
- 3.2 Work : 1 yes, 2 no, 3 younger than 10 years of age, 4 study.
- 3.3 Type of work : 1 construction, 2 factory, 3 services, 4 other.

SPECIAL DATA FOR SICK PERSONS

- 4.1 Location of sick person : 1 in camp, 2 ambulatory, 3 hospitalized.
- 4.2 If hospitalized, where : 1 San Juan de Dios Hospital, 2 Roosevelt Hospital, 3 IGSS, 4 other.
- 4.3 Diagnosis : 1 respiratory illness, 2 digestive, 3 dermatologica, 4 other.

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SURVEY INSTRUCTIONS

Control n° : leave this space blank because it will be used later on to organize the information.

Form n° : put in this space the order number that each survey guide is putting on his forms (for example, guide A has forms 1,2,3,4 and so forth, guide B also has forms 1,2,3,4, etc.).

Survey Guide Identification n° : put this number on all forms.

- 1.1 Site identification number : actual address of the site (for example, this number could be 1, 215, sector 3, C-123, southern sector, street 2, n° 34, etc).
- 1.2 Name of head of family of family name. It is better to place the name of the head of family or if the person do not wish to give it, the last name or last names of the family.
- 1.3 Number of persons living at the site : put in this space the number of all persons living or sleeping of that site. Make sure to give the persons enough time to be sure of the number since this number will be checked later on with all of the individual forms used in each site.

SANITATION OF SITES

1.4 Overall appearance of site :

Consider the following points in arriving at the answer.

Good site :

- made of sawn wood or other materials better than wood
- more than one bedroom and separate kitchen
- natural light in all rooms
- air circulates through all rooms
- cement brick floor
- new roofing material

Average site :

- unsawn wood or similar materials
- a single bedroom and separate kitchen
- natural light in at least bedroom
- cement floor
- sheet roofing used

Poor site :

- poor quality materials (tin, cardboard, etc)
- no separate rooms
- natural light does not penetrate rooms
- no air circulation
- dirt floor
- sheeting, cardboard, plastic on the roof

1.5 Source of water : put an X in the appropriate space

- for tank, water that is taken from plastic tanks located around the beltway
- tank truck, when water is taken directly from the tank truck
- brought in barrel, when water is bought from trucks that sell barreled water
- combination, when two or more possible ways of obtaining water are used.

- 1.6 Buy water : put an X between the parentheses ; no problem in answering this question.
- 1.7 How much water does the family consume per day : same as the previous questions, put an X between the parentheses but take special care of the following : less than 10 gallons would be the amount meant if a person said less than 2 cans, because 1 can has 5 gallons ; 10 to 54 gallons is the amount if the person says half a barrel or 2 to 10 cans, because 1 barrel contains 54 gallons. More than 54 gallons, if the person says more than 1 barrel.
- 1.8 How far away is the latrine : put an X between the appropriate parentheses, considering the following information : less than 50 meters is a half-block ; between 50 to 100 meters, slightly less than one block ; more than a 100 meters, is more than one block, for example, a block and a half, 2 blocks, etc.
- 1.9 Has garbage containers with lids : the purpose of this question is to determine if the garbage is put in barrels, cans or other containers and whether they are covered.
- 1.10 Pets : Put an X in the appropriate space. Pets are any animals that live with the family and the family feeds them. Examples are dogs, cats, rabbits, chickens, goats, parrots, parakeets and others.
- 1.11 Rodents and insects : put an X in the appropriate place, noting the following : flies, if these are the most prevalent or bothersome ; cockroaches, if these are the most prevalent or bothersome ; mosquitoes, if these are the most prevalent or bothersome ; mice or rats, if these are the worse problem. Enter all if more than two of these pests are present.

Note : These questions are asked only once per site. On the other forms for individuals of the same site, copy the answers to the questions 1.4 to 1.11. They should be the same for all persons.

PERSONAL DATA

All persons living in the site or a responsible person who is well informed of all others living in the site are asked the following questions.

- 2.1 Age : put an X in the appropriate place.
- 2.2 Sex : put an X in the appropriate space.
- 2.3 Health-illness : put an X in the appropriate space if healthy.
Every person who says he is healthy or if the responsible person interviewed says that he is healthy, then the person is healthy, provided that the observer does not consider him sick. Sick persons are all those who say they are sick or those said by the responsible person to be sick, or if it is obvious to the interviewer that the person sick.

If any person is sick, the special data requested on this same form should also be noted.

- 2.4 Place of origin : put an X in the appropriate space for the place of origin of each of the persons living in the site.

SOCIAL DATA

These data are requested from all persons who live in the site or the responsible person who is asked to provide them.

- 3.1 Know how to read and write : put an X in the appropriate spot.
- 3.2 Work : put an X in the appropriate spot.
- 3.3 Type of work : put an X in the spot strictly for those who work.
Consider the following : Construction, those who build houses, roads, buildings, etc. Factory : those work in any type of factory. Services : those who work in domestic or public services, for example, gardeners, sweepers, janitors, mailmen, etc. Other : persons working in any other activity not included in the aforementioned categories.

SPECIAL DATA FOR SICK PERSONS

These questions are answered only for those considered sick :

4.1 Location of sick person : put an X in the appropriate spot.

Consider the following : In the site : those persons who are staying at the site ; ambulatory : those persons who, even though sick, go to work or do not remain at the site ; hospitalized, those who are currently in a hospital.

4.2 If hospitalized, where : put an x in the appropriate spot.

4.3 Diagnosis : put an X in the appropriate spot. The survey taker should make a diagnosis on the basis of signs and symptoms stated in the interview and by simple observation (when possible). Decide whether the illness is respiratory, digestive, dermatological or none of the above and enter that information in the appropriate space.

Note : Any question about procedures should be addressed to your immediate superior in the organization of this survey whom you should recognize by full name.

SUMMARY OF PARAMETERS OF EMERGENCY CAMPS

This information indicates whether or not the camp meets the necessary requirements for an adequate installation.

	A	B	C	D	E	F	G	H
- Site far from mosquito-breeding areas and garbage	yes	no	yes	no	yes	yes	yes	yes
- Good access to roads	no	yes	no	yes	yes	yes	yes	yes
- Good land drainage	no	no	no	no	yes	no	no	yes

- no danger of insects or rodents	yes	no	yes	no	yes	no	yes	yes
- Not exposed to noise, foul odors, etc.	yes	no	yes	no	yes	yes	yes	yes
- Sufficient space for all persons	yes	yes	no	no	no	yes	no	no
- Reasonable distance from water source	yes	no	no	no	yes	yes	yes	yes
- Placement of tents in rows	yes	no	yes	no	yes	yes	yes	yes
- Streets at least 10 meters wide	no	no	no	no	no	no	no	yes
- Minimum of 3 square meters per person	no	no	no	no	no	no	no	no
- 8 meters between tents	no	no	no	no	no	no	no	no
- Residential area facing prevailing winds	yes	yes	no	no	no	yes	no	yes
- Natural ventilation	yes	yes	yes	no	yes	yes	yes	no
- Tents lighted	no	no	no	no	no	no	no	no
- Water tanks within 10 meters	no	yes	yes	no	no	no	no	yes
- Sufficient latrines	yes	yes	yes	no	no	yes	yes	yes
- Sufficient wash basins	no	no	no	no	no	no	no	yes
- Appropriate drainage system	no	no	no	no	no	no	no	yes
- Garbage cans with lids	no	no	no	no	no	no	no	no
- Dust is raised	no	yes	no	no	no	yes	yes	yes
- Fewer than 1,000 inhabitants	no	yes	yes	no	yes	no	yes	no
- Supply of drinking water	no	no	no	no	yes	yes	yes	yes
- Residual chlorine	no	no	no	no	yes	yes	yes	yes
- First aid post	yes	no	yes	yes	yes	yes	no	yes
- Supply of more than 20 liters per person	yes	no	no	no	no	no	yes	yes
- Food hygiene	no	no	no	no	no	no	no	no
- Sanitary education	no	no	no	no	no	no	no	no
- Field cover, for example, grassy plain	yes	yes	yes	no	yes	yes	yes	yes

Judging by the preceding information, the conclusion is that the campsites meet the requirements for a good installation in the following percentages (all parameters analyzed have been given equal weight):

CAMP A - 52 %
CAMP B - 39 %
CAMP C - 43 %
CAMP D - 9 %
CAMP E - 54 %
CAMP F - 61 %
CAMP G - 57 %
CAMP H - 83 %

The following were the most serious problems :

- Good land drainage	75 % poor
- Roads 10 meters wide	88 % do not exist
- Sufficient wash basins	83 % were insufficient
- Proper drainage system	100 % lacking
- Minimum of 3 square meters per person	100 % lacking
- Nine meters between tents	100 % lacking
- Garbage containers with lids	100 % lacking
- Food hygiene	100 % lacking
- Sanitary education	100 % lacking

CHAPTER VIII

GENERAL RECOMMENDATIONS AND CONCLUSIONS

Following a disaster, people must be aware of the emergency, the type of disaster that has occurred and the damage caused. Immediate emergency measures have to be considered. These should be designed in a way to produce tranquillity, safety and protection for all victims. They should also receive technical support.

Steps considered important in these cases are the following : prepare a guide with basic advice as promptly as possible. Distribute this guide to everyone as fliers, and over the radio, television and so forth. The purpose is to provide people with minimum ideas of safety and thereby reduce danger of accidents and to prevent deaths by negligence and unknown dangers.

Persons responsible for sanitation in emergency situations should be aware of a camp's basic needs and the general requirements for it to operate properly. A recommended procedure follows : Develop working groups composed of one leader and three assistants. These persons should have a good idea of the basic ideas needed for a good camp installation. This system will help to make sure every camp is established properly.

Several essential pieces of information are the number of persons to be lodged, the ease of obtaining water to meet their needs, types of sources, treatment required, storage and distribution. The water should always be chemically and physically acceptable and always bacteriologically potable.

As for latrines, give special attention to proper location with respect to the residential area of the camp and to separation of latrines for men and women.

Those who will live in the camp should help to organize it. They should be organized fairly and sufficient labor should be available for

the entire stay in the camp.

If some of the work is done by machine and some by hand, the proper machinery must be used. It must be used to the maximum and therefore it is necessary to specify the time and place where the machinery will be used to shorten the amount of time that it is not working.

If no city or state waste disposal service is available, some system will have to be developed at the camp. Burning and burial of residue or ashes in ditches is recommended. Persons living in the camp should be organized to do this work at least every two days.

Other matters of interest to sanitation are food hygiene and controlling insects and rodents. The most important, however, may be the right education for the disaster victims. If the victims understand their situation and what has to be done, the camp will work properly and sanitation will be satisfactory.

The experiences of these camps revealed serious faults stemming from the lack of technically trained personnel for the construction and design of camps. This led to a deficient, poorly organized installation that had misfortunes such as floods, lack of drinking water, poor distribution and operation of latrines, and poor garbage disposal.

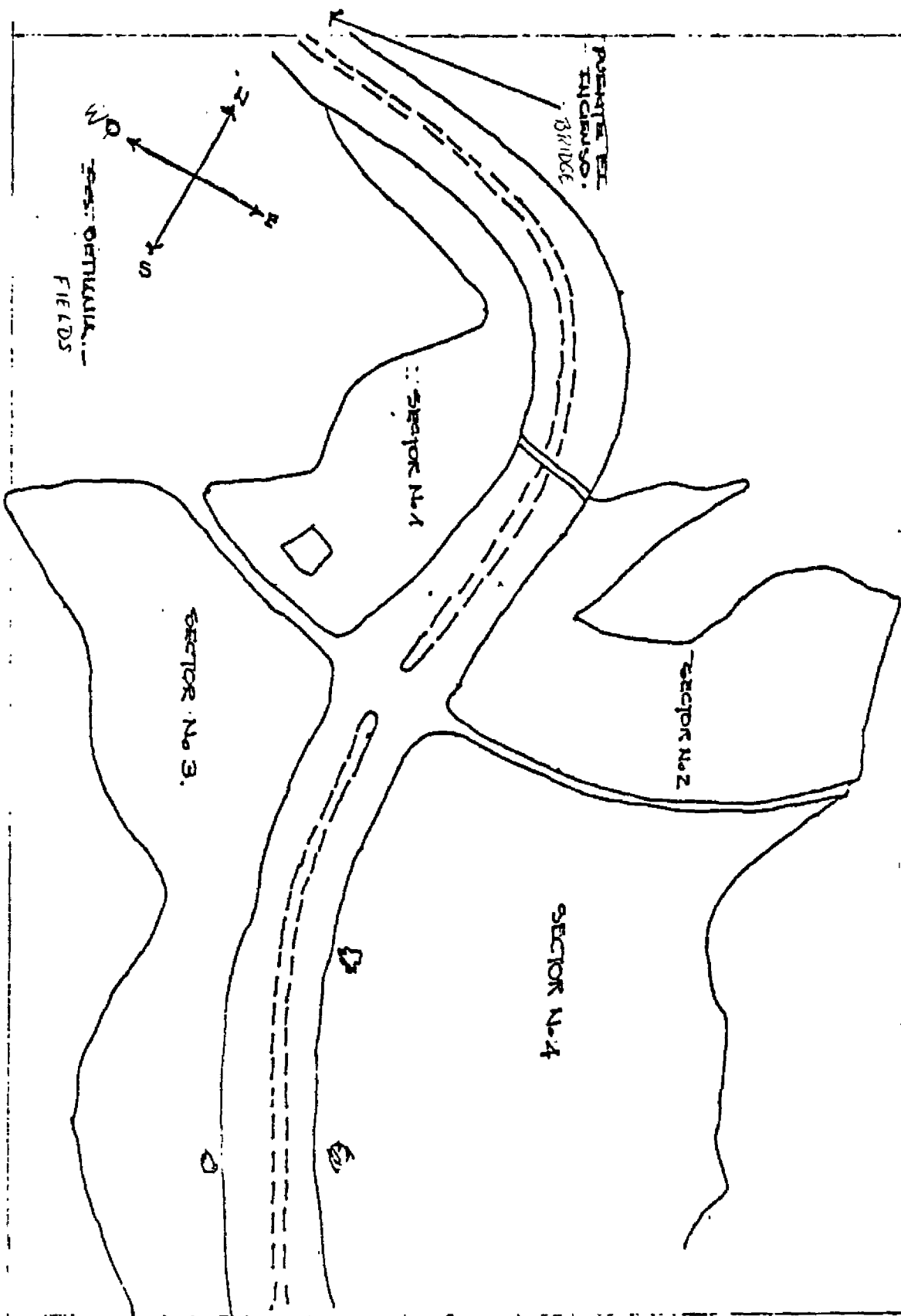
CHAPTER VIII

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4th OF FEBRUARY 1960
COLONIA 4 DE FEBRERO



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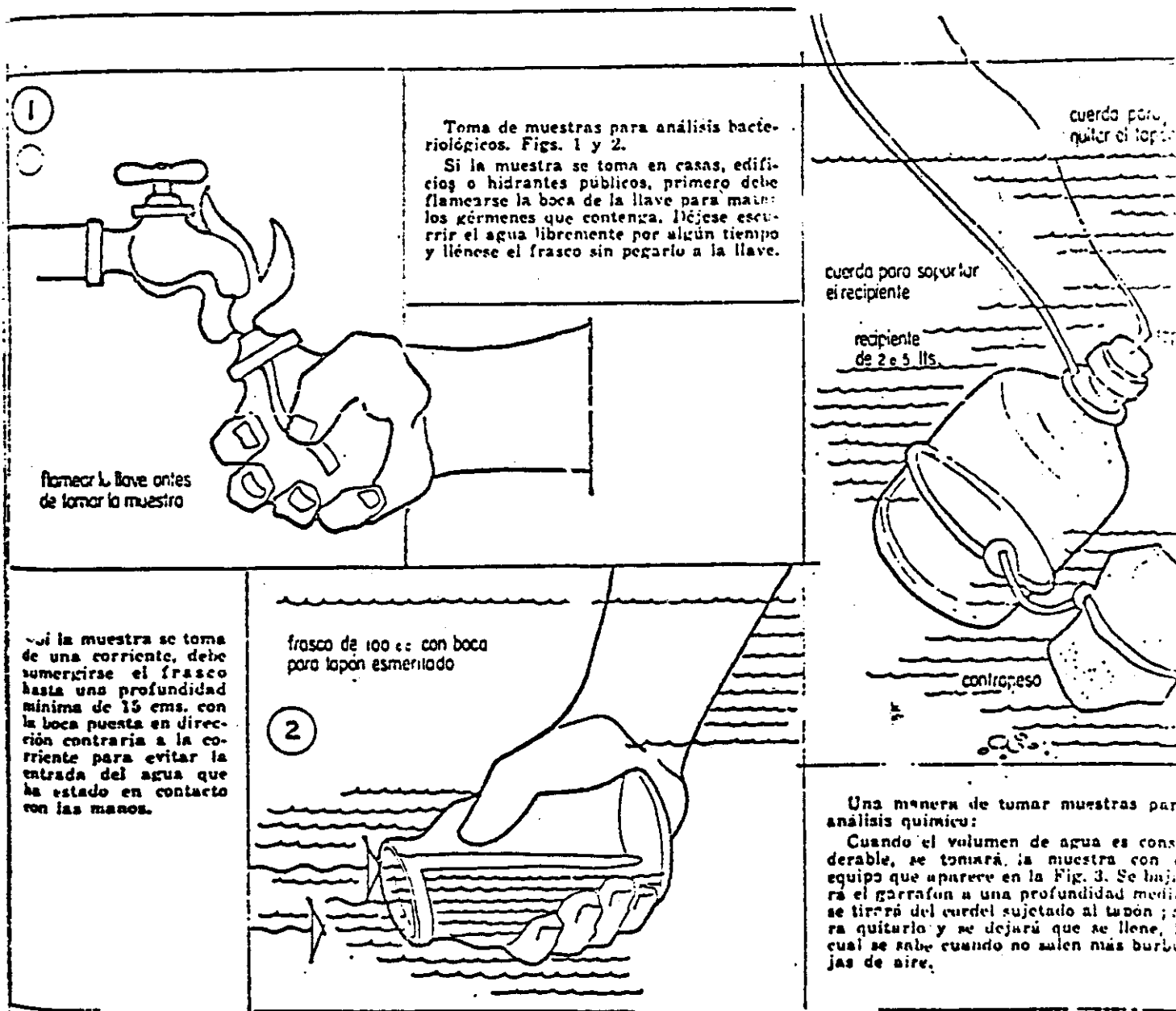
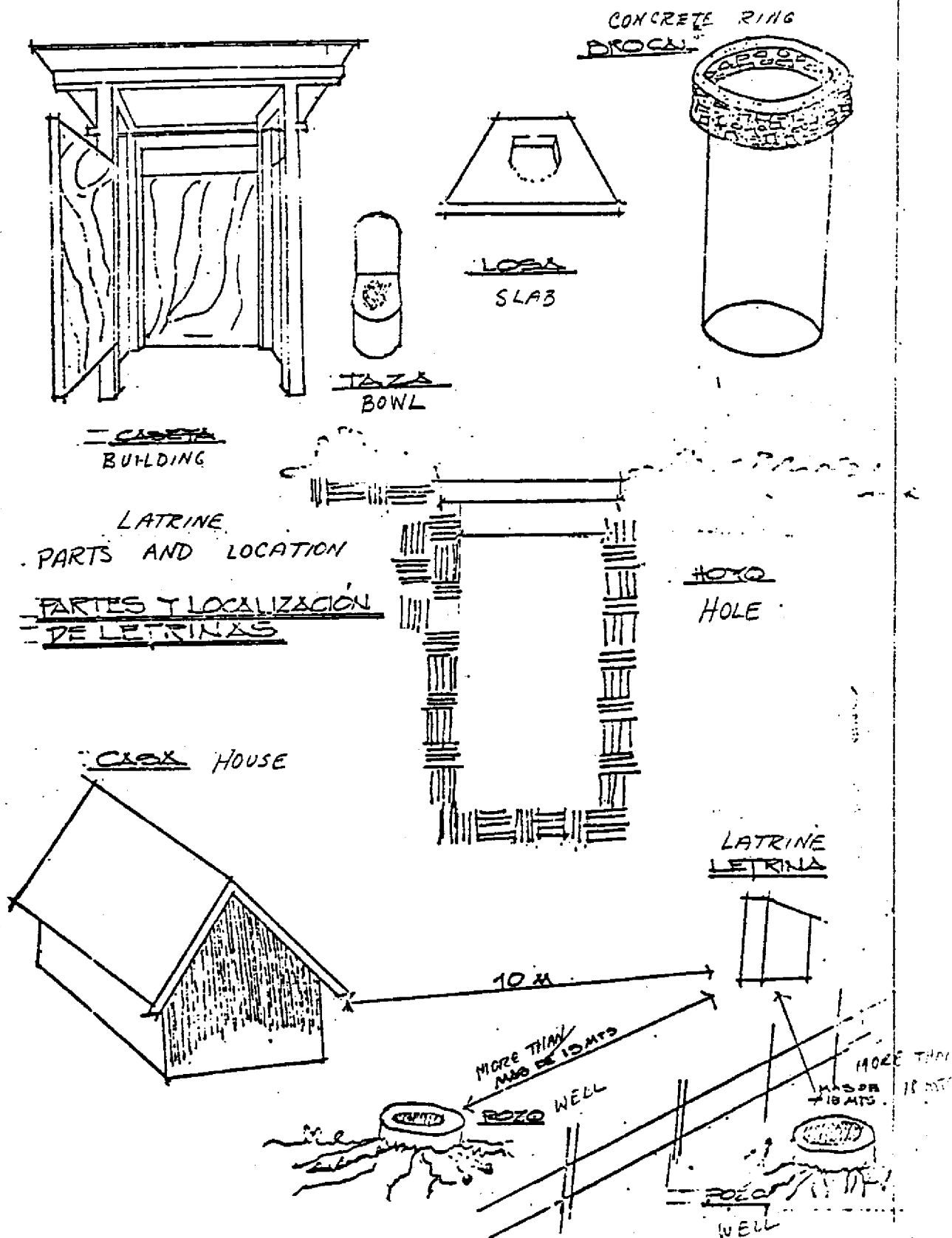


FIGURE 3



STANDARD LATRINE MODULE-
MODULO TIPICO DE LETRINA

PARA DETERMINAR EL N.º DE MÓDULOS NECESARIOS: DIVIDIR EL N.º DE USUARIOS PROBABLES ENTRE 50

YER PETALLA B

