NOTES ON SANITARY FACILITIES IN THE PHILIPPINES

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INTRODUCTION

The last five years ushered in the Philippines an expanded rural development program which brought to the grassroots level, the barrio, sanitary facilities for the basic needs of the people. The sanitation phase of this program includes the country-wide development of rural water supply sources, such as drilling artesian wells, improvement and protection of springs, construction of piped water system and the initiation of campaigns to provide excreta disposal facilities on a national scale. These sanitary facilities are part of a total health program intended to bring to the people better medical care, improved disease prevention and health promotion.

WATER SUPPLIES

Records as of June 1958 showed that there are some 14,870 separate water supply sources developed, maintained and operated by the government, serving approximately 9,243,000 people or about 41.0 percent of the total population. Tables I to III give a breakdown of water supply sources classified into piped water systems (i.e. with distribution system), "artesian" wells and improved springs. These tables were compiled from records and reports of the National Waterworks and Sewerage Authority (NAWASA), the Division of Sanitation and the Section of Epidemiology and Vital Statistics of the Bureau of Health. Data on other individual water sources which commonly include open dug wells, driven wells provided with open pitcher pumps and other types are not included because they are not available for reference. These latter sources however,

are considered not satisfactory sources of drinking water unless the water is previously boiled or treated with some suitable disinfectant.

TABLE I — STATUS OF PIPED WATER SYSTEMS IN THE PHILIPPINES

FISCAL YEAR	INDIVIDUAL SYSTEM		POPULATION SERVED	
	Number	Cumulative Total	Number (1000's)	Cumulative Total (1000's)
Before 1954-1955	427	427	2,786	2,786
1954-1955	51	478	64	2,850
1955-1956	66	544	250	3,100
1956-1957	51	595	326	3,426
1957-1958	76	671	62	3,488

Note: Estimated population served is rounded to the nearest 1000.

The Manila and suburbs waterworks system (formerly the Metropolitan Water District) is excluded from this tabulation.

TABLE II—STATUS OF "ARTESIAN" WELLS IN THE PHILIPPINES*

FISCAL YEAR	INDIVIDUAL SYSTEMS		POPULATION SERVED (1000's)	
	Number	Cumulative Total	Number	Cumulative Total
Before 1954-1955**	3,281	3,281	820	820
1954-1955	1,316	4,597	329	1,149
1955-1956	2,694	7,291	674	1,823
1956-1957	3,884	11,175	971	2,794
1957-1958	2,415	13,590	604	3,398

Note: Estimated population served is rounded to the nearest 1000.

x Artesian wells in this tabulation refer to free-flowing wells as well as non-free flowing wells. No distinction is made between true artesian wells and deep or shallow wells.

xx Number of "artesian" wells before the fiscal year 1954-1955 does not include some 4,700 dug and open-pitcher pump wells constructed before the war as they are not considered satisfactory drinking water sources unless treatment is made.

TABLE III—STATUS OF IMPROVED SPRINGS IN THE PHILIPPINES

FISCAL YEAR	INDIVIDUAL SYSTEMS		POPULATION SERVED (1000's)	
	Number	Cumulative Total	Number	Cumulative Total
Before 1954-1955	40	40	36	36
1954-1955	56	96	49	85
1955-1956	98	194	63	148
1956-1957	108	302	66	214
1957-1958	314	616	191	405

Note: Estimated population served is rounded to the nearest 1000.

TABLE IV — YEARLY ESTIMATED POPULATION SERVED BY THE MANILA AND SUBURBS WATERWORKS (FORMERLY THE MANILA METROPOLITAN WATER DISTRICT)x

YEAR	POPULATION SERVED
June 30, 1954 —	1,664,000
June 30, 1955 —	1,736,000
June 30, 1956 —	1,808,000
June 30, 1957 —	1,880,000
June 30, 1958 —	1,952,000

Note: Population served rounded to the nearest 1000.

x It is estimated that 80% of the people within the water district are served by the waterworks.

TABLE V — SUMMARY OF POPULATION SERVED BY INDIVIDUAL WATER SYSTEMS IN THE PHILIPPINES, 1954-1958.

YEAR (June 30)	Estimated Population Served	Estimated Total Population	Percent Population Served
1954	5,306,000	21,180,000	25.0
1955	5,820,000	21,518,000	27.0
1956	6,879,000	21,857,000	31.5
1957	8,314,000	22,195,000	37.5
1958	9,243,000	22,534,000	41.0

Note: Estimated populations rounded to the nearest 1000.

TABLE VI — SUMMARY OF INDIVIDUAL WATER SYSTEMS IN THE PHILIPPINES, 1958.

TYPES	NUMBER
Piped Water Sys.	671
"Artesian" wells	13,590
Improved springs	616
T O T A L	14,877

Tables V and VI give summaries of the total population served by the different types of water supply sources and the total number of individual systems under each type. Tables VII and VIII show the status of water quality of the individual water supply sources as determined by physical, chemical and bacteriological examinations. Records of the Bureau of Health (Water Analysis Station) show that more than one-fourth (26.6%) of all water samples submitted for bacteriological examination indicate positive results (up to completed test) for coliform, as of May 1959. Records as of June 1959 show that about one-fifth (18.2%) of all water samples submitted for physical and chemical examinations did not satisfy standards set up by the Bureau of Health.

TABLE VII — RESULTS OF PHYSICAL AND CHEMICAL EXAMINATIONS OF WATER SAMPLES, MANILA WATER ANALYSIS STATION, JULY 1958 — JUNE 1959.

Source of Water Sample	Total Samples Examined	Samples Found Unsatisfactory	Percent of Samples Found Unsatisfactory
Piped Water System	295	12	4.1
Springs	8	1	12.5
Artesian wells	27	9	33.3
Deep wells	104	46	44.2
Shallow wells	28	16	57.1
T O T A L	462	84	18.2

Note: Individual water systems usually examined for physical and chemical properties.

TABLE VIII — RESULTS OF BACTERIOLOGICAL EXAMINATIONS OF WATER SAMPLES, BUREAU OF HEALTH WATER ANALYSIS STATIONS, JULY 1958 — MAY 1959.

Source of Water Sample	Total Samples Examined	Samples Positive Coliform	Percent Positive
Piped Water System	7,513	1,666	22.3
Springs	187	107	57.2
Artesian wells	1,881	557	29.6
Deep wells	873	439	50.3
Shallow wells	1,057	294	27.8
T O T A L	11,511	3,063	26.6

Note: Piped water systems have about ten samples each; others usually sampled for bacteriological examination once a year.

EXCRETA DISPOSAL

Compiled reports of Provincial and City Health Officers in the Bureau of Health show that there are some 1,996,650 excreta disposal units in the Philippines (excluding the city

of Manila) as of the end of 1958. It is estimated that there are some 3,853,560 families in 1958 (except Manila), so that there about 51.8 percent or a little more than one out of every two families with a reported excreta disposal system. Said excreta disposal systems are classified as septic tanks, antipolo system, bored-hole latrines, or other sanitary systems. Septic tanks usually do not have any further treatment (secondary treatment) for the effluent and the reported other sanitary systems may not be satisfactory at all, so that the actual percentage of families with sanitary means of excreta disposal is probably much less than 50 percent. Table IX gives the breakdown of excreta disposal systems according to type from 1954 to 1958 in the Philippines.

TABLE IX — SUMMARY OF EXCRETA DISPOSAL SYSTEMS, PHILIPPINES, 1954-1958.×

TYPE	1954	1955	1956	1957	1958
Septic tanks	63,953	74,445	89,190	92,268	97,510
Antipolo Systems	467,083	492,370	520,208	536,463	551,549
Bored-hole Latrine	6,234	8,893	10,131	10,257	8,344
Other Sanitary Systems	1,088,141	1,175,392	1,377,100	1,431,243	1,399,247
TOTAL	1,625,411	1,751,100	1,996,629	2,070,231	1,996,650
Estimated Total No. of Families	3,622,170	3,680,020	3,737,860	3,795,710	3,853,560
Percent of Families with Excreta Disposal Facilities	44.9	47.6	53.4	54.5	51.8

× Excluding the City of Manila.

REFUSE COLLECTION AND DISPOSAL

The collection and disposal of refuse in the different towns in the Philippines is generally a function of the Mayor's Office, the local health unit or the public works department. In the city of Manila, a City Department of Public Services undertakes the collection and disposal of refuse. The cities of Iloilo and Tacloban handle their refuse by contractual services.

Refuse in cities and the larger towns is usually disposed of by the landfill or open dump method whenever low, spacious and cheap land suitable for dumping is available. The garbage portion of refuse is commonly used for hog and other animal feeding. This is especially true in the smaller towns of the country where refuse disposal is the responsibility of the individual household. Combustible materials are either burned or buried in the ground. The Bureau of Agricultural Extension has initiated a program of small scale composting in rural areas with the help of school teachers. So far, available information on refuse collection and disposal in the different towns is very scanty.

REFUSE COLLECTION AND DISPOSAL IN THE CITY OF MANILA

The city of Manila produces an average of 850 cubic meters or 280 tons of refuse daily. The collection and disposal of this refuse is undertaken by the City Department of Public Services. For purposes of collection, the city is divided into fifty-one (51) districts and each district is of such size that one truck with a complement of four (4) personnel could cover the whole area in eight hours. Collection of refuse is done daily in residential districts and two to three times during the day only in market places. As a means to improve the efficiency of collection and to instill civic cleanliness into the city inhabitants, an anti-litter campaign and other communities in the country have followed suit. However, the collection of sweepings from some minor streets is complicated by the presence of animal-drawn vehicles.

A landfill method is used for the disposal of the refuse of Manila. The present dumping ground is located in Tondo, a low area near Manila Bay. The refuse is covered with saw-

dust, handsprayed daily and power-sprayed twice a week with DDT to control flies and other vermin. The refuse disposal problem of the city of Manila appears to be the inavailability of suitable dumping grounds. The low areas within economical hauling distances, suitable for dumping refuse are being filled quite fast. The city administration therefore created an Advisory Committee to study the refuse collection and disposal problem of the city and studies are underway to determine the economical and practical refuse disposal method for the refuse of Manila with the unavailability of dumping grounds. A pilot composting plant is being set up to assess its practicability as a disposal method for the refuse of Manila.

SEWAGE DISPOSAL IN THE CITY OF MANILA

The city of Manila is served by a sewerage system which was in operation since 1909. About one-third of the city is connected to this sewerage system. Financial considerations and topographical conditions in some areas however, delay the needed expansion of the city's sewerage services. Two-thirds of the city therefore, have to depend on individual septic tanks, septic wells and pail privies for the disposal of their sewage or excreta. The sewerage system of Manila disposes its sewage load into the Manila Bay without prior treatment. The system is under the administration of the National Waterworks and Sewerage Authority (NAWASA). The septic tanks, septic wells and pail privies are however under the administration of the City Department of Public Services.

Septic tanks may be constructed by homeowners in unsewered areas in accordance with standard plans prepared by the city. It is however to be noted that septic tank effluents are being disposed into the streets gutters without prior treatment and thereby pose potential contamination hazards to the public. Septic well type toilets may be constructed in unsewered areas when the assessed value of the building does not exceed ₱3000 and ₱5000 when the building is located in sewered areas. The same public health hazard is encountered with this type of sewage disposal in the city. Records of the city Department of Public Services indicate that there are some 13,720 septic well toilets serving approximately 68,600 people or about 5.5 percent of the city population, as of 1956.

Buildings located in unsewered areas having an assessed value less than ₱1000 are required by City Ordinance to have at least a private pail installation for excreta disposal. A charge of ₱6.00 per month is made for such service. Collection of pail privies is done daily by collectors who bring the pails to the nearest pail deposits to be transported to disposal stations at night. The contents of the pails are dumped finally into the sewers at the pumping stations. Records of the Department of Public Services show that as of 1956, there are about 3,388 pails serving approximately 16,900 people.

PHILIPPINE STATISTICAL SURVEY OF HOUSEHOLDS

In a survey of households undertaken by the National Economic Council and the Bureau of Census and Statistics on a national scale in 1956, part of the data collected included the sources of drinking water, types of toilet facilities and the methods of refuse disposal. Tables X to XII give the percentage distribution of households classified according to the above criteria.

TABLE X — PERCENTAGE DISTRIBUTION OF HOUSEHOLDS BY SOURCE OF DRINKING WATER FOR THE PHILIPPINES, URBAN AND RURAL: MAY 1956.

Source of Drinking Water	Philippines	Urban	Rural
All Sources (thousands)	3,812	1,269	2,543
Percent	100.0	100.0	100.0
Shallow well, unprotected	26.6	9.4	35.3
Shallow well, protected	5.4	4.2	6.0
Springs	12.6	4.5	16.6
Drilled wells, free flowing	4.0	5.2	3.3
Drilled wells, pitcher pump	24.0	21.0	25.5
Rivers, streams and lakes	3.5	2.7	3.9
Stored rain water	3.0	3.0	3.0
Municipal piped water system	19.6	48.8	5.0
Others	0.8	0.8	0.8
Not reported	0.5	0.4	0.5

The Bulletin of the Philippine Statistical Survey of Households states, "About one-third (32%) of all households still depend on shallow wells for their drinking water, three-tenths (28%) on artesian wells, and one-fifth (19.6%) on municipal piped water systems. One out of 25 households still depend on rivers, streams and lakes as their source of drinking water.

However, three-fourths (75%) of all households in urban areas have artesian wells or municipal piped water system as their source of drinking water compared with only one-third (33.8%) in rural areas. More than one-half (57.9%) of all households living in rural areas depend on shallow wells or springs as the source of drinking water."

TABLE XI — PERCENTAGE DISTRIBUTION OF HOUSEHOLDS BY TYPE OF TOILET FACILITIES, FOR THE PHILIPPINES, URBAN AND RURAL: MAY 1956.

Area	Total Households		Percent of Total by Type of Toilet Facilities							
	Number (1,000)	Percent	Open Pit	Anti-polo	Sanitary Pit	Flush	Pail System	None	Others	Not
Philippines	3,812	100.0	27.3	13.0	6.4	6.6	1.3	44.5	0.1	0.7
Metropolitan Manila	292	100.0	4.7	5.3	9.3	53.3	12.6	14.7	—	0.1
Proper	176	100.0	0.2	3.4	4.3	59.5	16.6	15.9	—	
Suburbs	116	100.0	11.4	8.3	16.9	43.8	6.6	12.8	—	0.3
Urban (Excluding Metropolitan Manila)	977	100.0	28.0	21.2	8.3	8.0	0.9	33.1	(x)	0.5
Rural	2,543	100.0	29.6	10.8	5.3	0.8	0.2	52.3	0.1	0.9

(x) Less than 0.1 percent

The Bulletin of Philippine Statistical Survey of Households states, "Only a little more than one-fourth (26.0%) of all households are said to be using sanitary toilet facilities (Antipolo System, Sanitary Pit, and Flush System). About forty-five precent (44.5%) reported no fixed toilet facilities. More than one-half (52.3%) of the households living in rural areas were reported in this category. Almost seventy percent (67.9%) of households living in Metropolitan Manila use Antipolo, Sanitary pit or Flush System, while about thirteen percent (12.6%) still use the pail system."

TABLE XII — PERCENTAGE DISTRIBUTION OF HOUSEHOLDS BY REFUSE DISPOSAL FACILITIES, FOR THE PHILIPPINES, URBAN AND RURAL: MAY 1956.

Refuse Disposal Facilities	Philippines	Urban	Rural
Households (thousands)	3,812	1,269	2,543
Percent	100.0	100.0	100.0
Burning	46.4	41.2	49.0
Compost pit	6.3	7.0	6.0
Throw-out	34.7	25.0	39.6
Collected	9.3	23.5	2.2
Others	2.6	2.5	2.7
Not reported	0.5	0.7	0.4

"About one-half (46.4%) of all households dispose of their refuse by burning, one-third, by throwing it out, one-tenth have it collected and one-sixteenth collect it in compost pits. Almost one out of four households (23.5%) living in urban areas have their refuse collected while the same number just throw it out," the Philippine Statistical Survey of Households Bulletin concludes.

Tables XIII and XIV give estimates of cost of sanitary facilities in the Philippines for a family of five and for a group of five to ten households. Data on average cost of "artesian" wells were obtained from the National Waterworks and Sewerage Authority and from the Division of Sanitation of the Bureau of Health.

TABLE XIII — ESTIMATED COST OF SANITARY FACILITIES IN THE PHILIPPINES, 1959.

Sanitary Facility	For a Family of Five	For a Group of 5-10 Houses
A. SHALLOW DUG WELL with six-inch concrete casing at least 10 ft. deep		
1. Open without pump	₱150	₱ 150
2. Covered and provided with a self-priming hand pump	₱500	₱1,500
B. TOILETS —		
1. Septic tank	₱550-₱650	₱ 500
2. Antipolo Toilet	₱300	₱ 750
3. Pit Privy	₱ 50	₱ 150
4. Bored-hole latrine	₱180	₱ 450

TABLE XIV — AVERAGE COST OF COMMUNITY "ARTESIAN WELL" FOR 250 PEOPLE, 1959.

Depth of Well in Feet	Estimated Cost
20— 30 ft. Driven	₱ 150
10— 50 ft. Drilled	₱ 950—₱1,350
50—100 ft. "	₱1,350—₱1,850
100—200 ft. "	₱1,850—₱3,050
200—300 ft. "	₱3,050—₱5,700
300—400 ft. "	₱5,700—₱7,100

The National Waterworks and Sewerage Authority (NAWASA) is the government agency charged with the construction, operation and maintenance of waterworks and sewerage systems in the Philippines. This government corporation was created by Republic Act 1383. It now owns and/or has jurisdiction, supervision and control over all territory formerly embraced by the Metropolitan Water District as well as all areas served by existing government-owned waterworks, sewerage and drainage systems in the Philippines. Its jurisdiction ex-

tends to the construction, maintenance, operation and control of nonself-supporting and/or nonrevenue producing water systems and sanitary works whether undertaken at the expense of the Authority or through subsidy of the National Government. However, there are a number of cities that have contested the constitutionality of this Act and have refused to submit to its authority.

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