

## **APPENDIX-11**

# **RESULT OF PUBLIC AWARENESS SURVEY FOR WATER AND SANITATION**

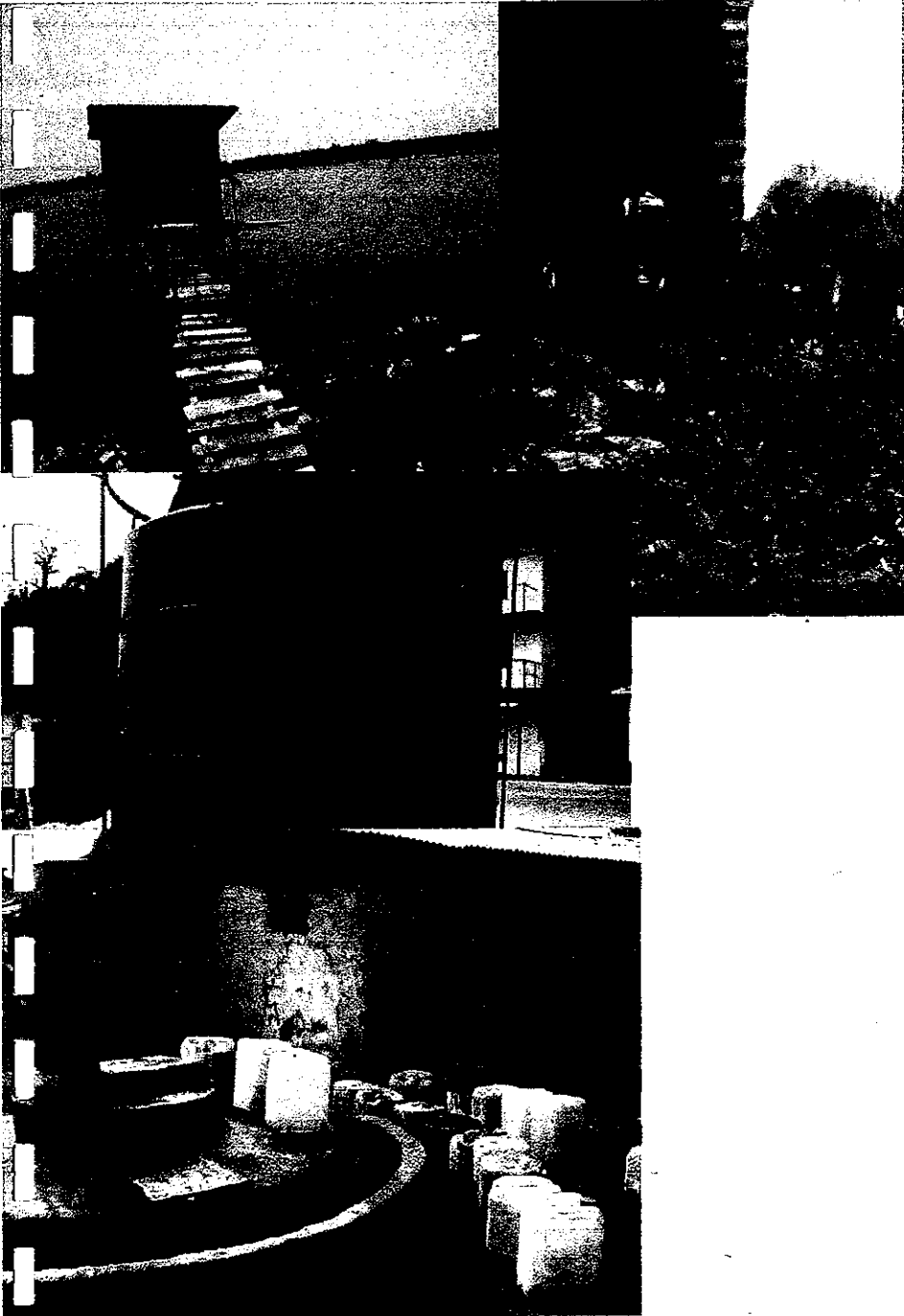
Final



Japan International Cooperation Agency

# REPORT

## PUBLIC AWARENESS SURVEY ON WATER AND SANITATION



Consultants:



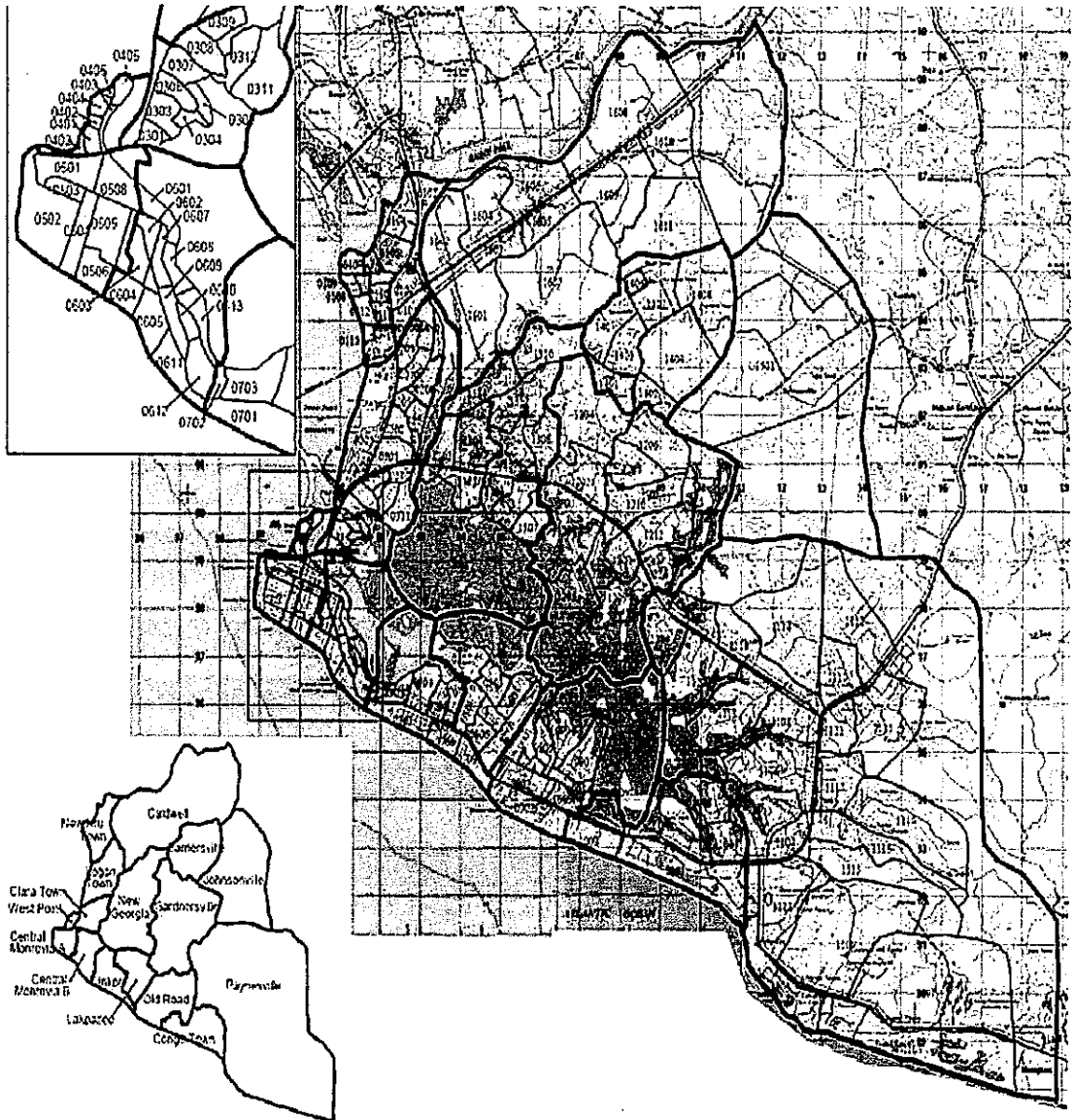
**SUBAH - BELLEH ASSOCIATES  
(MANAGEMENT CONSULTANTS)**

43 Broad St., Monrovia, Liberia

## Table of Content

	<b>Page</b>
<b>List of Tables</b>	iii
<b>List of Figures</b>	iv
<b>Executive Summary</b>	1
<b>1. Introduction</b>	<b>5</b>
<b>1.1. Background to the survey</b>	<b>5</b>
<b>1.2. Objectives of the Survey</b>	<b>5</b>
<b>1.3. Scope of the Survey</b>	<b>6</b>
<b>1.4. Survey Methodology</b>	<b>7</b>
<b>1.5. Management of the survey</b>	<b>7</b>
1.5.1. Overall Planning and Management	7
1.5.2. Field Data Collection and Quality Control	8
<b>2. Survey Findings</b>	<b>9</b>
<b>2.1. Demographic Information</b>	<b>10</b>
2.1.1. Household Population	10
2.1.2. Household Heads	12
2.1.3. Household Housing Situation	13
2.1.4. Household Income	14
2.1.5. Household Saving and Expenditures	14
<b>2.2. Household Water Situation</b>	<b>15</b>
2.2.1. Sources of Household Water Supply	15
2.2.2. Household Drinking Water Supply	16
2.2.3. Water Consumption	18
2.2.4. Affordability of Pipe-Borne Water	18
<b>2.3. Household Sewerage and Sanitation Situation</b>	<b>19</b>
2.3.1. Type of Toilets Used by Households	19
2.3.2. Type of Sanitation System	20
2.3.3. Household Expenditures for Waste Disposal	21
2.3.4. Preference for LWSC Service	21
2.3.5. Use of Public Toilets	22
2.3.6. Public Management of Sanitation Facilities	22
<b>2.4. Household Disease Burden of Unsafe Water &amp; Poor Sanitation</b>	<b>22</b>
<b>3 Conclusion &amp; Recommendation</b>	<b>23</b>
3.1 Conclusion	23
3.2 Recommendation	23
<b>Appendices</b>	<b>24</b>

Picture 1: Map of Monrovia



## List of Tables

Table 1:	Number of Communities and interviews by Zones
Table 2:	Head of Households by sex and Zones (neighbourhood)
Table 3:	Number and Percent of Household Heads by Sex and Zones
Table 4:	Size of Labour Force and Number Employed by Zones
Table 5:	Households by Housing Arrangement
Table 6:	Household Heads by Level of Income
Table 7:	Sources of Household Drinking Water Supply
Table 8:	Number of households by Status of Sufficiency and Community
Table 9:	Households by Time Spent to Fetch Water
Table 10:	Households by Daily Water Consumption
Table 11:	Zone by Type of Toilets
Table 12:	Zones by Type of Sanitation System
Appendix Table 1:	Distribution of Heads of Households by Status of Employment
Appendix Table 2:	Heads of Household by Educational Level
Appendix Table 3:	Distribution of Household Heads by Level of Education & Employment Status
Appendix Table 4:	Distribution of Households by Occupation
Appendix Table 5:	Number of Households by length of time lived in community
Appendix Table 6:	Number of Households by number of persons generating income
Appendix Table 7:	Distribution of Households by income generated in Households
Appendix Table 8:	Distribution of Households by amount save from monthly income
Appendix Table 9:	Distribution of Households by Expenditure on food
Appendix Table 10:	Distribution of Households by source of water supply
Appendix Table 11:	Distribution of Households by water pressure at water source
Appendix Table 12:	Distribution of Households by length of time water is available
Appendix Table 13:	Distribution of Households by length of time to fetch water once at water source
Appendix Table 14:	Households by willingness to pay additional tariff for LWSC services
Appendix Table 15:	Distribution of Households by willingness to pay additional tariff for pipe borne water
Appendix Table 16:	Distribution of Households by location of types of toilets by zones
Appendix Table 17:	Distribution of Households by Expenditures made on waste water disposal
Appendix Table 18:	Household status of satisfaction for LWSC sewerage system
Appendix Table 19:	Respondents by Preference for LWSC Services by Zones
Appendix Table 20:	Respondents by Willingness to Pay for LWSC Services by Zones
Appendix Table 21:	Number of Households by Quantity of Water used Daily
Appendix Table 22:	Distribution of Households by Willingness to Pay Additional Tariff for LWSC Services
Appendix Table 23:	Income and Expenditures by Items and Zones

## List of Figures & Pictures

- Figure 1: Employment Status by Zones  
Figure 2: Educational Status of Household Heads  
Figure 3: Occupation of Household Heads  
Figure 4: Household by Expenditures  
Figure 5: Households by Type of Toilets
- Picture 1: Map of Monrovia  
Picture 2: Damaged Septic Tank in Gaye Town Community  
Picture 3: Kids in their Toilet Site in Tarr Town (Zone 900)

# Executive Summary

Before 1990, about 45% of the urban population enjoyed access to drinking water from improved sources (managed water systems or improved hand pump wells), compared to 23% in the rural population. Eleven urban cities were served with piped water. In 1991, the daily water production for the city of Monrovia amounted 16 mgd (61,000 m<sup>3</sup>/day) with a daytime peak of an additional 18% to the average production. Customer service was by house connections and a limited number (150) of public standpipes to serve the low-income areas. Of the 17,900 house connections, 7,600 (45%) were metered and legal, and 10,300 connections were not metered. Of the metered connections, 4,500 (59%) were defective.

The damage to infrastructure and other resources as the result of the war reduced access to safe drinking water to large parts of the country, particularly in urban cities, and accelerated the slide towards total breakdown of water delivery systems. It also worsened the already inadequate sewage system. As a result, the LWSC's total water production from White Plains is currently estimated at 1.4 MGD (5,200 m<sup>3</sup>/day); that is less than 10% of the piped water production before the war. The sewage system, on the other hand, is generally out of commission and requires massive resources for rehabilitation. The Liberia Water and Sewer Corporation (LWSC), which is the state enterprise responsible to manage the water and sewer sector, is severely under-resourced and limited in capacity to fully rehabilitate, expand, and continue the operations of its water supply and sewerage facilities in Monrovia.

In its drive to restore public utility, the government has requested its international partners to assist in the restoration and improvement of the water and sewerage sector. Responding to this request, the government of Japan, through Japan International Cooperation Agency (JICA), has deployed a team to undertake a Master Plan Study for the restoration and improvement of water supply, sewerage and drainage system in greater Monrovia. As part of their study, JICA undertook this **"Public Awareness Survey on Water and Sanitation"** in Greater Monrovia and Rural Montserrado. The study was undertaken by Subah-Belleh Associates, a management consulting firm owned and Managed by Liberian. In terms of geographic coverage, the survey covered sixteen zones of Monrovia. The zones included 163 communities and targeted 436 household heads as respondents. This **Executive Summary** presents the main findings of the study. The information and data are survey area specific.

## **Employment Status**

The study establishes that there were 1,842 persons in the survey area members of households 18 years and above and capable of working for self or for others for income. This constitutes a labor force of 57 percent of which 33 percent are employed. At the level of household heads, employment status is impressive. Most household heads, 70.9 percent are employed with (29.4%) being self-employed.

## **Education**

Over two-third of all household heads covered had either senior high school (28.9 percent) or college education (38.2 percent). Only 9.2 percent had no formal education. Most (around 85.7 percent) household heads with college education had employment either as teachers (8 percent) or salaried professionals (37 percent). For those with Junior high school education, only 8.5 percent were employed by others; 43 percent were self-employed, while 45 percent were unemployed.

## **Occupation**

The most prevalent occupation recorded among households was salaried professionals (37 percent), followed by unspecified professions (20 percent) and wage labourers (15 percent). Approximately 9 percent of household heads had no kind of occupation.

### **Household Housing Situation**

There were a mix housing arrangement among households. However, a slight majority (52 percent) of the homes occupied by households were owned by the households themselves. This compared to 39 percent rental homes and 8 percent of accommodations, where housing was virtually free but not owned. The rest lived in homes under "other" arrangements.

### **Household Income**

Household income level varies among respondents. Close to 83 percent of households earn less than L\$6,000 to L\$24,000 (or less than US\$400) a month, while the rest (17 percent) earn over L\$24,000 a month. There are a few communities, such as Gardnersville, Caldwell and Sinkor-2, where a high percent of households are within the L\$24,000 to L\$30,000 range.

### **Household Savings**

Nearly half (49 percent) of all households do not save out of their monthly income, while around 47 percent saved only up to L\$6,000 a month. Together, this makes up for around 96 percent of household who have little or no savings out of their monthly earnings. This is influenced by the fact that limited number of household members work, household income is generally low, and households face huge expenditure challenges in making their daily livelihood needs.

### **Household Expenditure**

Households generally spent their income on food, water, education, health, transportation, rent, clothing, and leisure. However, for each expenditure item, the households generally spend around L\$6,000 and below. Areas of relatively much higher expenditure include food, clothing, and education. The area of virtually no expenditure was waste water disposal, which was especially the case, given that most households were either using the septic tank system, the pit latrines, or other means than the public sewage system; only around 11 percent were connected to the system, which is not very functional and collecting usage fees.

### **Household Drinking Water Supply**

Households in all communities covered in the survey access their drinking water from a variety of sources. The main source of drinking water for half of the households was the hand pump, which, if maintained, can be considered a relatively safe source of drinking water. But while half of the surveyed household utilized the hand pump, some 31 percent found their main source in pipe-borne water accessed from sources in homes and the community. Perhaps the most unsafe source was the water truck and "push-push" which was cited as the main source of drinking water by 6 percent of the households. In addition, some 9.4 percent access their drinking water from "other sources".

### **Availability/Access**

Out of the 135 households receiving pipe-borne water, 71.3 percent said they receive sufficient water. Closely related to the issue of time was how long water was available, lasted and could be accessed by households. The survey revealed that 46 percent of the household could have water available to them for at least 6 hours and above daily, while the rest of 54 percent have water for less than 6 hours per day.



## Water Consumption

Amongst households interviewed, 30 percent consumed 35 gallons or more in their households as compared to the 60 percent of households who consumed between 15 to 30 gallons of water a day and only around 10 percent consumed between 5 to 10 gallons a day.

## Willingness to Pay

In the absence of the knowledge of basic costs for delivering improved water services to households, the survey, nevertheless, sought to determine people's willingness and capacity to pay for pipe-borne water if it was provided to their homes (in-house and in-yard). Survey results showed that around 86.5 percent agreed to pay additional costs for pipe borne water in house while 85.8 agree to pay additional cost for pipe borne in yard. Another 62.3 percent and 50.6 percent agree to pay additional cost of pipe borne supply at public taps in and above 500 meters respectively.

## Type of Toilets Used by Households

Households in Monrovia use different kinds of toilets. More than half of the respondents (58 percent) used flush toilets or had commodes, even though the vast majority of them lacked access to running water. The rest used other means, the most common being the pit latrine which account to (26.1 percent). Regarding the location and usage of latrines, close to half of the latrines were located inside the house. However, of these, only 39.3 percent were for private, exclusive household use; the remaining 10 percent were multi-household facilities, used by more than one household. Multi-household usage even exceeded nine (9) households to a single latrine in some situations, though close to two-thirds accommodated between 3 and 4 households.

## Type of Sanitation System

The most common type of sewage system in use among households is the septic tank connection. Only 11 percent of households in the survey are connected to the public sewage system, which indicates the severe limitation of the current public sewage system as well as the challenges of rebuilding it. In addition to septic tanks and the public sewage system, pit latrines are in use by around one-fourth of all households, while 14.7 percent have no sanitation facility. Thus, to a large extent, most human waste disposal systems are unsafe and the attending health consequence is a critical challenge.

## Household Expenditure for Waste Disposal

Currently, the number of households paying for waste disposal services is low; over 97 percent pay nothing. A small portion 2.1 percent have paid for waste water disposal. The low or no expenditure on waste disposal is explained by the types of disposal systems in place; only 11 percent of households depend on the public sewage system, many of whom do not even pay, due to the state of the system and the difficulty of rebuilding it and establishing management and control over it. It also obviously shows that most households operate self managed sewage systems in the forms of septic tanks and pit latrines, among others.

However, the prospect for improving the sewage system appears good from a customer interest perspective; over 61.5 percent of households interviewed are not satisfied with the current sewage systems mainly because of their untidiness.

## Preference for LWSC Services

Over 80 percent of households will be willing to access sewage services provided by LWSC. More importantly, 71 percent would access LWSC services, even if it was above their current tariff charges. Yet, around 35 percent will be willing to pay only up to L\$250 a month and slightly more than three-quarters only a maximum of L\$400 a month. However, it is interesting to point that 86 percent

currently do not pay for sewage services and may find it difficult accommodating the idea when the time for the actual payment comes.

Around three-quarters (75 percent) of households would be willing to pay for septic tank and its maintenance, if provided with it. But there is a limit to how much they are willing to pay for it; close to two-third are willing to pay only up to L\$250, which is about US\$4/month.

In the case of pit latrines and maintenance services, only close to a third (33 percent) would be willing to pay for it. This low willingness rate may be due to the fact that only 26.6 percent do use pit latrines; and because of the low income experience of most pit latrine users, close to 55 percent are willing to pay only up to L\$100 a month for such services. However, this may be a significantly amount, given that as in the case of the pit latrine, communal use would mean sharing the cost. Fortunately, around 35 percent are willing to pay up to L\$250.

### Conclusion and Recommendations

Communities in Monrovia are confronted with challenges in accessing proper water and sanitation services. The major sources of household water supply are unsafe and have consequences for the incidences of water borne diseases. With a breakdown in public infrastructures, the existing limited capacity of sewage disposal system is critical. Communities in Greater Monrovia welcome the restoration of LWSC and would utilize its variety of services once available. The majority are willing to even pay additional tariffs to access improved services. The fallback, however, is that household incomes are generally low; unemployment is around 30 percent; savings are virtually non-existing.

## Chapter 1

# INTRODUCTION

### 1.1 Background to the Survey<sup>1</sup>

Before 1990, about 45% of the urban population enjoyed access to drinking water from improved sources (managed water systems or improved hand pump wells), compared to 23% in the rural population. Eleven urban cities were served with piped water. In 1991, the daily water production for the city of Monrovia amounted 16 mgd (61,000 m<sup>3</sup>/day) with a daytime peak of an additional 18% to the average production. Customer service, was by house connections and a limited number (150) of public standpipes to serve the low-income areas. Of the 17, 900 house connections, 7,600 (45%) were metered and legal, and 10,300 connections were not metered. Of the metered connections, 4,500 (59%) were defective.

On account of the limited capacity of LWSC, Monrovia has never had a functional sewer system. Less than 35% of the Monrovia population in the 1980s was served by the LWSC operated sewer system, leaving 65% to rely on various on-site facilities such as septic tanks, pour/flush latrines, VIP latrines, open pit and communal or family latrines. The sewer system, originally built to serve 130,000 persons was over-stretched to cope with a load of nearly 1,000,000 persons, with the result that sewage spillage and other harmful effluents constituted health hazards in parts of the city. Since the 1980s, only gravity lines draining into the sea or swamps have been usable. The almost total breakdown of the sewage treatment plant in Monrovia increased dramatically the amount of raw sewage being discharged to rivers, contaminating what become alternative water sources for many households. Some 1998 data on national access level (UN CCA survey results) indicate that only 17% of the urban population had access to sanitation facilities; of these, only 1.3% use flush to sewage system.

War damage to infrastructure and other resources reduced access to safe drinking water to large parts of the country, particularly in urban cities and accelerated the slide towards total breakdown of water delivery systems. It also worsened the already inadequate sewage system. As a result, the LWSC's total water production from White Plains is currently estimated at 1.4 MGD (5,200 m<sup>3</sup>/day); that is equals less than 10% of the piped water production before the war. The sewage system, on the other hand, is generally out of commission and requires massive resources for rehabilitation. And the Liberia Water and Sewer Corporation (LWSC), which is the state enterprise responsible to manage the water and sewer sector, is severely under-resourced and limited in capacity to fully rehabilitate, expand, and continue the operations of its water supply and sewerage facilities in Monrovia.

It is against this background, and in its drive to restore public utility, that the government has requested its international partner to assist in the restoration and improvement of the water and sewerage sector. Responding to this request, the government of Japan, through Japan International Cooperation Agency (JICA), has deployed a team to undertake a Master Plan Study for the restoration and improvement of water supply, sewerage and drainage system in greater Monrovia. As part of their study, JICA undertook this *"Public Awareness Survey on Water and Sanitation"* in Greater Monrovia and Rural Montserrado.

### 1.2 Objective of the Survey

Generally, JICA commissioned this survey to acquire data on the awareness of the usage of water and sewerage services and facilities among Monrovia's residents. Through this survey, JICA sought to gather area-specific data that will inform JICA Team in its restoration, improvement planning and designing of improved water and sanitation services in the coverage area defined above. Specifically, the survey sought to achieve the following objectives:

<sup>1</sup> Much of the materials for this section was taken from the work: *"Reconstruction Needs Assessment for Liberia Water and Sanitation Priority Sector"*, Urban Water and Sewerage Sub-Task Group. Draft Document. Dec. 2003

- To assess the status and conditions of water and sanitation in Greater Monrovia and its surrounding communities;
- To determine the knowledge, attitudes, and behaviour of the population towards water and sanitation in local communities;
- To determine public and/or community management structures in place to ensure their effectiveness and efficiency;
- To determine willingness of the population to pay for improved water and sanitation services; and
- To determine the level of ability (affordability) of the population to pay for improved water and sanitation services.

### 1.3 Scope of the Survey

The survey covered a wide range of issues related to households' experiences and needs in the areas of water supply and sewage and sanitation services in Monrovia and surrounding communities. Some of the key and specific issues covered included:

- Accessibility of water to the community dwellers in Greater Monrovia and its proximities;
- The sources of water for community dwellers of Monrovia
- Present water consumption level of community dwellers of Monrovia;
- The willingness of community members to participate in the management of LWSC facilities in their communities;
- The level of satisfaction and dissatisfaction of community members with water and sewer services in their communities; and
- Types of facilities that suit the ability and willingness of community members to pay for services provided to them.

In terms of geographic coverage, the survey covered sixteen zones of Monrovia<sup>2</sup>. The zones included 163 communities. The following table shows the distribution of communities by zone.

Table 1: Number of Communities and Interviews by Zones

Zone Code	General Name	No. of Communities	No. of Interviews
100	New Kru Town	14	42
200	Logan Town	10	30
300	Clara Town	12	36
400	West Point	6	18
500	Monrovia A	7	21
600	Monrovia B	13	40
700	Sinkor- 1	8	24
800	Sinkor-2 (Lakpazee)	6	18
900	Old Road	10	31
1000	Congo Town	7	21
1100	Paynesville	29	65
1200	Gardnerville	12	29
1300	Bardnerville	6	35
1400	New Georgia	11	11
1500	Johnsonville	2	5
1600	Caldwell	10	10
<b>Total</b>		<b>163</b>	<b>493</b>

<sup>2</sup> Zonal classification is done by LISGIS. Monrovia Downtown District is placed in two zones. Sinkor-2 is Lakpazee (the northern part of the suburb adjacent the Springs Payne Domestic Airfield.

## **1.4 Methodology**

### **1.4.1 Survey Design**

This survey contained two stages in its sampling design. Communities were considered the primary sampling units (PSUs). For the purpose of the National Population and Housing Census of 2008 and subsequent sample surveys, Monrovia was delineated into sixteen (16) zones. The zones have different sizes in terms of numbers of communities. The communities are also subdivided into enumeration areas (EAs). For the purpose of this survey, communities were directly used as primary sampling units, instead of EAs, since it was easier and much more convenient to clearly identify the communities involved. A complete enumeration was carried out at the community level. Three (3) households sampled in each urban community and one (1) in each rural community.

For each community, the total number of dwelling units was the frame for selecting dwelling units in which the households were selected as respondents for the interviews. The household was the respondent and sampling unit for the final stage of the sampling design and its total listing in the selected dwelling units formed the sampling frame for household/respondent selection.

### **1.4.2 Sample Selection**

All communities in the Monrovia area were selected for the study. Community maps were acquired from LISGIS and other agencies to identify and verify boundaries of communities in order to avoid overlaps of communities by enumeration teams. The community listing used was developed from the LISGIS sampling frame for Monrovia.

#### **a. Urban Communities**

In each selected community, three (3) households were randomly selected, using systematic sample selection procedures. Since households are associated with dwelling units, dwelling units were randomly selected. To select dwelling units, walk patterns were conducted in each community by establishing sampling start point (SSP) and determining sampling intervals (SIs). The SIs were calculated by dividing an estimated count of dwelling units in the community by 3 (sample size for the community). Only one household was interviewed for each selected dwelling unit. To select households as respondent, one (1) household was selected from the list, using the straw draw method.

#### **b. Rural Communities**

While three (3) households were required for interviews in urban communities, only one (1) was required for rural communities. However, the same procedure for selecting samples in urban communities was followed for the selection of samples in rural communities

## **1.5 Management of the Survey**

### **1.5.1 Overall Planning and Management**

The survey was managed and executed by Subah-Belleh Associates, a Liberian-owned and managed management consulting company. A senior consultant of the firm handled the overall planning and management of the survey. Two survey professionals led the technical efforts in the areas of survey design and administration. Data collection was carried out by three teams. After two (2) days of orientation training, the teams were deployed simultaneously to various communities of Monrovia covered by the survey.

### 1.5.2 Field Data Collection and Quality Control

**Field Data Collection.** The field data collection exercise involved 12 data collection staff, including nine (9) enumerators and 3 field supervisors, (distributed in the three teams). In addition, the data processing required 2 manual editors and 1 data entry clerk, all led by a computer programmer.

**Quality Control.** In order to ensure that the survey provided reliable data, quality control activities were carried out, involving two (2) basic approaches: 1. *orientation training for field staff* and 2. *rigorous field monitoring and supervision*. Training was conducted prior to the commencement of field activities as a measure of ensuring the right capacity of the field staff to carry out quality work and produce quality outputs. The fifteen-member research team, including the three (3) field supervisors, nine (9) enumerators, one (1) data entry clerks, and two (2) manual editors underwent a two-day training exercise. The training covered the field application of a multi-stage sampling methodology and review of the household questionnaires prior to their administration.

In addition, mock interview sessions were conducted to test the enumerators' skills, understanding, accuracy, and speed as far as the administration of the instrument was concerned. The exercise included actual field testing of the instrument in nearby communities. Based on said field testing, relevant changes were made to the questionnaires, which strengthened the ease of administering the questionnaire.

The training was followed-up with close daily supervision of enumerators during the data collection exercise, reviewing the work of each one and providing necessary corrections and support. In addition to the field supervisors, the survey coordinator visited each team in the field to address both administrative and technical problems encountered during the data collection process.

## Chapter 2

# SURVEY FINDINGS

### 2.1 Demographic Information

The survey gathered basic demographic information about the households and household heads covered in the survey. They included, age, sex, household population, housing, and employment status. As in most surveys of this nature, identifying the characteristics of the survey setting was essential for understanding and contextualizing the findings.

#### 2.1.1 Household Population

In the 436 households covered in the survey, 3,420 persons were counted, giving an average nearly eight (8) persons-per-household, a relatively high household size compared to the national household size of 6. Consistent with the sex pattern of the national population, there were more females than males in the various households. Of the total household population counted, 51.7% are females, while 48.3% are males. On the other hand, the adult population (18 years and above) counted in the survey areas was found to be higher than the child/younger population (<18 years). Adults made up around 54 percent, compared to around 46 percent for the children/younger population.

#### 2.1.2 Household Heads

The survey gathered some basic demographic information on the heads of households interviewed in the survey. The information collected on household heads included sex, age, education, and occupation.

##### Sex

Consistent with the general and accepted pattern of household leadership structure, there were more male household heads than female household heads in the households covered by the survey. As Table 2 shows, male households were dominant in all survey zones, except Sinkor-1, where female heads of households were slightly higher than males—at 54.2 percent. In general, there was one (1) female household head to every four (4) male household heads. This means that most respondents in this survey were males, a factor which may have subjected these findings to more male understanding and concerns than females.

Table 2: Heads of Household by Sex and Zone (Neighbourhood)

Zone Code	Name of Neighbourhood	Heads of Households				
		Males		Females		Both
		No.	%	No.	%	
100	New Kru Town	32	76.2	10	23.8	42
200	Logan Town	26	86.7	4	13.3	30
300	Clara Town	27	75.0	9	25.0	36
400	West Point	14	77.8	4	22.2	18
500	Monrovia A	13	61.9	8	38.1	21
600	Monrovia B	30	75.0	10	25.0	40
700	Sinkor 1	11	45.8	13	54.2	24
800	Sinkor 2	13	72.2	5	27.8	18
900	Old Road	21	67.7	10	32.3	31
1000	Congo Town	16	76.2	5	23.8	21
1100	Paynesville	51	78.5	14	21.5	65
1200	Gardnerville	24	82.8	5	17.2	29
1300	Barnesville	26	74.3	9	25.7	35
1400	New Georgia	10	90.9	1	9.1	11
1500	Johnsonville	5	100.	0	0.0	5
1600	Caldwell	8	80.0	2	20.0	10
Total		327	75.0	109	25.0	436

## Age

The ages of the heads of households ranged from 20 years to 89 years, with 52.1 percent falling between ages of 20 and 39. The largest block of household heads (approximately 39.2 percent) were found to be between the ages of 40 and 59 years. This age structure generally showed most household heads to be of productive ages, having income-earning capacity and potential, even though a little under 10 percent of them were in the retirement age category of around 60 and above.

Table 3: Number and Percent of Household Heads by Sex and Zone (Neighbourhood)

Zone Code	Neighborhood	Number of persons by age grouping							
		20-39		40-59		60-79		80-99	
		No	%	No	%	No	%	No	%
100	New Kru Town	12	59.5	20	38.1	10	2.4	0	0.0
200	Logan Town	12	70.0	12	30.0	4	0.0	2	0.0
300	Clara Town	15	47.2	19	47.2	3	5.6	0	0.0
400	West Point	9	22.2	9	77.8	0	0.0	0	0.0
500	Monrovia A	12	14.3	9	81.0	0	4.8	0	0.0
600	Monrovia B	11	57.5	24	37.5	4	5.0	0	0.0
700	Sinkor 1	6	37.5	17	50.0	0	12.5	1	0.0
800	Sinkor 2	4	66.7	12	27.8	2	5.6	0	0.0
900	Old Road	5	51.6	21	45.2	5	3.2	0	0.0
1000	Congo Town	3	61.9	18	33.3	0	4.8	0	0.0
1100	Paynesville	25	58.5	39	30.8	1	10.8	0	0.0
1200	Gardnerville	4	41.4	24	31.0	1	27.6	0	0.0
1300	Barnesville	14	54.3	20	25.7	1	14.3	0	5.7
1400	New Georgia	1	54.5	10	27.3	0	18.2	0	0.0
1500	Johnsonville	1	60.0	4	40.0	0	0.0	0	0.0
1600	Caldwell	1	60.0	8	20.0	1	20.0	0	0.0
Total		135	52.1	266	39.2	32	8.3	3	0.5

In terms of comparisons in zones, the most youthful groups of household heads were found in Logan Town and Sinkor-2, with 70 percent and 66.7 percent respectively in the 20 to 39 age category. Given the nature of the communities involved, this finding may be significant in highlighting the understanding of the complicated mix of limited education, early child bearing, poverty, and weak social cohesion. In communities like Monrovia-A and West Point, household leadership comes with more maturity; as shown in Table 3, with 81 percent of household heads in Monrovia-A between the ages of 40 and 59, while in West Point and Sinkor 1, it is 77.8 percent and 50 percent, respectively. Unlike Monrovia A and West Point, Gardnerville recorded the highest percentage of old age household heads (close to 28 percent between 60 and 79 years).

## Employment Status

Of the total number of persons enumerated in the survey area (3,225), 57% or 1,842 were economically active persons. These are members of households 18 years and above who are capable of working for self or for others to earn income. This places the workforce in the survey area at 57% of the person counted, one-third of who were employed. The rate of employment in this area exceeds the national rate by three percentile points. The highest employment rates were found in Monrovia-1 (62%), West Point (39.1%), Caldwell (36.4%) and New Georgia (35.6%).



Table 4 Size of Labor Force and Number Employed by zones

Zone Code	Neighborhood	Employment		
		No in Labor Force	No Employed	Percentage Employed
100	New Kru Town	192	55	28.6
200	Logan Town	125	39	31.2
300	Clara Town	147	36	24.5
400	West Point	64	25	39.1
500	Monrovia A	92	57	62.0
600	Monrovia B	179	60	33.5
700	Sinkor One	82	28	34.1
800	Sinkor Two	75	24	32.0
900	Old Road	112	31	27.7
1000	Congo Town	74	20	27.0
1100	Paynesville	314	102	32.5
1200	Gardnerville	160	56	35.0
1300	Bardnesville	138	43	31.2
1400	New Georgia	45	16	35.6
1500	Johnsonville	10	3	30.0
1600	Caldwell	33	12	36.4
<b>Total</b>		<b>1,842</b>	<b>607</b>	<b>33.0</b>

At the level of household heads, employment status is impressive. Most household heads, 70.9% were employed with nearly one-third (29.4%) being self-employed. By zones, Paynesville had the best rate of employed household heads (83.1%), followed by Congo Town (81%) and Monrovia 1 (80.9%). (See appendix Table 1)

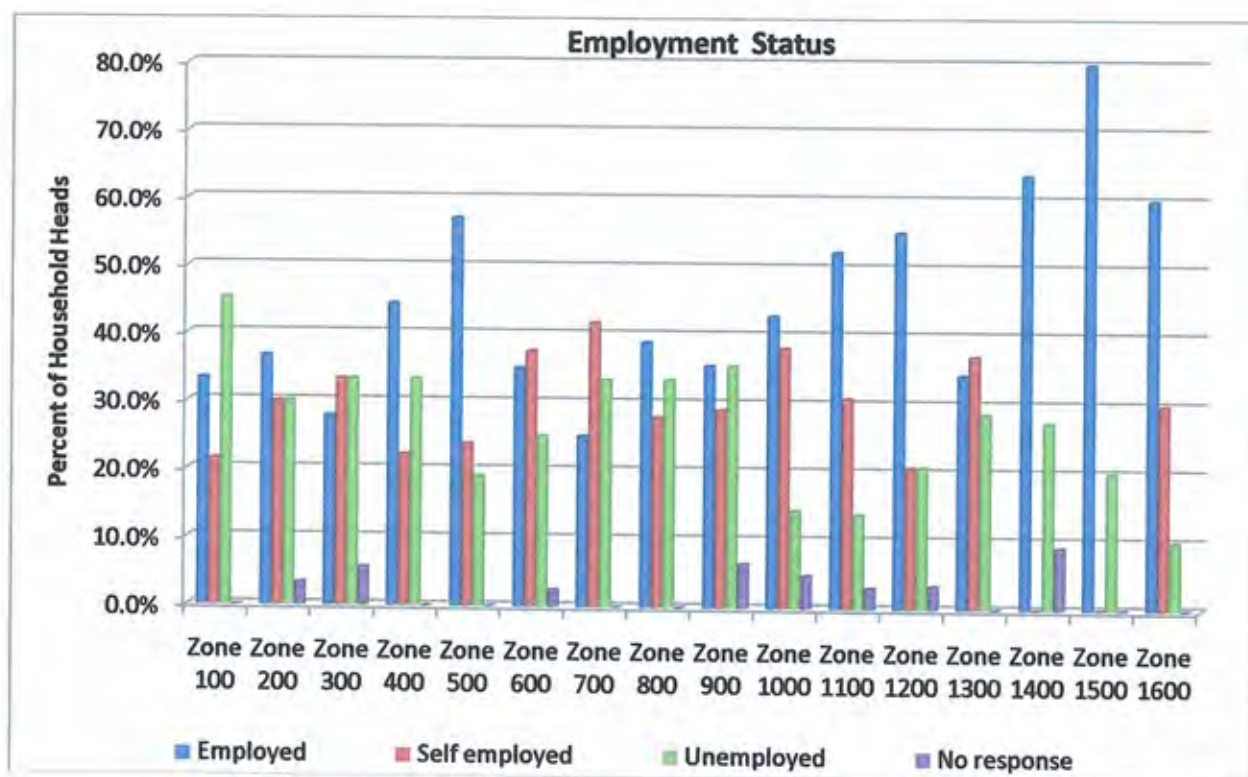


Figure 1: Household heads by Employment status by Zones



## Education

Over two-third of all household heads covered had either senior high school (29 percent) or college education (38 percent). Only 9.2 percent had no formal education. (see appendix table 2)

Not surprisingly, there was found a direct link between formal education and occupation/employment; the higher the level of formal education, the better the occupation/employment status. Around 86 percent of those with college education were employed, compared to 63.5 percent for those with only high school education.

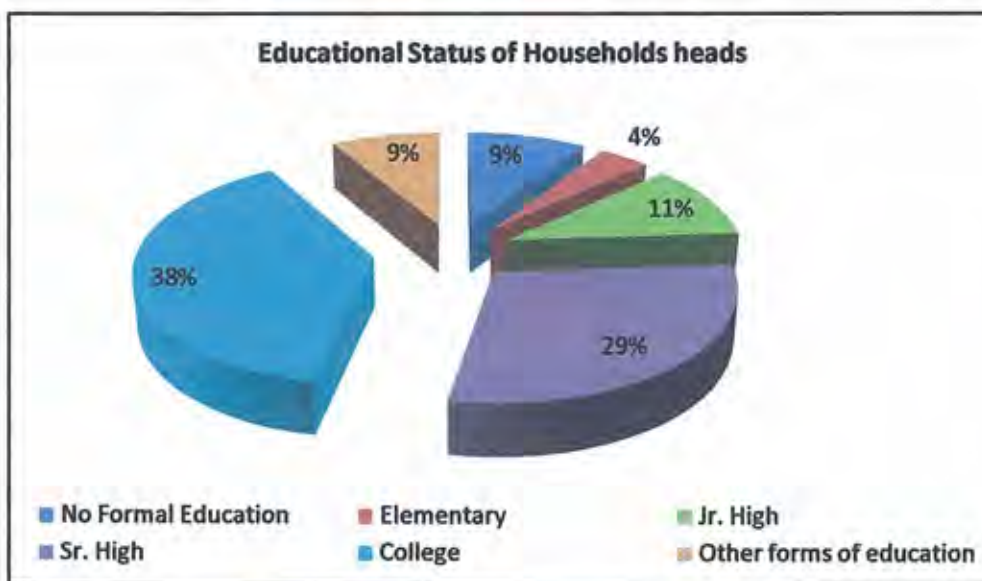


Figure 2: Respondents by Educational Status

One interesting (though not surprising) finding on the relationship between education and employment status revealed that those at the lower ends of the formal education ladder found it difficult finding jobs and had to seek means of self-employment or face the prospect of unemployment. For example, 71 percent of those with only elementary education were self-employed, while the rest were unemployed. Further, 55 percent of those with no formal education were self-employed, while 40 percent were unemployed. For those with Jr. high school education, only 8.5 percent were employed by others; 43 percent were self-employed, while 45 percent were unemployed. . (See Appendix Table 3)

## Occupation

Though 71 percent of household were employed, About 91 percent had some kind of occupation, including students (5.3 percent) and housewives (about 4 percent). The most prevalent occupation recorded among households was salaried professionals (about 37 percent), followed by unspecified professions (20 percent), and wage labor (15.4 percent) while 9.4 percent of household heads had no kind of occupation. (See Appendix Table 4)

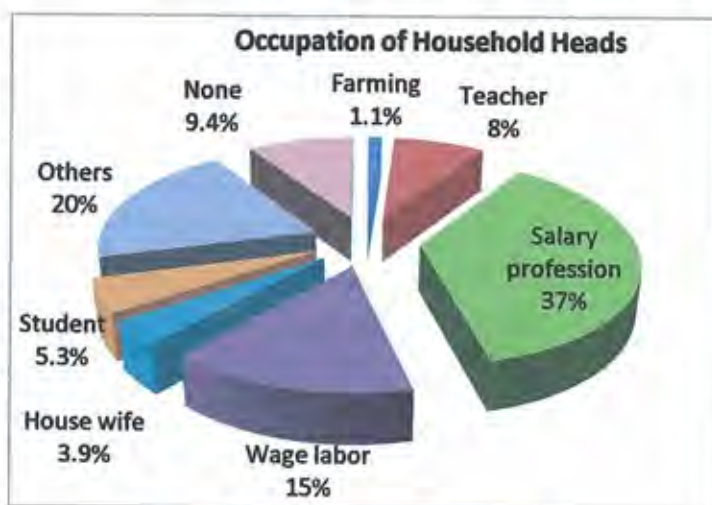


Figure 3: Occupation of Respondents

### 2.1.3 Household Housing Situation

#### Housing Arrangement

There was a mix arrangement for housing among households. However, a slight majority (52 percent) of the homes occupied by households were owned by the households themselves. This compared to 39 percent rental homes and 8 percent of accommodation, where housing was virtually free but not owned. The rest lived in homes under "other" arrangements. The areas with high and greater home

ownership by households were Logan 70 percent follow by Sinkor 2 with 66.7 percent. Other areas where majority of the homes were owned by the households, included Caldwell and Johnsville with 60 percent each.

Table 5: Number of Household by Housing Arrangement

Number of Household by Housing Arrange for Households											
Zone Code	Neighborhood	Ownership		Rented/Lease		Not owned (Free)		Other (specify)		Total	
		No.	%	No.	%	No.	%	No.	%	No.	%
100	New Kru Town	25	59.5	16	38.1	1	2.4	0	0.0	42	25
200	Logan Town	21	70.0	9	30.0	0	0.0	0	0.0	30	21
300	Clara Town	17	47.2	17	47.2	2	5.6	0	0.0	36	17
400	West Point	4	22.2	14	77.8	0	0.0	0	0.0	18	4
500	Monrovia - A	3	14.3	17	81.0	1	4.8	0	0.0	21	3
600	Monrovia - B	23	57.5	15	37.5	2	5.0	0	0.0	40	23
700	Sinkor - 1	9	37.5	12	50.0	3	12.5	0	0.0	24	9
800	Sinkor - 2 (Lakpazee)	12	66.7	5	27.8	1	5.6	0	0.0	18	12
900	Old Road	16	51.6	14	45.2	1	3.2	0	0.0	31	16
1000	Congo Town	13	61.9	7	33.3	1	4.8	0	0.0	21	13
1100	Paynesville	38	58.5	20	30.8	7	10.8	0	0.0	65	38
1200	Gardnerville	12	41.4	9	31.0	8	27.6	0	0.0	29	12
1300	Bardnesville	19	54.3	9	25.7	5	14.3	2	5.7	35	19
1400	New Georgia	6	54.5	3	27.3	2	18.2	0	0.0	11	6
1500	Johnsonville	3	60.0	2	40.0	0	0.0	0	0.0	5	3
1600	Caldwell	6	60.0	2	20.0	2	20.0	0	0.0	10	6
<b>Total</b>		<b>227</b>	<b>52.1</b>	<b>171</b>	<b>39.2</b>	<b>36</b>	<b>8.3</b>	<b>2</b>	<b>0.5</b>	<b>436</b>	<b>227</b>

By contrast, communities found with the least of home ownership were Monrovia-A with 14.3 percent and West Point with 22.2 percent.

The levels of household home ownership can be considered significant enough to encourage investment in water and sewage/sanitation infrastructures and services in most of the communities covered by the survey. The ownership of homes will certainly encourage households to consider acquiring water and sanitation facilities and services. The common experience is that persons in rental and/or free facilities are less likely to invest in home improvement, especially those with relatively huge cost.

### Time Lived in Community

A significant portion (about 41 percent) of the persons interviewed resided in their current communities for less than 5 years. Among them, 41 percent had spent 5 to 15 years in those communities; while 11.2 percent spent 26 to 35 years. A small percentage (about 3 percent) lived in the communities for more than 45 years. (See Appendix Table 5)

### 2.1.4 Household Income

Consistent with findings that employment is low among household members and that one-third of the employed work for themselves, salary and wage earners are few in the Monrovia area. In 12.8 percent of all households covered, there were no salary/wage earners, while there was only one (1) in 52 percent of all households. However, the number of wage earners increased to two (2) in 27 percent of households and three (3) in only 7 percent of households. (See Appendix Table 6).

Household income level varies among households. As shown in Table 6, up to 83 percent of households earn less than L\$6,000 to L\$24,000 (or less than US\$400) a month, while the rest (17 percent) earn over L\$24,000 a month. Although the income level is low, there are few areas that had a high percentage of households within L\$ 24,001 - 30,000 range. Greater proportions of

households in the areas with high percentage were Gardnerville with 46 percent followed by Caldwell 42 and Sinkor-2 with 22.2 percent. (See Appendix Table 7)

**Table 6: Number and Percent of Household Heads by Level of Income**

Household Income Range	No. of HH in Range	% of HH in Range
LD\$6,000 and below	61	14.0
LD\$(6,005 to 12,000)	132	30.3
LD\$(12,005 to 18,000)	111	25.5
LD\$(18,005 to 24,000)	57	13.1
LD\$(24,005 to 30,000)	43	9.9
LD\$(30,005 to 36,000)	13	3.0
LD\$(36,005 to 42,000)	5	1.1
LD\$(42,005 to 48,000)	3	0.7
LD\$(48,005 to 54,000)	2	0.5
LD\$(54,005 to 60,000)	4	0.9
Above LD\$72,000	5	1.1
<b>Total</b>	<b>436</b>	<b>100</b>

### 2.1.5 Household Savings and Expenditure

#### *Household Savings*

Nearly half (49 percent) of all households did not save out of their monthly income, while around 47 percent saved only up to L\$6,000 a month. Together, this makes up for about 96 percent of household who had little or no savings out of their monthly earnings. This is influenced by the fact that limited number of household members working, household income was generally low and households face huge expenditure challenges in meeting their daily livelihood needs.

On the zone level, relatively the highest 'no savings' were recorded in West Point where 77.8 percent of households reported that they did not save from their monthly income. In Clara Town and Logan Town 66.7 percent each claimed that they did not save. (See appendix table 8)

#### *Household Expenditures*

Households generally spent their income on food, water, education, health, transportation, rent, clothing, and leisure. However, for each expenditure item, the households spent monthly around L\$6,000 and below. Areas of relatively much higher expenditure include food, clothing, and education. The area of virtually no expenditure was waste water disposal, which was especially the case, given that most households were either using the septic tank system, the pit latrines, or other means than the public sewage system; only around 1.1 percent were connected to the system, which is not very functional but collecting usage fees.



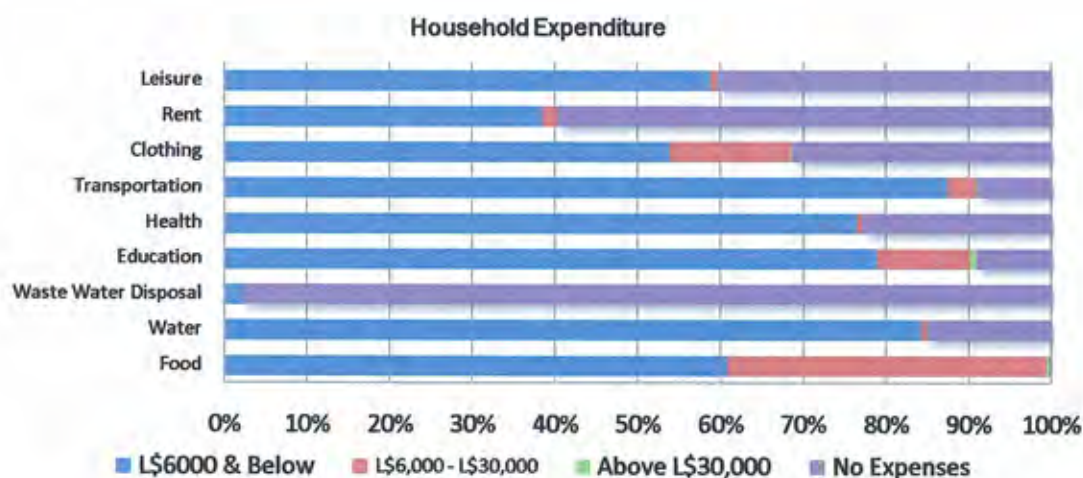


Figure 4: Percent of Household by Expenditure

As the survey reveals, 60.8 percent of the households within the L\$6,000 and below bracket spent their income on food. In this category, the highest was recorded in Paynesville 86.2 percent, 80 percent in Johnsonville, 77.5 percent in Monrovia B, 77.1 percent in Bardnerville and 74.2 for Old road (See Appendix Table 9)

## 2.2 Household Water Situation

### 2.2.1 Sources of Household Water Supply

In the survey areas, residents sourced their water for household use through a number of different means, the most common being the “push-push”, which supplies water to 63.8 percent of households in the communities covered. The push-push operators in turn source their water from sources including open wells, hand pumps, and public reservoirs.

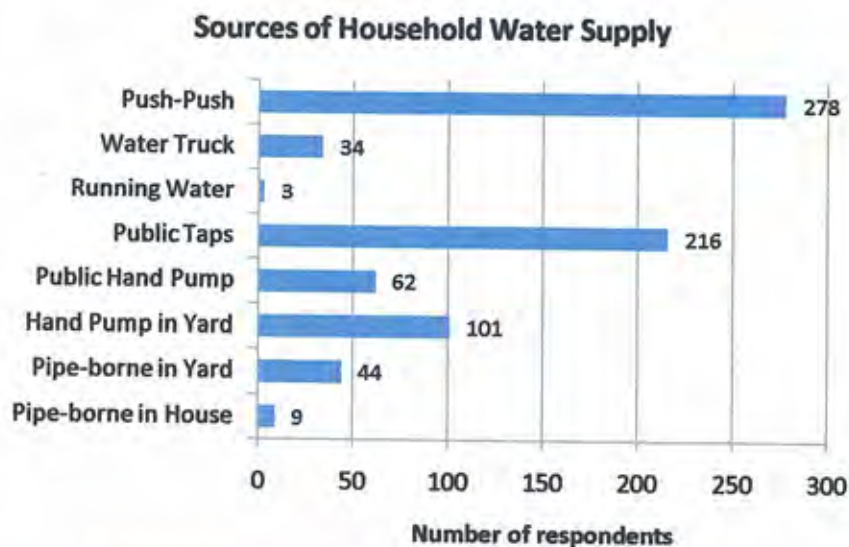


Figure 5 Numbers of Households by Source of Water Supply

Next to "push-push", public taps was found to be the most common source supplying water to households, with 49.5 percent. This is followed by hand pumps which served 37.4 percent of households. Other less common but important sources included pipe borne in homes, pipe borne in yards, water truck, and running water. (See Appendix Table 10)

### 2.2.2 Household Drinking Water Supply

#### Main Sources

Households in all communities of in the survey access their drinking water from a variety of sources. The main source of drinking water for half of the households was the hand pump, which, if maintained, can be considered a relatively safe source of drinking water. But while such substantial number of household utilized the hand pump, 31 percent found their main source in pipe-borne water accessed from sources in homes, Yard and the community. Perhaps the most unsafe source was the water truck and push-push, which was cited as the main source of drinking water by 6 percent of the households. In addition, some 9.4 percent access their drinking water from "other" sources.

Table 7: Sources of Household Drinking Water Supply

Main Source of Drinking Water	Number	Percentage
Pipe born in house	7	1.6
Pipe born in yard	42	9.6
Pipe borne in community/public taps	86	19.7
Hand pump in yard	53	12.2
Public hand pump	165	37.8
Water truck/push-push	26	6.0
Other	41	9.4
No response	16	3.7
<b>Total</b>	<b>436</b>	<b>100.0</b>

#### Availability/Access

The level of availability of drinking water to household was assessed on the basis of the following: the pressure of water flow, which limits the amount of water that a number of persons can collect at any given point in time; sufficiency or adequacy of water available and/or the method and difficulty of

accessing it; and the duration of time water was available to the consumers. In terms of water pressure, except for some 6 percent, who complained about experiencing low water pressure, the vast majority of households with access to pipe-borne water seemed relatively satisfied with the water pressure at their main sources of water supply. (See Appendix Table 11).

Table 8: Number of Households by Status Sufficiency and Community

Zone Code	Neighborhood	Status of Sufficiency				Total
		Sufficient		Not Sufficient		
		No.	%	No.	%	
100	New Kru Town	30	71.4	12	28.6	42
200	Logan Town	24	80.0	6	20.0	30
300	Clara Town	26	72.2	10	27.8	36
400	west Town	12	66.7	6	33.3	18
500	Monrovia A	16	76.2	5	23.8	21
600	Monrovia B	28	70.0	12	30.0	40
700	Sinkor One	16	66.7	8	33.3	24
800	Sinkor Two	11	61.1	7	38.9	18
900	Old Road	19	61.3	12	38.7	31
1000	Congo	15	71.4	6	28.6	21
1100	Paynesville	48	73.8	17	26.2	65
1200	Gardnerville	22	75.9	7	24.1	29
1300	Bardnerville	30	85.7	5	14.3	35
1400	New Georgia	6	54.5	5	45.5	11
1500	Johnsonville	2	100.0	3	150.0	5
1600	Caldwell	6	60.0	4	40.0	10
<b>Total</b>		<b>311</b>	<b>71.3</b>	<b>125</b>	<b>28.7</b>	<b>436</b>

Sufficiency of water from source is assessed for all households covered in the survey. As show in Table 8 below, 71.3 percent of households reported having sufficient water for their entire needs, while 29 percent said their water supply was insufficient. At the zone level, Johnsonville (100%),

Bardnerville (85.7%) and Logan Town (80%) reported the highest level of satisfaction that their source of water adequately met their needs. These three communities, unlike others in the survey area, have had the benefit of pipe-borne water even during the armed conflict years.

Households with access to pipe-borne water were probed on the amount of time water is available during the week. Accordingly, (45.6%) reported that they have water at least 6 hours every day. To the contrary, in communities like West Point, Clara Town and New Kru Town, most households were experiencing irregular water supply. (see appendix table 12).

Time spent in fetching their drinking water from the various sources available to them was identified as a major indicator of the level of access of households to drinking water. The results of this survey revealed that 47.4 percent of all households take 5 to 10 minutes at a time to fetch water once from their drinking water

points. For the remaining 34.5 percent, it takes from 10 to over 30 minutes to fetch water once at any time during the day. The worst experiences are felt by some 13.6 percent of households, who take over 30 minutes at a time a day to fetch their drinking water. (See also Appendix Table 13)

To get an actual idea of how difficult it is to access drinking water, the time spent must be viewed alongside the number of trips made fetching water each day. Only slightly over one-third fetch their drinking water once a day. In addition, 40 percent makes at least two trip a day, while 19.5 percent makes three trips daily, the rest more surprisingly makes between 6 and 15 trips a day. (See also Appendix Table 13)

### 2.2.3 Water Consumption

The level of consumption of water among households varies. Amongst households interviewed, 30 percent consumed 35 gallons or more in their households as compared to the 60 percent of households who consumed between 15 and 30 gallons of water a day and only around 10 percent consumed between 5 and 10 gallons a day. (see also Appendix Table 21)

### 2.2.4 Affordability of Pipe- Borne Water

Increasing access to adequate safe water will come with some costs to households. Thus, the question of affordability by households for improved sources of water is a critical factor in improving access, and is a function of both willingness and the ability to pay.

#### Willingness to Pay

In the absence of the knowledge of basic costs for delivering improved water services to households, the survey, nevertheless, sought to determine people's willingness and capacity to pay for pipe-borne water if it was provided to their homes (in-house and in-yard). Survey results showed that around 86.5 percent agreed to pay additional costs for pipe borne water in house while 85.8 agree to additional cost pipe borne in yard. Another 62.3 percent and 50.6 percent agree to pay additional cost of pipe borne supply at public taps in and above 500 meters respectively. This is a clear indication that the desire of pipe borne water is high among households. (See Appendix Table 14)

Table 9: Household by time Spent Fetching Water

Time Spent Fetching Water Once	No. of Households	Percent of Total Households
5 - 10 minutes	199	47.4
10 - 20 minutes	86	20.5
20 - 30 minutes	59	14.0
Above 30 minutes	57	13.6
Not applicable	35	4.5
<b>Total</b>	<b>436</b>	<b>100</b>

Table 10: Households by Daily Water Consumption

Consumption Level	No. of Households	Percentage of Total Households
5 gallons	4	0.9
10 gallons	40	9.2
15 gallons	53	12.2
20 gallons	86	19.7
25 gallons	69	15.8
30 gallons	52	11.9
35 gallons	29	6.7
40 gallons	45	10.3
45 gallons	16	3.7
50 gallons	25	5.7
55 gallons	2	0.5
60 gallons	7	1.6
65 gallons	2	0.5
Above 75 Gallons	6	1.4
<b>Total</b>	<b>436</b>	<b>100.0</b>



Furthermore, 86.5 percent of households who expressed their willingness and agree to pay are also desirous of having pipe-borne water if the service is provided in their homes (in-house and in-yard) by the Liberia Water and Sewer Corporation (LWSC). However, At the community level, of households that agree to pay additional tariff for pipe borne in house, the highest were recorded in Monrovia A, Congo Town, Logan Town, Gardnerville, New Georgia, Johnsonville and Caldwell at 100 percent. This was follow by New Kru Town 94.7 percent, West Point 94.1, Sinkor 1 88.9 percent and Clara Town 87.1 percent.(See Appendix Table 14)

### Agreed to Pay

Though households interviewed generally agreed to pay more than what they are currently paying for water if piped water became available to them, only around 7.3 percent, respectively, would be willing to pay above L\$850 (or around US\$15) monthly for it in the house and in the yard. In fact, between 80 and 88 percent were willing to pay only a maximum of \$L550 for piped waters in their homes and yards. Thus, if charges for pipe-borne water to be supplied reaches and/or exceeds US\$10, it seems like most households will find it unaffordable. (See Appendix Table 15)

## 2.3 Household Sewerage and Sanitation Situation

### 2.3.1 Type of Toilets Used by Households

With just one in 25 Liberians having access to a toilet, most use the nearest bush or beach, unwittingly committing what the UN Children's Fund (UNICEF) calls "the riskiest sanitation practice". Liberia's 3.5 million people share just 19,690 toilets, according to a government water and sanitation sector assessment from October 2008, and fewer than one in three Liberians have access to safe drinking water, according to the head of Liberia's Water and Sewer Corporation,

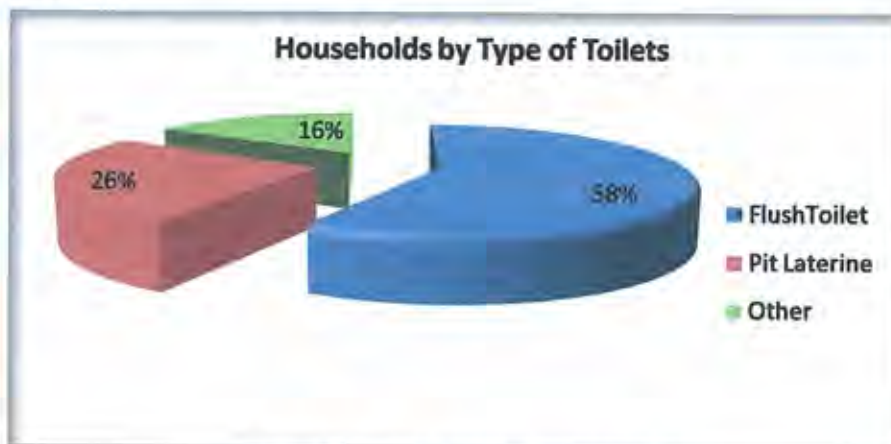


Figure 6 Types of Toilets Households Used

Households in Monrovia use different kinds of toilets. More than half of the respondents (about 58 percent) used flush toilets or had commodes, even though the vast majority of them lacked access to running water. The rest used other means, the most common being the pit latrine which account to (26.1 percent), made popular since the war, after the breakdown of the modern sewage system in Monrovia and other cities in Liberia.



Table 11: Zone by Type of Toilets Households Used

Zone Code	Neighborhood	Type of toilet						Total
		Flush toilet		Pit latrine		Others		
		No.	%	No.	%	No.	%	
100	New Kru Town	15	35.8	14	33.3	13	31.0	42
200	Logan Town	15	50.0	12	40.0	3	10.0	30
300	Clara Town	12	33.4	16	44.0	8	22.3	36
400	West Town	0	0.0	15	83.0	3	16.7	18
500	Monrovia A	20	95.3	1	4.8	0	0.0	21
600	Monrovia B	40	75.0	6	15.0	4	10.0	40
700	Sinkor One	16	66.7	2	8.4	6	25.0	24
800	Sinkor Two	13	72.2	2	11.1	3	16.7	18
900	Old Road	18	58.1	8	25.8	5	16.1	31
1000	Congo	9	42.9	2	9.5	10	47.6	21
1100	Paynesville	44	67.7	15	23.1	6	9.2	65
1200	Gardnerville	24	82.7	4	13.7	1	3.4	29
1300	Bardnesville	17	48.6	13	37.1	5	14.3	35
1400	New Georgia	10	90.9	1	9.1	0	0.0	11
1500	Johnsonville	3	60.0	1	20.0	1	20.0	5
1600	Caldwell	6	60.0	2	20.0	2	20.0	10
<b>Total</b>		<b>252</b>	<b>57.8</b>	<b>114</b>	<b>26.1</b>	<b>70</b>	<b>16.0</b>	<b>436</b>

Regarding the types of latrines used, close to half of the latrines were located inside the house. However, of these, only 39.3 percent were for private, exclusive household use; the remaining 10 percent were multi-household facilities, used by more than one household. Multi-household usage even exceeded nine (9) households to a single latrine in some situations, though close to two-thirds accommodated between 3 and 4 households. (See Appendix Table 16)

### 2.3.2 Type of Sanitation System

The decrepit infrastructure means toilet-users may have to use up to four gallons of water each time they flush. "At US 25 cents a gallon, for some it is a choice between flushing and affording to buy food at the end of the day." According to the World Bank, per capita income in Liberia was US 40 cents per day in 2007.

Without regular running water, waste flushed into the system often backs up, causing sewage to spill out of manholes into the streets. Inhabitants rated sanitation as their top development priority in a series of assessments undertaken by the NGO Water Aid in 2008.

The most common type of sewage system in use among households is the septic tank connection. Only 11 percent of households in the survey are connected to the public sewage system, which indicates the severe limitation of the current public sewage system as well as the challenges of rebuilding it. In addition to septic tanks and the public sewage system, pit latrines are in use by around one-fourth of all households, while 21.3 percent have no sanitation facility. This means most households are, to a large extent, experiencing unsafe human waste disposal and its attending health consequences.

Table 12: Zones by Types of Sanitation System

Zones	Neighborhood	Types of Sanitation System										Total
		Sewer connection		Septic tank		Pit latrine		No sanitation facilities		No response		
		No.	%	No.	%	No.	%	No.	%	No.	%	
100	New Kru Town	2	4.8	11	26.2	15	35.7	14	33.3	0	0.0	42
200	Logan Town	0	0.0	16	53.3	11	36.7	3	10.0	0	0.0	30
300	Clara Town	3	8.1	11	30.6	13	36.1	9	25.0	0	0.0	36
400	West Point	0	0.0	1	5.6	7	38.9	10	55.6	0	0.0	18
500	Central Monrovia - A	11	52.4	9	42.9	0	0.0	1	4.8	0	0.0	21
600	Central Monrovia - B	7	17.5	20	50.0	4	10.0	8	20.0	1	2.5	40
700	Sinkor - 1	4	16.7	10	41.7	1	4.2	9	37.5	0	0.0	24
800	Sinkor - 2	1	5.6	12	66.7	1	5.6	4	22.2	0	0.0	18
900	Old Road	6	19.4	15	48.4	3	9.7	7	22.6	0	0.0	31
1000	Congo Town	1	4.8	7	33.3	1	4.8	12	57.1	0	0.0	21
1100	Paynesville	5	7.7	39	60.0	13	20.0	7	10.8	1	1.5	65
1200	Gardnerville	0	0.0	25	86.2	3	10.3	1	3.4	0	0.0	29
1300	New Georgia	5	14.3	15	42.9	10	28.6	5	14.3	0	0.0	35
1400	Barnersville	2	18.2	8	72.7	1	9.1	0	0.0	0	0.0	11
1500	Johnsonville	0	0.0	4	80.0	0	0.0	1	20.0	0	0.0	5
1600	Caldwell	1	10.0	5	50.0	2	20.0	2	20.0	0	0.0	10
<b>Total</b>		<b>48</b>	<b>11.01</b>	<b>208</b>	<b>47.7</b>	<b>85</b>	<b>19.5</b>	<b>93</b>	<b>21.3</b>	<b>2</b>	<b>0.5</b>	<b>436</b>

### 2.3.3 Household Expenditure for Waste Disposal

Currently, the number of households paying for waste disposal services is low; over 97 percent pay nothing. A small portion (2.1 percent) is paying for waste water disposal. The low or no expenditure

on waste disposal is explained by the types of disposal system in Place; only 11 percent of households depend on the public sewage system, many of whom do not even pay, due to the state of the system and the difficulty of rebuilding it and establishing management and control over it. It also obviously shows that most households operate self managed sewage systems in the forms of septic tanks and pit latrines, among others. (See Appendix Table 17)



Picture 2: Damaged Septic Tanks in Gaye Town Community (Zone 900)

However, the prospect for improving the sewage system appears good from a customer interest perspective; over 61.5 percent of households interviewed are not satisfied with the current sewage systems mainly because of its untidiness. (See *Appendix Table 18*)

#### 2.3.4 Preference for LWSC Services

Over 80 percent of households will be willing to access sewage services provided by LWSC. The preference is particularly telling in the more populated communities where an overwhelming majority of households show strong preference for sewage services. Specifically, all households interviewed in Central Monrovia A, West Point and Clara Town have a preference for sewage services. Communities which show the least preference for sewage services are Sinkor-2 (Lakpazee) and Gardnersville. These two communities are somewhat on the outskirts of the city. (See *Appendix Table 19*).

More importantly, 71 percent would access LWSC services, even if it was above their current tariff charges. This finding is more encouraging in the populated communities. In Central Monrovia A, 95.8% of households agreed to pay for sewage services; 94.4% in West Point; and 91.9% in Clara Town. (See *Appendix Table 24*). Yet, around 61 percent will be willing to pay only up to L\$250 a month and slightly more than three-quarters only a maximum of L\$400 a month. However, it is interesting to point that 86 percent currently do not pay for sewage services and may find it difficult accommodating the idea when the time for the actual payment comes. (See *Appendix Table 19*)

Around three-quarters (75 percent) of households would be willing to pay for septic tank and its maintenance, if provided with it. But there is a limit to how much they are willing to pay for it; close to two-thirds are willing to pay monthly up to L\$250, which is about US\$4/month.

In the case of pit latrines and maintenance services, only close to a third (33 percent) would be willing to pay for it. This low willingness rate may be due to the fact that only 26.6 percent do use pit latrines; and because of the low income experience of most pit latrine users, close to 55 percent are willing to pay only up to L\$100 a month for such services. However, this may be a significantly amount, given that as in the case of the pit latrine, communal use would mean sharing the cost. Fortunately, around 35 percent are willing to pay up to L\$250.

#### 2.3.5 Use of Public Toilets (5U)

The attraction to the idea of public toilets was significant enough to be considered. The idea is old and has worked in much poorer communities like West Point in Monrovia. Over 42 percent of households covered were receptive to the idea of using such facility if it became available in their areas.

### 2.3.6 Public Management of Sanitation Facilities

Most households (over 72 percent) are willing to participate in the management of public sanitation facilities. This has already proven to be an effective strategy in many communities, particularly in the



Picture 3: Kids in at their toilet site in Tarr Town (Zone 900)

area of water resources such as the hand pumps. Management control by the community has helped to maintain the pumps.

## 2.4 Household Disease Burden of Unsafe Water and Poor Sanitation

In slightly over one-third of all households, there were reports of water-borne diseases resulting from the consumption of unsafe drinking water. The most common diseases included diarrheal, dysentery, and cholera. Treatment of these diseases imposed some level of expenditure are already meagre household incomes. Over 46 percent of the affected households spent between L\$705 and L\$850 on related health care; only 4.5 percent incurred no medical expenses in dealing with water-borne disease affecting members of these households.

### Chapter 3

## CONCLUSION AND RECOMMENDATIONS

### 3.1 Conclusion

The communities of Monrovia are faced with enormous challenges accessing proper water and sewerage/sanitation services. With one of the major sources of household water supply being the "Push-Push" and many drinking water sources unsafe, there are many households reporting incidences of water-borne diseases and diseases resulting from poor sanitation. The public infrastructure, which once provided water and sewerage services can no longer cope with the current demands, while many alternative means of supply are unsafe, inadequate, irregular, and require considerable effort to obtain.

However, water consumption level, for example, is high and most communities in Monrovia would welcome the restoration of the LWSC to full capacity and would utilize its variety of water and sewerage services once they became available. Households are so pressed for better services that the majority are willing to even pay additional tariffs on top of their current costs to access LWSC's services, once they became available. The only note of caution, though, is that household incomes are generally low; unemployment among households is around 30 percent; households' savings potentials are already extremely low, due to already crowded expenditure and over-stretched commitments. Thus, the additional tariffs households seem willing to pay for water and sewage services are generally small, if not insignificant.

### 3.2 Recommendations

Restoring the public water system with a focus on household customers must proceed cautiously, with cost considerations adequately linked to a good understanding of household needs and capacities. A series of targeted customer survey might provide much of the answers that would be needed in this direction.

## APPENDIX

Appendix Table 1: Distribution of Heads of Households by Status of Employment

Zones		Employment Status								Total
		Employed		Self-employed		Unemployed		No response		
		No.	%	No.	%	No.	%	No.	%	
100	New Kru Town	14	33.3	9	21.4	19	45.2	0	0.0	42
200	Logan Town	11	36.7	9	30.0	9	30.0	1	3.3	30
300	Clara Town	10	27.8	12	33.3	12	33.3	2	5.6	36
400	West Point	8	44.4	4	22.2	6	33.3	0	0.0	18
500	Central Monrovia - A	12	57.1	5	23.8	4	19.0	0	0.0	21
600	Central Monrovia - B	14	35.0	15	37.5	10	25.0	1	2.5	40
700	Sinkor 1	6	25.0	10	41.7	8	33.3	0	0.0	24
800	Sinkor 2	7	38.9	5	27.8	6	33.3	0	0.0	18
900	Old Road	11	35.5	9	29.0	11	35.5	0	0.0	31
1000	Congo Town	9	42.9	8	38.1	3	14.3	1	4.8	21
1100	Paynesville	34	52.3	20	30.8	9	13.8	2	3.1	65
1200	Gardnerville	16	55.2	6	20.7	6	20.7	1	3.4	29
1300	New Georgia	12	34.3	13	37.1	10	28.6	0	0.0	35
1400	Barnersville	7	63.6	0	0.0	3	27.3	1	9.1	11
1500	Johnsonville	4	80.0	0	0.0	1	20.0	0	0.0	5
1600	Caldwell	6	60.0	3	30.0	1	10.0	0	0.0	10
	Total	181	41.5	128	29.4	118	27.1	9	2.1	436

Appendix Table 2: Head of Households by Educational Level

Zones	Neighborhood	2A-5 Educational Level						Total	
		No formal education	Elementary	Jr. High	Sr. High	College	Other forms of education		No response
100	New Kru Town	5	2	5	16	14	0	0	42
		11.9%	4.8%	11.9%	38.1%	33.3%	0.0%	0.0%	100.0%
200	Logan Town	4	1	5	10	9	1	0	30
		13.3%	3.3%	16.7%	33.3%	30.0%	3.3%	0.0%	100.0%
300	Clara Town	6	1	2	14	12	0	1	36
		16.7%	2.8%	5.6%	38.9%	33.3%	0.0%	2.8%	100.0%
400	West Point	2	0	1	6	9	0	0	18
		11.1%	0.0%	5.6%	33.3%	50.0%	0.0%	0.0%	100.0%
500	Central Monrovia A	0	2	3	6	10	0	0	21
		0.0%	9.5%	14.3%	28.6%	47.6%	0.0%	0.0%	100.0%
600	Central Monrovia B	2	2	6	10	16	4	0	40
		5.0%	5.0%	15.0%	25.0%	40.0%	10.0%	0.0%	100.0%
700	Sinkor 1	6	1	4	5	6	2	0	24
		25.0%	4.2%	16.7%	20.8%	25.0%	8.3%	0.0%	100.0%
800	Sinkor 2	2	0	2	6	8	0	0	18
		11.1%	0.0%	11.1%	33.3%	44.4%	0.0%	0.0%	100.0%
900	Old Road	4	2	4	9	9	3	0	31
		12.9%	6.5%	12.9%	29.0%	29.0%	9.7%	0.0%	100.0%
1000	Congo Town	2	1	3	6	8	0	1	21
		9.5%	4.8%	14.3%	28.6%	38.1%	0.0%	4.8%	100.0%
1100	Paynesville	3	1	2	19	25	15	0	65
		4.6%	1.5%	3.1%	29.2%	38.5%	23.1%	0.0%	100.0%
1200	Gardnerville	0	1	2	5	18	3	0	29
		0.0%	3.4%	6.9%	17.2%	62.1%	10.3%	0.0%	100.0%
1300	New Georgia	4	2	5	11	7	6	0	35
		11.4%	5.7%	14.3%	31.4%	20.0%	17.1%	0.0%	100.0%
1400	Bardnerville	0	0	2	1	6	2	0	11
		0.0%	0.0%	18.2%	9.1%	54.5%	18.2%	0.0%	100.0%
1500	Johnsonville	0	0	0	1	4	0	0	5
		0.0%	0.0%	0.0%	20.0%	80.0%	0.0%	0.0%	100.0%
1600	Caldwell	0	1	1	1	6	1	0	10
		0.0%	10.0%	10.0%	10.0%	60.0%	10.0%	0.0%	100.0%
Total	Count	40	17	47	126	167	37	2	436
		9.2%	3.9%	10.8%	28.9%	38.3%	8.5%	0.5%	100.0%

Appendix Table 3: *Distribution of Households by Level of Education and Employment Status*

Level of Education	Employment Status				Total
	Employed	Self employed	Unemployed	No response	
No formal education	1 2.5%	22 55.0%	16 40.0%	1 2.5%	40 100.0%
Elementary	0 0.0%	12 70.6%	5 29.4%	0 0.0%	17 100.0%
Jr. High	4 8.5%	20 42.6%	21 44.7%	2 4.3%	47 100.0%
Sr. High	44 34.9%	36 28.6%	42 33.3%	4 3.2%	126 100.0%
College	116 69.5%	27 16.2%	22 13.2%	2 1.2%	167 100.0%
Other forms of education	15 40.5%	11 29.7%	11 29.7%	0 0.0%	37 100.0%
No response	1 50.0%	0 0.0%	1 50.0%	0 0.0%	2 100.0%
<b>Total</b>	181 41.5%	128 29.4%	118 27.1%	9 2.1%	436 100.0%



Appendix Table 4: Distribution of Households by Occupation

Zones	Neighborhood	Occupation								Total
		Farming	Teacher	Salary profession	Wage labor	House wife	Student	Others	None	
100	New Kru Town	1	1	10	5	0	2	13	10	42
		2.4%	2.4%	23.8%	11.9%	0.0%	4.8%	31.0%	23.8%	100.0%
200	Logan Town	1	0	12	5	0	1	7	4	30
		3.3%	0.0%	40.0%	16.7%	0.0%	3.3%	23.3%	13.3%	100.0%
300	Clara Town	0	1	12	2	1	1	12	7	36
		0.0%	2.8%	33.3%	5.6%	2.8%	2.8%	33.3%	19.4%	100.0%
400	West Point	0	4	3	3	2	2	3	1	18
		0.0%	22.2%	16.7%	16.7%	11.1%	11.1%	16.7%	5.6%	100.0%
500	Central Monrovia A	0	3	9	1	1	0	6	1	21
		0.0%	14.3%	42.9%	4.8%	4.8%	0.0%	28.6%	4.8%	100.0%
600	Central Monrovia B	0	4	14	11	1	3	4	3	40
		0.0%	10.0%	35.0%	27.5%	2.5%	7.5%	10.0%	7.5%	100.0%
700	Sinkor 1	0	0	6	4	3	2	7	2	24
		0.0%	0.0%	25.0%	16.7%	12.5%	8.3%	29.2%	8.3%	100.0%
800	Sinkor 2	0	1	7	2	1	2	3	2	18
		0.0%	5.6%	38.9%	11.1%	5.6%	11.1%	16.7%	11.1%	100.0%
900	Old Road	0	4	9	5	1	2	6	4	31
		0.0%	12.9%	29.0%	16.1%	3.2%	6.5%	19.4%	12.9%	100.0%
1000	Congo Town	0	0	8	6	0	1	4	2	21
		0.0%	0.0%	38.1%	28.6%	0.0%	4.8%	19.0%	9.5%	100.0%
1100	Paynesville	1	6	34	10	3	3	7	1	65
		1.5%	9.2%	52.3%	15.4%	4.6%	4.6%	10.8%	1.5%	100.0%
1200	Gardnerville	0	5	17	2	2	1	2	0	29
		0.0%	17.2%	58.6%	6.9%	6.9%	3.4%	6.9%	0.0%	100.0%
1300	New Georgia	2	2	9	8	0	3	8	3	35
		5.7%	5.7%	25.7%	22.9%	0.0%	8.6%	22.9%	8.6%	100.0%
1400	Bardnersville	0	1	5	0	2	0	3	0	11
		0.0%	9.1%	45.5%	0.0%	18.2%	0.0%	27.3%	0.0%	100.0%
1500	Johnsonville	0	2	2	1	0	0	0	0	5
		0.0%	40.0%	40.0%	20.0%	0.0%	0.0%	0.0%	0.0%	100.0%
1600	Caldwell	0	1	4	2	0	0	2	1	10
		0.0%	10.0%	40.0%	20.0%	0.0%	0.0%	20.0%	10.0%	100.0%
Total		5	35	161	67	17	23	87	41	436
		1.1%	8.0%	36.9%	15.4%	3.9%	5.3%	20.0%	9.4%	100.0%

Appendix Table 5: Number of Household by Length of Time lived in Community

Zones	Neighborhood	Years Lived in Present Community						Total	
		> 5 yrs	6 to 15 yrs	16 to 25 yrs	26 to 35 yrs	36 to 45 yrs	46 to 55 yrs		Above 56 yrs
100	New Kru Town	16	10	6	6	1	2	1	42
		38.1%	23.8%	14.3%	14.3%	2.4%	4.8%	2.4%	100.0%
200	Logan Town	12	9	5	3	1	0	0	30
		40.0%	30.0%	16.7%	10.0%	3.3%	0.0%	0.0%	100.0%
300	Clara Town	16	15	3	0	0	2	0	36
		44.4%	41.7%	8.3%	0.0%	0.0%	5.6%	0.0%	100.0%
400	West Point	11	5	1	1	0	0	0	18
		61.1%	27.8%	5.6%	5.6%	0.0%	0.0%	0.0%	100.0%
500	Central Monrovia A	10	9	2	0	0	0	0	21
		47.6%	42.9%	9.5%	0.0%	0.0%	0.0%	0.0%	100.0%
600	Central Monrovia B	16	15	5	3	1	0	0	40
		40.0%	37.5%	12.5%	7.5%	2.5%	0.0%	0.0%	100.0%
700	Sinkor 1	14	5	3	2	0	0	0	24
		58.3%	20.8%	12.5%	8.3%	0.0%	0.0%	0.0%	100.0%
800	Sinkor 2	8	5	3	2	0	0	0	18
		44.4%	27.8%	16.7%	11.1%	0.0%	0.0%	0.0%	100.0%
900	Old Road	9	12	5	4	1	0	0	31
		29.0%	38.7%	16.1%	12.9%	3.2%	0.0%	0.0%	100.0%
1000	Congo Town	11	4	4	1	0	1	0	21
		52.4%	19.0%	19.0%	4.8%	0.0%	4.8%	0.0%	100.0%
1100	Paynesville	29	29	4	3	0	0	0	65
		44.6%	44.6%	6.2%	4.6%	0.0%	0.0%	0.0%	100.0%
1200	Gardnerville	7	21	1	0	0	0	0	29
		24.1%	72.4%	3.4%	0.0%	0.0%	0.0%	0.0%	100.0%
1300	New Georgia	12	16	4	2	0	1	0	35
		34.3%	45.7%	11.4%	5.7%	0.0%	2.9%	0.0%	100.0%
1400	Bardnerville	2	6	2	0	1	0	0	11
		18.2%	54.5%	18.2%	0.0%	9.1%	0.0%	0.0%	100.0%
1500	Johnsonville	0	4	1	0	0	0	0	5
		0.0%	80.0%	20.0%	0.0%	0.0%	0.0%	0.0%	100.0%
1600	Caldwell	5	5	0	0	0	0	0	10
		50.0%	50.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%
Total		178	178	170	49	27	5	6	1
		40.8%	40.8%	39.0%	11.2%	6.2%	1.1%	1.4%	0.2%

Appendix Table 6: Number of Households by Number of Persons generating income

Zone Code	Neighborhood	Number of Person Employed In Household											Total		
		No person		One person		Two persons		Three persons		Four persons		Five persons			
100	New Kru Town	10	23.8	19	45.2	7	16.7	4	9.5	0	0.0	2	4.8	42	9.6
200	Logan Town	5	16.7	15	50.0	6	20.0	4	13.3	0	0.0	0	0.0	30	6.9
300	Clara Town	9	25.0	19	52.8	7	19.4	1	2.8	0	0.0	0	0.0	36	8.3
400	West Point	6	33.3	4	22.2	7	38.9	1	5.6	0	0.0	0	0.0	18	4.1
500	Monrovia - A	2	9.5	12	47.6	8	38.1	1	4.8	0	0.0	0	0.0	21	4.8
600	Monrovia - B	2	5.0	29	67.5	9	22.5	2	5.0	0	0.0	0	0.0	40	9.2
700	Sinkor - 1	3	12.5	16	62.5	6	25.0	0	0.0	0	0.0	0	0.0	24	5.5
800	Sinkor - 2	2	11.1	11	61.1	4	22.2	0	0.0	0	0.0	1	5.6	18	4.1
900	Old Road	4	12.9	21	71.0	5	16.1	0	0.0	0	0.0	0	0.0	31	7.1
1000	Congo Town	3	14.3	10	47.6	7	33.3	1	4.8	0	0.0	0	0.0	21	4.8
1100	Paynesville	3	4.6	32	49.2	22	33.8	8	12.3	0	0.0	0	0.0	65	14.9
1200	Gardnerville	1	3.4	8	31.0	12	41.4	6	20.7	1	3.4	0	0.0	29	6.7
1300	Bardnerville	4	11.4	25	71.4	5	14.3	0	0.0	1	2.9	0	0.0	35	8.0
1400	New Georgia	1	9.1	2	27.3	4	36.4	2	18.2	1	9.1	0	0.0	11	2.5
1500	Johnsonville	0	0.0	1	20.0	3	60.0	1	20.0	0	0.0	0	0.0	5	1.1
1600	Caldwell	1	10.0	2	30.0	5	50.0	0	0.0	1	10.0	0	0.0	10	2.3
	<b>Total</b>	<b>56</b>	<b>12.8</b>	<b>225</b>	<b>51.6</b>	<b>117</b>	<b>26.8</b>	<b>31</b>	<b>7.1</b>	<b>4</b>	<b>0.9</b>	<b>3</b>	<b>0.7</b>	<b>436</b>	<b>100.0</b>

Appendix Table 7: Distribution of Households by Income Generated in Households

Zone Code	Neighborhood	Household Income Categories																							
		6,000 and below	6,005 to 12,000	12,005 to 18,000	18,005 to 24,000	24,005 to 30,000	30,005 to 36,000	36,005 to 42,000	42,005 to 48,000	48,005 to 54,000	54,005 to 60,000	60,005 to 66,000	66,005 to 72,000	Above 72,000											
100	New Kru Town	12	28.6	7	16.7	5	11.9	10	23.8	4	9.5	0	0.0	2	4.8	0	0.0	0	0.0	1	2.4	1	2.4	1	2.4
200	Logan Town	5	16.7	5	16.7	12	40.0	4	13.3	2	6.7	1	3.3	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	1	3.3
300	Clara Town	7	18.9	15	40.5	8	21.6	2	5.4	4	10.8	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	1	2.7
400	West Point	6	33.3	6	33.3	3	16.7	1	5.6	1	5.6	1	5.6	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
500	Monrovia -A	0	0	7	33.3	2	9.5	7	33.3	4	19.0	0	0.0	0	0.0	0	0.0	1	4.8	0	0	0	0	0	0
600	Monrovia -B	5	13.5	15	40.5	14	37.8	1	2.7	1	2.7	1	0.0	1	2.7	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
700	Sinkor -1	1	4.2	13	54.2	5	20.8	3	12.5	0	0.0	2	8.3	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
800	Sinkor -2	1	5.6	4	22.2	6	33.3	3	16.7	4	22.2	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
900	Old Road	5	14.7	14	41.2	10	29.4	3	8.8	1	2.9	0	0.0	1	2.9	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
1000	Congo Town	2	9.5	9	42.9	4	19.0	4	19.0	0	0.0	2	9.5	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
1100	Paynesville	6	9.2	16	24.6	22	33.8	10	15.4	9	13.8	1	1.5	1	1.5	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
1200	Gardnerville	2	6.7	1	3.3	6	20.0	5	16.7	8	26.7	2	10.0	0	0.0	1	3.3	1	3.3	2	6.7	1	3.3	1	3.3
1300	Bardnerville	5	14.3	17	48.6	7	20.0	2	5.7	3	8.6	0	0.0	0	0.0	1	2.9	0	0.0	0	0.0	0	0.0	0	0.0
1400	New Georgia	1	9.1	2	18.2	3	27.3	1	9.1	1	9.1	1	9.1	0	0.0	1	9.1	0	0.0	0	0.0	0	0.0	1	9.1
1500	Johnsonville	1	33.3	1	33.3	0	0.0	1	33.3	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
1600	Caldwell	2	20.0	0	0.0	4	40	0	0	1	10.0	2	20.0	0	0	0	0	0	0	0	1	10	0	0	0
	<b>Total</b>	61	14.0	132	30.3	111	25.5	57	13.1	43	9.9	13	3.0	5	1.1	3	0.7	2	0.5	4	0.9	5	1.1	5	1.1

Appendix Table 8: Distribution of Households by Amount Save from Monthly Income

Zone Code	Neighbor- hood	Level of Income										Number						
		No Saving	6,005 and below	6,005 to 12,000	12,005 to 18,000	18,005 to 24,000	24,005 to 30,000	LD\$(30,005 to 36,000)	54,005 to 60,000									
100	New Kru Town	21	50.0	18	42.9	2	4.8	0	0.0	0	0.0	1	2.4	0	0.0	0	0.0	42
200	Logan Town	20	66.7	9	30.0	0	0.0	0	0.0	1	3.3	0	0.0	0	0.0	0	0.0	30
300	Clara Town	24	66.7	9	25.0	2	5.6	0	0.0	0	0.0	1	2.8	0	0.0	0	0.0	36
400	West Point	14	77.8	2	11.1	1	5.6	1	5.6	0	0.0	0	0.0	0	0.0	0	0.0	18
500	Monrovia - A	11	52.4	9	42.9	1	4.8	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	21
600	Monrovia - B	14	35.0	23	57.5	2	5.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	40
700	Sinkor - 1	13	54.2	9	37.5	1	4.2	1	4.2	0	0.0	0	0.0	0	0.0	0	0.0	24
800	Sinkor - 2	9	50.0	8	44.4	1	5.6	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	18
900	Old Road	12	38.7	19	61.3	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	31
1000	Congo Town	7	33.3	14	66.7	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	21
1100	Paynesville	29	44.6	36	55.4	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	65
1200	Gardnerville	11	37.9	15	51.7	2	6.9	0	0.0	1	3.4	0	0.0	0	0.0	0	0.0	29
1300	Bardnesville	14	40.0	21	60.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	35
1400	New Georgia	6	54.5	5	45.5	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	11
1500	Johnsonville	3	60.0	2	40.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	5
1600	Caldwell	4	40.0	4	40.0	1	10.0	0	0.0	0	0.0	0	0.0	1	10.0	0	0.0	10
	<b>Total</b>	<b>212</b>	<b>48.6</b>	<b>203</b>	<b>46.6</b>	<b>13</b>	<b>3.0</b>	<b>2</b>	<b>0.5</b>	<b>2</b>	<b>0.5</b>	<b>2</b>	<b>0.5</b>	<b>2</b>	<b>0.2</b>	<b>1</b>	<b>0.2</b>	<b>436</b>



Public Awareness Survey on Water & Sanitation

Appendix Table 9: Distribution of Households by Expenditure on Food

Zone Code	Neighbor- hood	Nothing on Food	Range of Expenses in LD										Total					
			6,000 and below	6,005 to 12,000	12,005 to 18,000	18,005 to 24,000	24,005 to 30,000	30,005 to 36,000	36,005 to 42,000	42,005 to 48,000	48,005 to 54,000							
100	New Kruu Town	0	0.0	17	40.5	19	45.2	5	11.9	1	2.4	0	0.0	0	0.0	0	0.0	42
200	Logan Town	0	0.0	13	43.3	15	50.0	1	3.3	1	3.3	0	0.0	0	0.0	0	0.0	30
300	Clara Town	0	0.0	13	36.1	21	58.3	2	5.6	0	0.0	0	0.0	0	0.0	0	0.0	36
400	West Point	0	0.0	10	55.6	8	44.4	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	18
500	Monrovia - A	0	0.0	4	19.0	17	81.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	21
600	Monrovia - B	0	0.0	31	77.5	9	22.5	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	40
700	Sinkor - 1	0	0.0	14	58.3	9	37.5	0	0.0	1	4.2	0	0.0	0	0.0	0	0.0	24
800	Sinkor - 2	0	0.0	10	55.6	7	38.9	1	5.6	0	0.0	0	0.0	0	0.0	0	0.0	18
900	Old Road	0	0.0	23	74.2	6	19.4	0	0.0	0	0.0	1	3.2	0	0.0	1	3.2	31
1000	Congo Town	0	0.0	11	52.4	9	42.9	1	4.8	0	0.0	0	0.0	0	0.0	0	0.0	21
1100	Paynesville	0	0.0	56	86.2	7	10.8	1	1.5	0	0.0	1	1.5	0	0.0	0	0.0	65
1200	Gardnerville	0	0.0	21	72.4	8	27.6	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	29
1300	Bardnerville	0	0.0	27	77.1	7	20.0	0	0.0	0	0.0	0	0.0	1	2.9	0	0.0	35
1400	New Georgia	0	0.0	5	45.5	5	45.5	1	9.1	0	0.0	0	0.0	0	0.0	0	0.0	11
1500	Johnsonville	0	0.0	4	80.0	1	20.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	5
1600	Caldwell	1	14.3	6	60.0	3	30.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	10
	<b>Total</b>	<b>1</b>	<b>0.2</b>	<b>265</b>	<b>60.8</b>	<b>151</b>	<b>34.6</b>	<b>12</b>	<b>2.8</b>	<b>3</b>	<b>0.7</b>	<b>2</b>	<b>0.5</b>	<b>1</b>	<b>0.2</b>	<b>1</b>	<b>0.2</b>	<b>436</b>

Appendix Table 10: Distribution of Households by Source of Water Supply

Zones	Neighborhood	source(s) of water									
		Pipe born in house	Pipe born in yard	Hand pump in yard	Public hand pump	Public taps	Running water	Water truck	Push-push	No response	
100	New Kru Town	Count	3	2	14	3	18	0	0	30	1
		Row	7.1	4.8	33.3	7.1	42.9			71.4	2.4
200	Logan Town	Count	0	10	13	1	9	0	0	24	0
		Row		33.3	43.3	3.3	30.0			80.0	
300	Clara Town	Count	1	6	16	0	10	0	1	24	1
		Row	2.7	16.2	43.2		27.0		2.7	64.9	2.7
400	West Point	Count	0	1	5	1	0	0	6	17	0
		Row		5.6	27.8	5.6			33.3	94.4	
500	Central Monrovia A	Count	0	1	5	0	3	0	14	8	0
		Row		4.8	23.8		14.3		66.7	38.1	
600	Central Monrovia B	Count	1	7	23	4	12	0	7	27	0
		Row	2.7	18.9	62.2	10.8	32.4		18.9	73.0	
700	Sinkor 1	Count	0	0	8	5	15	0	0	15	0
		Row			33.3	20.8	62.5			62.5	
800	Sinkor 2	Count	1	1	5	0	13	0	0	15	0
		Row	5.6	5.6	27.8		72.2			83.3	
900	Old Road	Count	2	2	3	5	25	0	1	22	0
		Row	5.9	5.9	8.8	14.7	73.5		2.9	64.7	
1000	Congo Town	Count	0	3	2	1	13	0	1	19	0
		Row		14.3	9.5	4.8	61.9		4.8	90.5	
1100	Paynesville	Count	0	6	4	21	32	1	0	31	0
		Row		9.2	6.2	32.3	49.2	1.5		47.7	
1200	Gardnerville	Count	0	2	1	16	23	0	0	10	0
		Row		6.7	3.3	53.3	76.7			33.3	
1300	New Georgia	Count	1	3	1	3	24	0	2	22	0
		Row	2.9	8.6	2.9	8.6	68.6		5.7	62.9	
1400	Bardnersville	Count	0	0	1	2	8	0	1	5	0
		Row			9.1	18.2	72.7		9.1	45.5	
1500	Johnsonville	Count	0	0	0	0	2	0	0	2	0
		Row					66.7			66.7	
1600	Caldwell	Count	0	0	0	0	9	2	1	7	0
		Row					90.0	20.0	10.0	70.0	
	Total	Count	9	44	101	62	216	3	34	278	2
		Row	2.1	10.1	23.2	14.2	49.5	0.7	7.8	63.8	0.5

Appendix Table 11: Distribution of Households by Water Pressure at Source of Water

Zones	Neighborhood	Condition of water flow				Total
		Water flows with high pressure	Water flows with normal pressure	Water flows with somewhat pressure	Water flows with very low pressure	
100	New Kru Town	1 5.3%	4 21.1%	9 47.4%	5 26.3%	19 100.0%
200	Logan Town	4 18.2%	5 22.7%	11 50.0%	2 9.1%	22 100.0%
300	Clara Town	3 13.6%	6 27.3%	13 59.1%	0 0.0%	22 100.0%
400	West Point	0 0.0%	0 0.0%	7 100.0%	0 0.0%	7 100.0%
500	Central Monrovia A	0 0.0%	3 42.9%	4 57.1%	0 0.0%	7 100.0%
600	Central Monrovia B	3 15.0%	16 80.0%	1 5.0%	0 0.0%	20 100.0%
700	Sinkor 1	4 50.0%	4 50.0%	0 0.0%	0 0.0%	8 100.0%
800	Sinkor 2	2 28.6%	4 57.1%	0 0.0%	1 14.3%	7 100.0%
900	Old Road	3 50.0%	3 50.0%	0 0.0%	0 0.0%	6 100.0%
1000	Congo Town	2 50.0%	2 50.0%	0 0.0%	0 0.0%	4 100.0%
1100	Paynesville	3 33.3%	5 55.6%	1 11.1%	0 0.0%	9 100.0%
1200	Gardnerville	1 100.0%	0 0.0%	0 0.0%	0 0.0%	1 100.0%
1300	New Georgia	0 0.0%	2 66.7%	1 33.3%	0 0.0%	3 100.0%
Total		26 19.3%	54 40.0%	47 34.8%	8 5.9%	135 100.0%



Appendix Table 12: Distribution of Households by Length of Time Water is Available

Zone Code	Neighborhood	Length of Time											
		>6 hrs		6 hrs.		4-5 hrs		1-3 hrs		Every Other Day		Once	
		No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
100	New Kru Town	6	5.3	1	31.6	3	15.8	0	0.0	8	42.1	1	5.3
200	Logan Town	6	13.6	3	27.3	0	0.0	1	4.5	12	54.5	0	0.0
300	Clara Town	7	0.0	0	31.8	6	27.3	0	0.0	11	40.9	0	0.0
400	West Point	1	0.0	0	14.3	2	28.6	0	0.0	4	57.2	0	0.0
500	Monrovia -A	1	14.3	1	14.3	3	42.9	0	0.0	1	14.3	1	14.3
600	Monrovia - B	3	15.0	3	20.0	1	5.0	11	55.5	1	5.0	0	0.0
700	Sinkor One	3	25.0	2	37.5	0	0.0	3	37.5	0	0.0	0	0.0
800	Sinkor Two	3	42.9	3	42.9	0	0.0	1	14.3	0	0.0	0	0.0
900	Old Road	3	50.0	3	33.3	0	0.0	1	16.7	0	0.0	0	0.0
1000	Congo Town	2	25.0	1	50.0	0	0.0	1	25.0	0	0.0	0	0.0
1100	Paynesville	4	33.3	3	44.4	0	0.0	2	22.2	0	0.0	0	0.0
1200	Gardnerville	1	0.0	0	100.0	0	0.0	0	0.0	0	0.0	0	0.0
1300	Bardnesville	0	66.7	2	0.0	0	0.0	1	33.3	0	0.0	0	0.0
1400	New Georgia	0	16.7	0	50.0	0	16.7	1	16.7	0	0.0	0	0.0
	<b>Total</b>	<b>40</b>	<b>29.6</b>	<b>22</b>	<b>16.3</b>	<b>15</b>	<b>11.1</b>	<b>21</b>	<b>15.6</b>	<b>35</b>	<b>25.9</b>	<b>2</b>	<b>1.5</b>

Appendix Table 13: Distribution of Households by Length of time to fetch water once at water source

Zone Code	Neighborhood	Description of Frequency	Length of Time				No respns.	Total
			5 - 10 mins.	11 - 20 mins.	21 - 30 mins.	>30 mins.		
100	New Kru Town	Count	11	6	9	13	3	42
		Percent	26.2%	14.3%	21.4%	31.0%	7.1%	100.0%
200	Logan Town	Count	13	9	3	4	0	29
		Percent	44.8%	31.0%	10.3%	13.8%	0.0%	100.0%
300	Clara Town	Count	17	3	8	7	2	37
		Percent	45.9%	8.1%	21.6%	18.9%	5.4%	100.0%
400	West Point	Count	6	2	0	10	0	18
		Percent	33.3%	11.1%	0.0%	55.6%	0.0%	100.0%
500	Monrovia One	Count	7	5	6	6	0	24
		Percent	29.2%	20.8%	25.0%	25.0%	0.0%	100.0%
600	Monrovia Two	Count	25	12	3	0	4	44
		Percent	56.8%	27.3%	6.8%	0.0%	9.1%	100.0%
700	Sinkor One	Count	16	2	2	2	3	25
		Percent	64.0%	8.0%	8.0%	8.0%	12.0%	100.0%
800	Sinkor Two	Count	11	4	0	0	1	16
		Percent	68.8%	25.0%	0.0%	0.0%	6.3%	100.0%
900	Old Road	Count	19	5	2	1	3	30
		Percent	63.3%	16.7%	6.7%	3.3%	10.0%	100.0%
1000	Congo Town	Count	12	2	0	1	1	16
		Percent	75.0%	12.5%	0.0%	6.3%	6.3%	100.0%
1100	Paynesville	Count	28	15	11	7	2	63
		Percent	44.4%	23.8%	17.5%	11.1%	3.2%	100.0%
1200	Gardnerville	Count	9	5	9	2	0	25
		Percent	36.0%	20.0%	36.0%	8.0%	0.0%	100.0%
1300	Bardnesville	Count	22	10	3	1	0	36
		Percent	61.1%	27.8%	8.3%	2.8%	0.0%	100.0%
1400	New Georgia	Count	1	3	1	1	0	6
		Percent	16.7%	50.0%	16.7%	16.7%	0.0%	100.0%
1500	Johnsonville	Count	2	0	0	0	0	2
		Percent	100.0%	0.0%	0.0%	0.0%	0.0%	100.0%
1600	Caldwell	Count	0	3	2	2	0	7
		Percent	0.0%	42.9%	28.6%	28.6%	0.0%	100.0%
<b>Total</b>		<b>Count</b>	<b>199</b>	<b>86</b>	<b>59</b>	<b>57</b>	<b>19</b>	<b>420</b>
		<b>Percent</b>	<b>47.4%</b>	<b>20.5%</b>	<b>14.0%</b>	<b>13.6%</b>	<b>4.5%</b>	<b>100.0%</b>

Appendix Table 14: Households by Willingness to pay additional Tariff for LWSC Services

Zones	Pipe Borne in House	Pipe Borne in Yard	Public Tap 500M	Public Tap Over 500M	Hand Pump 500M	Hand Pump over 500M	Trucking Service
100	36 94.7%	36 94.7%	22 57.9%	12 31.6%	25 65.8%	10 26.3%	8 21.1%
200	26 100.0%	25 96.2%	14 53.8%	6 23.1%	14 53.8%	5 19.2%	7 26.9%
300	27 87.1%	26 83.9%	17 54.8%	8 25.8%	13 41.9%	4 12.9%	2 6.5%
400	16 94.1%	16 94.1%	10 58.8%	7 41.2%	3 17.6%	1 5.9%	4 23.5%
500	24 100.0%	22 91.7%	12 50.0%	9 37.5%	14 58.3%	5 20.8%	8 33.3%
600	18 78.3%	19 82.6%	14 60.9%	14 60.9%	12 52.2%	8 34.8%	9 39.1%
700	16 88.9%	16 88.9%	13 72.2%	8 44.4%	8 44.4%	8 44.4%	7 38.9%
800	8 66.7%	8 66.7%	7 58.3%	4 33.3%	6 50.0%	6 50.0%	5 41.7%
900	16 84.2%	16 84.2%	16 84.2%	12 63.2%	11 57.9%	9 47.4%	8 42.1%
1000	16 100.0%	16 100.0%	16 100.0%	15 93.8%	13 81.3%	12 75.0%	14 87.5%
1100	32 68.1%	33 70.2%	21 44.7%	18 38.3%	23 48.9%	22 46.8%	32 68.1%
1200	9 100.0%	8 88.9%	4 44.4%	3 33.3%	3 33.3%	2 22.2%	9 100.0%
1300	22 75.9%	24 82.8%	25 86.2%	24 82.8%	22 75.9%	18 62.1%	19 65.5%
1400	6 100.0%	6 100.0%	5 83.3%	4 66.7%	4 66.7%	4 66.7%	5 83.3%
1600	3 100.0%	2 66.7%	2 66.7%	1 33.3%	2 66.7%	1 33.3%	1 33.3%
Total	275 86.5%	273 85.8%	198 62.3%	145 45.6%	173 54.4%	115 36.2%	138 43.4%

Appendix Table 15: Distribution of Households by Additional Tariff they are willing to pay for Pipe borne water

Zones	Amount In Liberian Dollars														Total	
	100 & <		105 - 250		255 - 400		405 - 550		555 - 700		705 - 850		> 850			
	No	%	No	%	No	%	No	%	No	%	No	%	No	%	No	%
100	17	44.7	6	25	6	15.8	5	13.2	2	5.3	0	0.0	2	5.3	38	90.5
200	1	4.2	4	14.8	8	33.3	6	25.0	2	8.3	0	0.0	3	12.5	24	80.0
300	5	18.5	6	37.5	7	25.9	3	11.1	3	11.1	1	3.7	2	7.4	27	73.0
400	5	31.3	1	4.2	5	31.3	1	6.3	3	18.8	1	6.3	0	0.0	16	88.9
500	2	8.3	2	11.1	5	20.8	5	20.8	2	8.3	4	16.7	4	16.7	24	54.5
600	2	11.1	3	18.8	6	33.3	1	5.6	4	22.2	0	0.0	2	11.1	18	72.0
700	1	6.3	5	62.5	2	12.5	6	37.5	1	6.3	0	0.0	1	6.3	16	88.9
800	0	0.0	1	6.3	4	50.0	2	25.0	1	12.5	0	0.0	0	0.0	8	44.4
900	4	25.0	2	12.5	4	25.0	3	18.8	3	18.8	0	0.0	0	0.0	16	51.6
1000	2	12.5	4	12.5	4	25.0	3	18.8	3	18.8	0	0.0	0	0.0	16	76.2
1100	11	34.4	10	31.3	6	18.8	1	3.1	2	6.3	0	0.0	2	6.3	32	48.5
1200	1	11.1	1	5.0	1	11.1	3	33.3	0	0.0	1	11.1	2	22.2	9	32.1
1300	3	15.0	7	175.0	4	20.0	3	15.0	1	5.0	0	0.0	2	10.0	20	54.1
1400	0	0.0	1	50.0	1	25.0	2	50.0	0	0.0	0	0.0	0	0.0	4	50.0
1500	1	50.0	1	25.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	2	25.0
1600	1	25.0	1	0.4	1	25.0	1	25.0	0	0.0	0	0.0	0	0.0	4	57.1
<b>Total</b>	56	20.4	55	20.1	64	23.4	45	16.4	27	9.9	7	2.6	20	7.3	274	62.8

Appendix Table 16: Distribution of Households by location of the Toilets

Zones	Neighborhood	Location of Toilets					Total
		Inside house private	Inside house public	outside the house (private)	outside the house (public)	No response	
100	New Kru Town	6	4	5	20	0	35
		17.1%	11.4%	14.3%	57.1%	0.0%	100.0%
200	Logan Town	11	2	2	12	0	27
		40.7%	7.4%	7.4%	44.4%	0.0%	100.0%
300	Clara Town	7	0	6	19	3	35
		20.0%	0.0%	17.1%	54.3%	8.6%	100.0%
400	West Point	0	0	4	11	1	16
		0.0%	0.0%	25.0%	68.8%	6.3%	100.0%
500	Central Monrovia A	16	4	1	3	0	24
		66.7%	16.7%	4.2%	12.5%	0.0%	100.0%
600	Central Monrovia B	14	5	9	14	0	42
		33.3%	11.9%	21.4%	33.3%	0.0%	100.0%
700	Sinkor 1	12	1	2	5	1	21
		57.1%	4.8%	9.5%	23.8%	4.8%	100.0%
800	Sinkor 2	7	0	4	4	0	15
		46.7%	0.0%	26.7%	26.7%	0.0%	100.0%
900	Old Road	9	3	2	15	0	29
		31.0%	10.3%	6.9%	51.7%	0.0%	100.0%
1000	Congo Town	5	0	3	4	2	14
		35.7%	0.0%	21.4%	28.6%	14.3%	100.0%
1100	Paynesville	28	12	14	9	0	63
		44.4%	19.0%	22.2%	14.3%	0.0%	100.0%
1200	Gardnerville	16	7	4	1	0	28
		57.1%	25.0%	14.3%	3.6%	0.0%	100.0%
1300	New Georgia	17	0	4	12	1	34
		50.0%	0.0%	11.8%	35.3%	2.9%	100.0%
1400	Bardnersville	4	1	1	2	0	8
		50.0%	12.5%	12.5%	25.0%	0.0%	100.0%
1500	Johnsonville	1	0	0	0	0	1
		100.0%	0.0%	0.0%	0.0%	0.0%	100.0%
1600	Caldwell	3	1	1	0	0	5
		60.0%	20.0%	20.0%	0.0%	0.0%	100.0%
Total		156	40	62	131	8	397
		39.3%	10.1%	15.6%	33.0%	2.0%	100.0%

Appendix Table 17: Distribution of Households by Expenditures Made on Waste Water Disposal

Zones	Neighborhood	Amount Spend on Waste Disposal								Total
		0	100	600	800	1,000	1,200	1,500	1,600	
100	New Kru Town	42	0	0	0	0	0	0	0	42
		100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%
200	Logan Town	30	0	0	0	0	0	0	0	30
		100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%
300	Clara Town	36	0	0	0	0	0	0	0	36
		100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%
400	West Point	18	0	0	0	0	0	0	0	18
		100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%
500	Central Monrovia A	15	1	0	1	0	2	1	1	21
		71.4%	4.8%	0.0%	4.8%	0.0%	9.5%	4.8%	4.8%	100.0%
600	Central Monrovia B	40	0	0	0	0	0	0	0	40
		100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%
700	Sinkor 1	23	1	0	0	0	0	0	0	24
		95.8%	4.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%
800	Sinkor 2	18	0	0	0	0	0	0	0	18
		100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%
900	Old Road	31	0	0	0	0	0	0	0	31
		100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%
1000	Congo Town	21	0	0	0	0	0	0	0	21
		100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%
1100	Paynesville	65	0	0	0	0	0	0	0	65
		100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%
1200	Gardnerville	29	0	0	0	0	0	0	0	29
		100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%
1300	New Georgia	35	0	0	0	0	0	0	0	35
		100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%
1400	Bardnersville	9	0	1	0	1	0	0	0	11
		81.8%	0.0%	9.1%	0.0%	9.1%	0.0%	0.0%	0.0%	100.0%
1500	Johnsonville	5	0	0	0	0	0	0	0	5
		100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%
1600	Caldwell	10	0	0	0	0	0	0	0	10
		100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%
<b>Total</b>		427	2	1	1	1	2	1	1	436
		97.9%	0.5%	0.2%	0.2%	0.2%	0.5%	0.2%	0.2%	100.0%

Appendix Table 18: Household Status of Satisfaction for LWSC Sewerage System

Zone	Neighborhood	Status			Total
		Satisfy	Dissatisfy	No response	
100	New Kru Town	1	41	0	42
		2.4%	97.6%	0.0%	100.0%
200	Logan Town	4	25	1	30
		13.3%	83.3%	3.3%	100.0%
300	Clara Town	1	35	0	36
		2.8%	97.2%	0.0%	100.0%
400	West Point	0	18	0	18
		0.0%	100.0%	0.0%	100.0%
500	Central Monrovia A	3	18	0	21
		14.3%	85.7%	0.0%	100.0%
600	Central Monrovia B	18	22	0	40
		45.0%	55.0%	0.0%	100.0%
700	Sinkor 1	11	13	0	24
		45.8%	54.2%	0.0%	100.0%
800	Sinkor 2	11	7	0	18
		61.1%	38.9%	0.0%	100.0%
900	Old Road	14	17	0	31
		45.2%	54.8%	0.0%	100.0%
1000	Congo Town	15	6	0	21
		71.4%	28.6%	0.0%	100.0%
1100	Paynesville	37	25	3	65
		56.9%	38.5%	4.6%	100.0%
1200	Gardnerville	19	10	0	29
		65.5%	34.5%	0.0%	100.0%
1300	New Georgia	15	20	0	35
		42.9%	57.1%	0.0%	100.0%
1400	Bardnersville	4	7	0	11
		36.4%	63.6%	0.0%	100.0%
1500	Johnsonville	4	1	0	5
		80.0%	20.0%	0.0%	100.0%
1600	Caldwell	7	3	0	10
		70.0%	30.0%	0.0%	100.0%
Total		164	268	4	436
		37.6%	61.5%	0.9%	100%

Table 49 Respondents by Preference for LWSC Services by Zone

	Pipe Borne Water		Public Tap in Community		Hand Pump 500 Meters		Trucking Service		Sewerage Main		Septic Tank Maintenance		Pit Latrine		Public Toilet							
	Agree	Disagree	Agree	Disagree	Agree	No response	Agree	Disagree	Yes	No	Agree	Disagree	Yes	No	Agree	Disagree						
0	36	2	0	12	26	0	25	13	8	30	37	5	36	9	34	8	12	30	11	31	23	19
0	94.7%	5.3%	0.0%	31.6%	68.4%	0.0%	65.8%	34.2%	21.1%	78.9%	88.1%	11.9%	85.7%	14.3%	81.0%	19.0%	28.6%	71.4%	26.2%	73.8%	54.8%	45.2%
0	26	0	0	6	20	0	14	12	7	19	27	3	26	4	24	6	7	23	4	26	17	13
0	100.0%	0.0%	0.0%	23.1%	76.9%	0.0%	53.8%	46.2%	26.9%	73.1%	90.0%	10.0%	86.7%	13.3%	80.0%	20.0%	23.3%	76.7%	13.3%	86.7%	56.7%	43.3%
0	27	4	0	8	23	0	13	18	2	29	37	0	34	3	31	6	13	24	10	27	15	22
0	87.1%	12.9%	0.0%	25.8%	74.2%	0.0%	41.9%	58.1%	6.5%	93.5%	100.0%	0.0%	91.9%	8.1%	83.8%	16.2%	35.1%	64.9%	27.0%	73.0%	40.5%	59.5%
0	16	1	0	7	10	0	3	14	4	13	18	0	17	1	17	1	7	11	10	8	10	8
0	94.1%	5.9%	0.0%	41.2%	58.8%	0.0%	17.6%	82.4%	23.5%	76.5%	100.0%	0.0%	94.4%	5.6%	94.4%	5.6%	38.9%	61.1%	55.6%	44.4%	55.6%	44.4%
0	24	0	0	9	15	0	14	10	8	16	24	0	23	1	17	7	7	17	2	22	8	16
0	100.0%	0.0%	0.0%	37.5%	62.5%	0.0%	58.3%	41.7%	33.3%	66.7%	100.0%	0.0%	95.8%	4.2%	70.8%	29.2%	29.2%	70.8%	8.3%	91.7%	33.3%	66.7%
0	18	5	0	14	9	0	12	11	9	14	40	4	28	16	33	11	10	34	16	28	19	25
0	78.3%	21.7%	0.0%	60.9%	39.1%	0.0%	52.2%	47.8%	39.1%	50.9%	90.9%	9.1%	63.6%	36.4%	75.0%	25.0%	22.7%	77.3%	36.4%	63.6%	43.2%	56.8%
0	16	2	0	8	10	0	8	10	7	11	19	6	11	14	14	11	11	14	10	15	10	15
0	88.9%	11.1%	0.0%	44.4%	55.6%	0.0%	44.4%	55.6%	38.9%	61.1%	76.0%	24.0%	44.0%	56.0%	56.0%	44.0%	44.0%	56.0%	40.0%	60.0%	40.0%	60.0%
0	8	4	0	4	8	0	6	6	5	7	7	11	8	10	12	6	6	12	5	13	9	9
0	66.7%	33.3%	0.0%	33.3%	66.7%	0.0%	50.0%	50.0%	41.7%	58.3%	38.9%	61.1%	44.4%	55.6%	66.7%	33.3%	33.3%	66.7%	27.8%	72.2%	50.0%	50.0%
0	16	3	0	12	7	0	11	8	8	11	22	9	16	15	23	8	19	19	14	17	13	18
0	84.2%	15.8%	0.0%	63.2%	36.8%	0.0%	57.9%	42.1%	42.1%	57.9%	71.0%	29.0%	51.6%	48.4%	74.2%	25.8%	38.7%	61.3%	45.2%	54.8%	41.9%	58.1%
0	16	0	0	15	1	0	13	3	14	2	20	1	16	5	18	3	12	12	10	11	11	10
0	100.0%	0.0%	0.0%	93.8%	6.3%	0.0%	81.3%	18.8%	87.5%	12.5%	95.2%	4.8%	76.2%	23.8%	85.7%	14.3%	42.9%	57.1%	47.6%	52.4%	47.6%	47.6%
0	32	10	5	18	17	12	23	13	32	15	43	23	42	24	50	16	58	58	24	42	24	42
0	68.1%	21.3%	10.6%	38.3%	36.2%	25.5%	48.9%	27.7%	68.1%	31.9%	65.2%	34.8%	63.6%	36.4%	75.8%	24.2%	87.9%	87.9%	36.4%	63.6%	36.4%	63.6%
0	9	0	0	3	6	0	3	6	9	0	15	13	13	15	24	4	27	27	5	23	4	24
0	100.0%	0.0%	0.0%	33.3%	66.7%	0.0%	33.3%	66.7%	100.0%	0.0%	53.6%	46.4%	46.4%	53.6%	85.7%	14.3%	96.4%	96.4%	17.9%	82.1%	14.3%	85.7%
0	20	7	0	22	5	0	20	7	17	10	27	8	24	11	16	19	21	21	14	21	16	19
0	74.1%	25.9%	0.0%	81.5%	18.5%	0.0%	74.1%	25.9%	63.0%	37.0%	77.1%	22.9%	68.6%	31.4%	45.7%	54.3%	60.0%	60.0%	40.0%	60.0%	45.7%	54.3%
0	6	0	0	4	2	0	4	2	5	1	7	1	6	2	5	3	7	7	2	6	2	6
0	100.0%	0.0%	0.0%	66.7%	33.3%	0.0%	66.7%	33.3%	83.3%	16.7%	87.5%	12.5%	75.0%	25.0%	62.5%	37.5%	87.5%	87.5%	25.0%	75.0%	25.0%	75.0%
0	2	0	0	2	0	0	2	0	2	0	2	0	2	0	2	0	2	2	0	1	1	1
0	100.0%	0.0%	0.0%	100.0%	0.0%	0.0%	100.0%	0.0%	100.0%	0.0%	100.0%	0.0%	100.0%	0.0%	100.0%	0.0%	100.0%	100.0%	50.0%	50.0%	50.0%	50.0%
0	3	0	0	1	2	0	2	1	1	2	7	0	7	0	5	2	6	6	1	6	2	5
0	100.0%	0.0%	0.0%	33.3%	66.7%	0.0%	66.7%	33.3%	33.3%	66.7%	100.0%	0.0%	100.0%	0.0%	71.4%	28.6%	85.7%	85.7%	14.3%	85.7%	28.6%	71.4%
0	275	38	5	145	161	12	173	134	138	180	352	84	309	127	335	111	317	317	139	297	184	252
0	86.5%	11.9%	1.6%	45.6%	50.6%	3.8%	54.4%	42.1%	43.4%	56.6%	80.7%	19.3%	70.9%	29.1%	74.5%	25.5%	72.7%	72.7%	31.9%	68.1%	42.2%	57.8%



Public Awareness Survey on Water & Sanitation

Table 20: Respondents by Willing to Pay for LWSC Services by Zones

Zones	Pipe Borne in House			Pipe Borne in Yard			Public Tap 500M			Public Tap Over 500M			Hand Pump 500M			Hand Pump over 500M			Trucking Service		
	Agree	Disagree	No response	Agree	Disagree	No response	Agree	Disagree	No response	Agree	Disagree	No response	Agree	Disagree	No response	Agree	Disagree	No response	Agree	Disagree	No response
0	36	2	0	36	2	0	22	16	0	12	26	0	25	13	0	10	28	0	8	30	
0	94.7%	5.3%	0.0%	94.7%	5.3%	0.0%	57.9%	42.1%	0.0%	31.6%	68.4%	0.0%	65.8%	34.2%	0.0%	26.3%	73.7%	0.0%	21.1%	78.9%	
0	26	0	0	25	1	0	14	12	0	6	20	0	14	12	0	5	21	0	7	19	
0	100.0%	0.0%	0.0%	96.2%	3.8%	0.0%	53.8%	46.2%	0.0%	23.1%	76.9%	0.0%	53.8%	46.2%	0.0%	19.2%	80.8%	0.0%	26.9%	73.1%	
0	27	4	0	26	5	0	17	14	0	8	23	0	13	18	0	4	27	0	2	29	
0	87.1%	12.9%	0.0%	83.9%	16.1%	0.0%	54.8%	45.2%	0.0%	25.8%	74.2%	0.0%	41.9%	58.1%	0.0%	12.9%	87.1%	0.0%	6.5%	93.5%	
0	16	1	0	16	1	0	10	7	0	7	10	0	3	14	0	1	16	0	4	13	
0	94.1%	5.9%	0.0%	94.1%	5.9%	0.0%	58.8%	41.2%	0.0%	41.2%	58.8%	0.0%	17.6%	82.4%	0.0%	5.9%	94.1%	0.0%	23.5%	76.5%	
0	24	0	0	22	2	0	12	12	0	9	15	0	14	10	0	5	19	0	8	16	
0	100.0%	0.0%	0.0%	91.7%	8.3%	0.0%	50.0%	50.0%	0.0%	37.5%	62.5%	0.0%	58.3%	41.7%	0.0%	20.8%	79.2%	0.0%	33.3%	66.7%	
0	18	5	0	19	4	0	14	9	0	14	9	0	12	11	0	8	15	0	9	14	
0	78.3%	21.7%	0.0%	82.6%	17.4%	0.0%	60.9%	39.1%	0.0%	60.9%	39.1%	0.0%	52.2%	47.8%	0.0%	34.8%	65.2%	0.0%	39.1%	60.9%	
0	16	2	0	16	2	0	13	5	0	8	10	0	8	10	0	8	10	0	7	11	
0	88.9%	11.1%	0.0%	88.9%	11.1%	0.0%	72.2%	27.8%	0.0%	44.4%	55.6%	0.0%	44.4%	55.6%	0.0%	44.4%	55.6%	0.0%	38.9%	61.1%	
0	8	4	0	8	4	0	7	5	0	4	8	0	6	6	0	6	6	0	5	7	
0	66.7%	33.3%	0.0%	66.7%	33.3%	0.0%	58.3%	41.7%	0.0%	33.3%	66.7%	0.0%	50.0%	50.0%	0.0%	50.0%	50.0%	0.0%	41.7%	58.3%	
0	16	3	0	16	3	0	16	3	0	12	7	0	11	8	0	9	10	0	8	11	
0	84.2%	15.8%	0.0%	84.2%	15.8%	0.0%	84.2%	15.8%	0.0%	63.2%	36.8%	0.0%	57.9%	42.1%	0.0%	47.4%	52.6%	0.0%	42.1%	57.9%	
0	16	0	0	16	0	0	16	0	0	15	1	0	13	3	0	12	4	0	14	2	
0	100.0%	0.0%	0.0%	100.0%	0.0%	0.0%	100.0%	0.0%	0.0%	93.8%	6.3%	0.0%	81.3%	18.8%	0.0%	75.0%	25.0%	0.0%	87.5%	12.5%	
0	32	10	5	33	9	5	21	13	13	18	17	12	23	13	11	22	25	11	32	15	
0	68.1%	21.3%	10.6%	70.2%	19.1%	10.6%	44.7%	27.7%	27.7%	38.3%	36.2%	25.5%	48.9%	27.7%	23.4%	46.8%	53.2%	23.4%	68.1%	31.9%	
0	9	0	0	8	1	0	4	5	0	3	6	0	3	6	0	2	7	0	9	0	
0	100.0%	0.0%	0.0%	88.9%	11.1%	0.0%	44.4%	55.6%	0.0%	33.3%	66.7%	0.0%	33.3%	66.7%	0.0%	22.2%	77.8%	0.0%	100.0%	0.0%	
0	22	7	0	24	5	0	25	4	0	24	5	0	22	7	0	18	11	0	19	10	
0	75.9%	24.1%	0.0%	82.8%	17.2%	0.0%	86.2%	13.8%	0.0%	82.8%	17.2%	0.0%	75.9%	24.1%	0.0%	62.1%	37.9%	0.0%	65.5%	34.5%	
0	6	0	0	6	0	0	5	1	0	4	2	0	4	2	0	4	2	0	5	1	
0	100.0%	0.0%	0.0%	100.0%	0.0%	0.0%	83.3%	16.7%	0.0%	66.7%	33.3%	0.0%	66.7%	33.3%	0.0%	66.7%	33.3%	0.0%	83.3%	16.7%	
0	3	0	0	2	1	0	2	1	0	1	2	0	2	1	0	1	2	0	1	2	
0	100.0%	0.0%	0.0%	66.7%	33.3%	0.0%	66.7%	33.3%	0.0%	33.3%	66.7%	0.0%	66.7%	33.3%	0.0%	33.3%	66.7%	0.0%	83.3%	16.7%	
0	275	38	5	273	40	5	198	107	13	145	161	12	173	134	11	115	203	11	138	180	
0	86.5%	11.9%	1.6%	85.8%	12.6%	1.6%	62.3%	33.6%	4.1%	45.6%	50.6%	3.8%	54.4%	42.1%	3.5%	36.2%	63.8%	3.5%	43.4%	56.6%	

Table 21: Number of Households by Quantity of Water Use Daily

Zone Code	Neighborhood	Description of Frequency	Quantity of Water in Gallons						Total Gallons	
			<15	15-20	25-30	35-40	45-50	55-60		65+
100	New Kru Town	Count	4	10	10	7	8	1	2	42
		Percent	9.5%	23.8%	23.8%	16.9%	19.0%	2.4%	4.8%	100.0%
200	Logan Town	Count	3	9	7	6	3	1	1	30
		Percent	10.0%	30.0%	23.4%	20.0%	10.0%	3.3%	3.3%	100.0%
300	Clara Town	Count	5	8	7	10	6	1	0	37
		Percent	21.6%	8.1%	18.9%	27.0%	16.2%	2.7%	0.0%	100.0%
400	West Point	Count	0	5	5	5	3	0	0	18
		Percent	0.0%	27.8%	27.8%	27.8%	16.7%	0.0%	0.0%	100.0%
500	Monrovia A	Count	1	5	8	4	4	1	1	24
		Percent	4.2%	20.8%	33.4%	16.6%	16.7%	4.2%	4.2%	100.0%
600	Monrovia B	Count	8	17	15	3	1	0	0	44
		Percent	18.2%	38.7%	33.1%	6.8%	2.3%	0.0%	0.0%	100.0%
700	Sinkor One	Count	4	10	8	0	2	1	0	25
		Percent	16.0%	40.0%	32.0%	0.0%	8.0%	4.0%	0.0%	100.0%
800	Sinkor Two	Count	1	12	3	2	0	0	0	18
		Percent	5.6%	66.6%	16.7%	11.1%	0.0%	0.0%	0.0%	100.0%
900	Old Road	Count	6	13	7	1	2	1	1	31
		Percent	19.4%	41.9%	22.6%	3.2%	6.5%	3.2%	3.2%	100.0%
1000	Congo Town	Count	1	8	6	2	3	0	1	21
		Percent	4.8%	38.1%	28.6%	9.5%	14.3%	0.0%	4.8%	100.0%
1100	Paynesville	Count	7	23	20	14	2	0	0	66
		Percent	10.6%	44.9%	30.3%	21.2%	3.0%	0.0%	0.0%	100.0%
1200	Gardnerville	Count	0	8	11	8	2	0	0	28
		Percent	0.0%	28.6%	39.3%	28.5%	7.2%	0.0%	0.0%	100.0%
1300	Bardnesville	Count	2	8	12	8	3	2	2	37
		Percent	5.4%	21.6%	32.4%	21.6%	8.1%	5.4%	5.4%	100.0%
1400	New Georgia	Count	0	1	1	3	1	0	0	6
		Percent	0.0%	16.7%	16.7%	33.3%	16.7%	0.0%	0.0%	100.0%
1500	Johnsonville	Count	0	1	1	0	0	0	0	2
		Percent	0.0%	50.0%	50.0%	0.0%	0.0%	0.0%	0.0%	100.0%
1600	Galdwell	Count	1	2	0	1	2	1	0	7
		Percent	14.3%	28.6%	0.0%	14.3%	28.6%	14.3%	0.0%	100.0%
Total		Count	44	139	121	74	41	9	8	436
		Percent	10.1%	21.9%	15.8%	17.0%	9.4%	2.1%	1.9%	100.0%

Table 21: Number of Households by Quantity of Water used Daily

Zones	Community	Quantity of Water in Gallons														Total
		5 gallons	10 gallons	15 gallons	20 gallons	25 gallons	30 gallons	35 gallons	40 gallons	45 gallons	50 gallons	55 gallons	60 gallons	65 gallons	Above 75 gallons	
100	New Kru Town	0	4	1	9	6	4	1	6	4	4	0	1	0	2	42
		0.0%	9.5%	2.4%	21.4%	14.3%	9.5%	2.4%	14.3%	9.5%	9.5%	0.0%	2.4%	0.0%	4.8%	100.0%
200	Logan Town	2	1	1	8	2	5	0	6	3	0	1	0	1	30	
		6.7%	3.3%	3.3%	26.7%	6.7%	16.7%	0.0%	20.0%	10.0%	0.0%	3.3%	0.0%	3.3%	100.0%	
300	Clara Town	0	5	3	5	2	5	2	7	1	5	0	1	0	36	
		0.0%	13.9%	8.3%	13.9%	5.6%	13.9%	5.6%	19.4%	2.8%	13.9%	0.0%	2.8%	0.0%	100.0%	
400	West Point	0	0	1	4	2	3	1	4	0	3	0	0	0	18	
		0.0%	0.0%	5.6%	22.2%	11.1%	16.7%	5.6%	22.2%	0.0%	16.7%	0.0%	0.0%	0.0%	100.0%	
500	Central Monrovia A	1	0	0	5	3	4	2	2	0	3	0	1	0	21	
		4.8%	0.0%	0.0%	23.8%	14.3%	19.0%	9.5%	9.5%	0.0%	14.3%	0.0%	4.8%	0.0%	100.0%	
600	Central Monrovia B	0	7	9	9	8	2	2	1	0	0	0	0	0	40	
		0.0%	17.5%	22.5%	22.5%	20.0%	5.0%	5.0%	2.5%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	
700	Sinkor 1	0	4	5	5	7	0	0	0	1	1	0	1	0	24	
		0.0%	16.7%	20.8%	20.8%	29.2%	0.0%	0.0%	0.0%	4.2%	4.2%	0.0%	4.2%	0.0%	100.0%	
800	Sinkor 2	0	1	4	8	2	1	0	2	0	0	0	0	0	18	
		0.0%	5.6%	22.2%	44.4%	11.1%	5.6%	0.0%	11.1%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	
900	Old Road	0	6	5	7	3	5	1	0	0	2	1	0	1	31	
		0.0%	19.4%	16.1%	22.6%	9.7%	16.1%	3.2%	0.0%	0.0%	6.5%	0.0%	0.0%	3.2%	100.0%	
1000	Congo Town	0	1	3	5	3	3	0	2	2	1	0	0	1	21	
		0.0%	4.8%	14.3%	23.8%	14.3%	14.3%	0.0%	9.5%	9.5%	4.8%	0.0%	0.0%	4.8%	100.0%	
1100	Paynesville	0	7	9	13	12	8	11	3	1	1	0	0	0	65	
		0.0%	10.8%	13.8%	20.0%	18.5%	12.3%	16.9%	4.6%	1.5%	1.5%	0.0%	0.0%	0.0%	100.0%	
1200	Gardnerville	0	0	4	4	9	3	6	2	0	1	0	0	0	29	
		0.0%	0.0%	13.8%	13.8%	31.0%	10.3%	20.7%	6.9%	0.0%	3.4%	0.0%	0.0%	0.0%	100.0%	
1300	New Georgia	0	2	4	4	7	5	1	6	1	1	0	2	0	35	
		0.0%	5.7%	11.4%	11.4%	20.0%	14.3%	2.9%	17.1%	2.9%	2.9%	0.0%	5.7%	0.0%	100.0%	
1400	Bardnerville	0	0	2	0	2	1	1	2	2	0	0	0	0	11	
		0.0%	0.0%	18.2%	0.0%	18.2%	9.1%	9.1%	18.2%	18.2%	0.0%	0.0%	0.0%	0.0%	100.0%	
1500	Johnsonville	0	2	0	0	0	3	0	0	0	0	0	0	0	5	
		0.0%	40.0%	0.0%	0.0%	0.0%	60.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	
1600	Caldwell	1	0	2	0	1	0	1	1	3	0	1	0	0	10	
		10.0%	0.0%	20.0%	0.0%	10.0%	0.0%	10.0%	10.0%	30.0%	0.0%	0.0%	0.0%	0.0%	100.0%	
Total		4	40	53	86	69	52	29	45	16	25	2	7	2	436	
		0.9%	9.2%	12.2%	19.7%	15.8%	11.9%	6.7%	10.3%	3.7%	5.7%	0.5%	1.6%	0.5%	100.0%	

**Table 22: Distribution of Households by Willing to Pay Additional Tariff for LWSC and Type of Services**

Zones	Pipe Borne in House	Pipe Borne in Yard	Public Tap 500M	Public Tap Over 500M	Hand Pump 500M	Hand Pump over 500M	Trucking Service
	Agree	Agree	Agree	Agree	Agree	Agree	Agree
100	36 94.7%	36 94.7%	22 57.9%	12 31.6%	25 65.8%	10 26.3%	8 21.1%
200	26 100.0%	25 96.2%	14 53.8%	6 23.1%	14 53.8%	5 19.2%	7 26.9%
300	27 87.1%	26 83.9%	17 54.8%	8 25.8%	13 41.9%	4 12.9%	2 6.5%
400	16 94.1%	16 94.1%	10 58.8%	7 41.2%	3 17.6%	1 5.9%	4 23.5%
500	24 100.0%	22 91.7%	12 50.0%	9 37.5%	14 58.3%	5 20.8%	8 33.3%
600	18 78.3%	19 82.6%	14 60.9%	14 60.9%	12 52.2%	8 34.8%	9 39.1%
700	16 88.9%	16 88.9%	13 72.2%	8 44.4%	8 44.4%	8 44.4%	7 38.9%
800	8 66.7%	8 66.7%	7 58.3%	4 33.3%	6 50.0%	6 50.0%	5 41.7%
900	16 84.2%	16 84.2%	16 84.2%	12 63.2%	11 57.9%	9 47.4%	8 42.1%
1000	16 100.0%	16 100.0%	16 100.0%	15 93.8%	13 81.3%	12 75.0%	14 87.5%
1100	32 68.1%	33 70.2%	21 44.7%	18 38.3%	23 48.9%	22 46.8%	32 68.1%
1200	9 100.0%	8 88.9%	4 44.4%	3 33.3%	3 33.3%	2 22.2%	9 100.0%
1300	22 75.9%	24 82.8%	25 86.2%	24 82.8%	22 75.9%	18 62.1%	19 65.5%
1400	6 100.0%	6 100.0%	5 83.3%	4 66.7%	4 66.7%	4 66.7%	5 83.3%
1600	3 100.0%	2 66.7%	2 66.7%	1 33.3%	2 66.7%	1 33.3%	1 33.3%
<b>Total</b>	275 86.5%	273 85.8%	198 62.3%	145 45.6%	173 54.4%	115 36.2%	138 43.4%

**Appendix Table 23: INCOME AND EXPENDITURES BY ITEMS AND ZONES**

ZONES	INCOME	SAVINGS	LOAN	Food	WATER	WASTE WATER	EDUCATION	TRANSPORTATION	HEALTH	RENT	CLOTHING	LIFESURE
100	Mode	1,000	200	9,000	600		475	1,800	250	400	900	500
	Minimum	700	200	300	20		200	180	100	200	450	50
	Maximum	72,575	25,000	5,200	21,000	3,500	15,000	15,000	5,000	4,000	37,800	15,000
200	Mode	6,000	3,000	9,000	450		750	500	1,000	250	1,500	500
	Minimum	0	1,000	800	20		350	250	50	250	1,000	150
	Maximum	97,930	20,000	14,550	19,530	6,400	48,780	14,400	2,100	6,000	24,000	4,000
300	Mode	7,000	1,000	9,000	600		500	500	300	250	3,000	500
	Minimum	700	100	600	10	25	125	250	50	250	600	100
	Maximum	100,000	25,000	9,000	18,000	9,000	75,000	9,000	2,500	6,000	18,000	1,500
400	Mode	10,000	800	5,000	450		1,000	300	500	600	3,000	2,000
	Minimum	1,500	800	700	30		125	200	250	300	2,000	500
	Maximum	31,000	15,500		12,000	2,000	8,000	4,000	1,500	3,000	10,000	3,000
500	Mode	10,000	5,000	9,000	125	1,200	150	300	500	600	6,000	800
	Minimum	6,450	500	100	80	100	150	175	125	500	150	250
	Maximum	49,000	10,000	3,000	12,000	4,500	10,000	12,600	8,000	9,000	10,200	2,500
600	Mode	12,000	1,000	500	150		450	1,000	200	600	8,000	500
	Minimum	2,000	200	500	20		133	100	120	400	500	60
	Maximum	39,266	60,000	10,400	8,750	900	9,600	8,000	2,000	3,000	15,000	3,500
700	Mode	5,000	0	2,500	0	0	150	0	0	0	1,200	0
	Minimum	5,000	0	1,350	0	0	150	0	0	0	360	0
	Maximum	33,715	12,400	9,000	18,600	625	6,000	4,650	2,000	3,600	16,000	3,000
800	Mode	1,200	1,000	5,000	100		400	500	2,000	450	1,000	200
	Minimum	1,200	300	300	100		400	260	300	450	1,000	170
	Maximum	28,330	9,000	12,880	3,000		5,000	25,000	15,000	9,000	7,200	1,800
900	Mode	2,400	1,000	50	6,000	50	700	500	600	600	2,000	500
	Minimum	2,400	150	50	600	15	150	150	75	250	600	100
	Maximum	40,250	2,250	900	50,000	5,000	7,125	6,000	18,000	4,500	6,700	5,000
1000	Mode	5,340	1,000	100	150		125	200	300	200	1,200	375
	Minimum	5,340	10	500	100	40	125	120	100	200	1,000	100
	Maximum	35,600	6,000	6,780	12,400	1,500	32,000	3,000	3,100	940	15,000	12,000

Public Awareness Survey on Water & Sanitation

1100	Mode	15,000	2,000	500	4,000	50		1,500	1,500	500	600	2,500	400
	Minimum	15	300	500	1,500	25		60	180	100	350	100	100
	Maximum	41,380	6,000	4,500	30,000	1,500		10,100	12,000	5,840	5,000	26,000	2,500
1200	Mode	18,000	1,000	600	4,000	150		5,000	1,500	460	500	3,000	500
	Minimum	1,550	500	600	1,500	50		200	500	160	500	950	100
	Maximum	90,000	20,000	7,000	9,000	2,000		10,200	32,000	19,000	9,100	20,000	4,000
1300	Mode	9,000	500	120	3,500	50		1,300	1,500	400	450	3,000	200
	Minimum	1,100	250	120	880	25		225	175	75	275	920	100
	Maximum	43,800	6,000	1,500	35,000	2,000		11,400	18,000	3,700	7,500	12,400	6,000
1400	Mode	4,000	1,000	1,500	6,000	50		250	2,000	300	5,200	3,500	300
	Minimum	4,000	1,000	1,500	1,200	50		250	400	300	5,200	300	300
	Maximum	78,000	5,000	1,800	7,400	500		9,500	3,500	2,500	5,200	10,000	2,300
1500	Mode	4,000			1,200			250	400	300		300	300
	Minimum	4,000			1,200			250	400	300		300	300
	Maximum	15,000			4,000			2,000	2,000	500		3,500	300
1600	Mode	36	3,000	1,000	1,000	50		500	300	750	600	2,000	300
	Minimum	36	3,000	1,000	1,000	50		500	300	750	600	2,000	300
	Maximum	58,900	36,630	5,000	8,000	8,000		10,000	5,200	3,000	5,100	21,000	2,100

Zone	Community name	Serial No.
100 (New Kru Town)	Bong Mines Bridge	1
	Central New Kru Town	2
	Crab Hole	3
	Duala Market	4
	Duala Mambo Town East	5
	Foundaye	6
	Lagoon East	7
	Lagoon West	8
	Monboe Town West	9
	Nyuan Town	10
	Point Four	11
	Popo Beach (A)	12
	Popo Beach (B)	13
	Tweh Farm	14
Blamo Town	15	
200 (Logan Town)	Central Logan Town	16
	Gbandi Town	17
	Jaimaca Road	18
	King Peter Town	19
	Little White Chapel	20
	Stockton Creak	21
	Vicky Spot	22
	Zinc Camp	23
	Zondo Town	24
	Central Clara Town (i)	25
	Central Clara Town (ii)	26
	Cow Factory	27
	Free port Development	28
	Giblata	29
300 (Clara Town)	Hope Community	30
	Paity Town	31
	Peugeot Garage	32
	River View	33
	Struggle Community	34
	Vai Town (A)	35
	Vai Town (B)	36
	Central West Point	37
	West Point	38
	Fish Town	39
	Grandcess Yard	40
	Police Station	41
	Power Plant	42
	West Point	43
400 (West Point)	Centennial Area	44
	Lynch/Center Street	45
	Mamba Point	46
	Randall/Lynch Street	47
	Randall/New Port Street	48
	Rock Crusher	49
	Snapper Hill	50
500 (Central Mon) (i)		

600 (Central Mon. (ii))	Sport Commission	51
	Bassa Community	52
	Barnard Quarters	53
	Bishop Brooks	54
	BTC Area	55
	Buzzi Quarters	56
	Capitol Hill	57
	Crown Hill	58
	Jallah Town	58
	Maternity Community	60
	Rock Spring Valley	61
	Slip Way	62
	Soniwein	63
	Warwein	64
Cooper Clinic	65	
700 (Sinkor) (i)	Fiama	66
	Fiama	67
	Fish Market	68
	ICA Camp	69
	Ocean View	70
	Plumkor	71
	Pyne People	72
	Saye Town	73
	Central Lakpazee	74
	Fiama East	75
800 (Sinkor) (ii)	Gbangaye Town	76
	New Matadi	77
	Old Matadi	78
	Raymond Field	79
	Wroto Town	80
	Catholic Hospital	81
	Chugbor	82
	Divine Togba Town Camp	83
	Gaye Town Community	84
	Key & Death Hole	85
900 (Old Road)	Nippay Town	86
	Smythe Road	87
	Tarr Town	88
	Yekpee Town	89
	Barchun Town	90
	Congo Town old Road	91
	Paynesvillie Logan Town	92
	Oldest Congo Town	93
	Pagoes Island	94
	Peace Island	95
1000 (Congo Town)	Swan Kamora	96



	72 <sup>nd</sup> Community	97
	AB Tolbert Road	98
	Barnard Farm	99
	Bassa Town	100
	Double Bridge	101
	Duport Road N/East	102
	Duport Road North	103
	Duport Road South	104
	GSA Road Rockville	105
	Jacob Town	106
1100 (Paynesville)	Kemah Jeh	107
	King Gray ELWA	108
	Kpelleh Town	109
	Morris' Farm	110
	Nee Zoe	111
	Paynesville Joe Bar	112
	Pipe Line	113
	Police Academy	114
	Red Light	115
	Rehab/Borbor Town	116
	Rock Hill	117
	S. D. Cooper Road	118
	Soul Clinic	119
	Town Hall	120
	Wood Camp	121
	Zinc Factory	122
	1200 (Gardnesville)	Bardnersville Road
Chicken Soup Factory		124
Day Break Mouth Open		125
Grass Field		126
J.E. Marshall		127
JJY/Show Hill		128
Kesselly Boulevard		129
L.River View		130
Margrove Island		131
MTA		132
1300 (New Georgia)	Shoe Factory	133
	Stephen Tobert Estate	135
	Bassa Town	136
	Battery Factory	137
	Chocolate City (A)	138
	Chocolate City East	139
	Flahn Town	140
	Iron Factory	141
	New Georgia	142
	New Georgia Estate	143
1400 (Barnesville)	SOS Transit	145
	Topoe Village	146
	Barnesville Estate	147
	Barwein Community	148

1500 (Johnsonville)	Dabwe Town	149
	Duan Town	150
	Johnsonville Road (A)	151
	Johnsonville Road (B)	152
	Kaba Town	153
	Old Field South	154
	Johnsonville Road	155
	Caldwell Community	155
	Caldwell Market	156
	Cassava Hill #2	157
1600 (Johnsonville)	Central Caldwell	158
	Dixville	159
	Dixville Waterside	160
	New Georgia Road	161
	Samukai Town	162
	Upper Caldwell-A	163
	Upper Caldwell-B	164
	Lower Caldwell	164



## The Master Plan

### STUDY ON URBAN FACILITIES RESTORATION AND IMPROVEMENT IN MONROVIA, LIBERIA

#### WATER AND SANITATION AWARENESS SURVEY

#### HOUSEHOLD QUESTIONNAIRE

#### INTRODUCTION

Hello, my name is \_\_\_\_\_ I have come from Subah-Belleh Associates (SBA) to do a study for the Japan International Cooperation Agency (JICA). JICA has contracted SBA to conduct survey in Monrovia. The objective of the survey is to assess the level of awareness about water and sanitation among residents of Monrovia.

JICA is the government of Liberia to restore and improve the water and sewer system for the benefit of all. SBA has come to gather information from your household that will help JICA understand your needs and plan better for the assistance it wants to provide. Your household is selected using a method that will avoid personal interest in selecting the sample households.

The interview will take around 30 minutes. Any information you will provide during this interview will be kept confidential. It will be combined with the information gathered from all the other respondents.

Do you have any question? If no question, can we begin the interview?

#### Section 1: IDENTIFICATION

STARTING TIME: \_\_\_\_\_

INTERVIEWER'S NO.		FIELD NO.	
DATE OF INTERVIEW		HOUSEHOLD No.	
ZONE/DISTRICT	COMMUNITY	AREA	

**Section 2: DEMOGRAPHIC INFORMATION**

**2-A Respondent**

2A-1. Relationship to Head of Household (If Household head skip 2B1 and 2B2)	Head	= 1	
	Spouse	= 2	
	Child	= 3	
	Other relative	= 4	
	Sibling	= 5	
2A-2. Sex	Male	= 1	
	Female	= 2	
2A-3. Age	Age must be recorded in 2 digits and in complete years		

**2-B Head of Household**

2B-1. Sex	Male = 1 Female = 2	
2B-2. Age	Age must be recorded in 2 digits and complete years	
2B-3. Occupation	Farming = 1 Teacher = 2 Salary profession = 3 Wage labor = 4 House wife = 5	Student = 6 Too young = 7 Others = 8 None = 9
2A-4. Employment Status	Employed = 1 Self employed = 2 Unemployed = 3	
2A-5. Educational Level	No formal education = 1 = 4 Elementary = 2 = 5 Jr. high = 3 = 6	Sr. high College Other forms of education

**2-C Household**

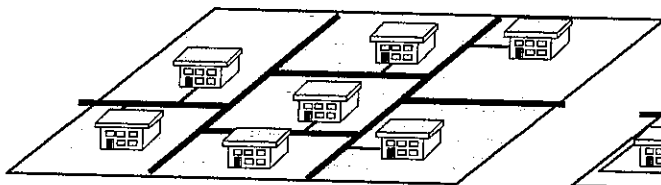
**2C-1. How many persons live in this household?**

<b>Age 18 &amp; above</b>	
Males	
Females	
<b>Age 17 years &amp; below</b>	
Males	
Females	
<b>Total Person</b>	
Males	
Females	
<b>Both Sexes</b>	

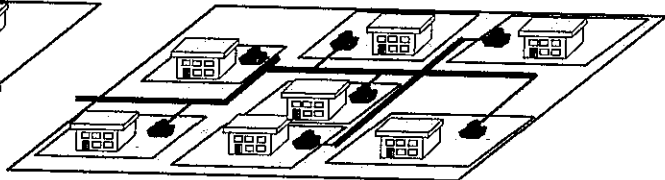
### Section 3: HOUSING

3A. Under what arrangement does your household lives in this house?	Own house	=	1	
	Rented /leased	=	2	
	Not owned, but free	=	3	
	Other specify	=	4	
3A-1. Other Specify				
3C. How long has your household lived in this present community?	(Enter only two digit number)			

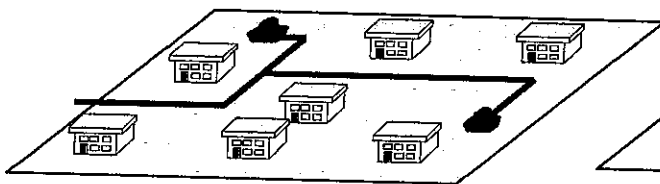
### Section 4: Water Supply



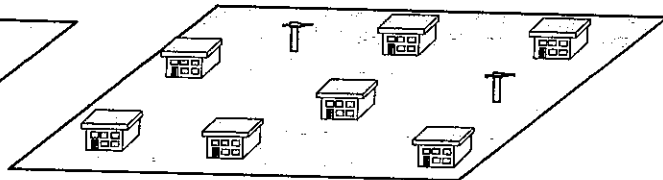
House connections



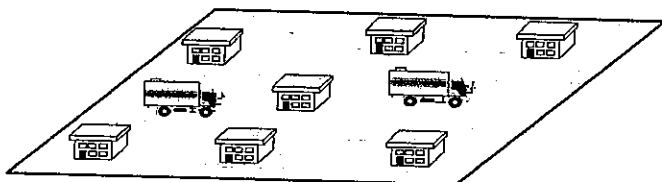
Yard connections



Public taps



Hand pump



Water Truck

Public Awareness Survey on Water & Sanitation

4A. What is/are the source(s) of water for your household? (Multiple responses)	Pipe born in house	=	1	
	Pipe born in yard	=	2	
	Pipe borne in community/ public taps	=	3	
	Hand pump in yard	=	4	
	Public hand pump	=	5	
	Rain harvest	=	6	
	Running water	=	7	
	Water truck/push-push	=	8	
	Others	=	9	
4B. What is the main source of drinking water? (Single response) if option 4-9 skip to 4F	Pipe born in house	=	1	
	Pipe born in yard	=	2	
	Pipe borne in community/ public taps	=	3	
	Hand pump in yard	=	4	
	Public hand pump	=	5	
	Rain harvest	=	6	
	Running water	=	7	
	Water truck/push-push	=	8	
	Others	=	9	
4C. If the answer to question 4-B is pipe borne in house, pipe borne in yard, public taps, how is the water flow (pressure) at the time water is available?	Water flows with high pressure	=	1	
	Water flows with normal pressure	=	2	
	Water flows with somewhat pressure	=	3	
	Water flows with very low pressure	=	4	
4D. If the answer to question 4-B is, pipe borne in house, pipe borne in yard, public taps, water trucks, are you satisfy with the time water is supplied to you?	Satisfied	=	1	
	Not satisfied	=	2	
4E. If the answer to question 4-B is, pipe borne in house, pipe borne in yard, public taps, water trucks, push-push, how long is water available to your family?	Always	=	1	
	More than 6 hrs./day	=	2	
	4 - 6 hrs./day	=	3	
	1 - 3 hrs./day	=	4	
	< 6 hrs every Other day	=	5	
	> 6 hrs every other day	=	6	
	Once/week	=	7	
4F. If the answer to question 4-B is, pipe borne in yard, public taps, water trucks, hand pump, how much minutes do you spend a day fetching water once from your source?	5 - 10 minutes	=	1	
	10 - 20 minutes	=	2	
	20 - 30 minutes	=	3	
	Above 30	=	4	
4F-b. How many times a day does your household go to fetch water from the water source?				
4G. How many gallons of water does your family use a day?	Please record quantity in gallons			
4H. How sufficient is the water available to your family daily?	Sufficient	=	1	
	Not sufficient	=	2	
4I. If the answer to the question, 4-H, is "not sufficient", how much more water does your family need daily?	The quantity must be recorded in gallons			
4J. If public taps are provided by LWSC in your community, would you want to use it?	Yes	=	1	
	No	=	2	

**Ask only if main source pipe borne water/taps**

4K. If the main source of water to your household are, pipe borne in house, pipe borne in yard, public taps, how much are you currently paying per month?	Record amount in Liberian Dollar	
4L. If your household can be provided with pipe borne water in your house, would you agree/disagree to pay more than you are paying now for water? (if option 2 skip to 4N)	Agree = 1 Disagree = 2	
4M. If your answer to question 4-L is "agree" how much would you agree to pay per month?	Record amount in Liberian Dollar	
4N. If your household can be provided with pipe borne water connection in your yard, would you agree/disagree to pay additional cost to your present water tariff? (if option 2 skip to 4P)	Agree = 1 Disagree = 2	
4O. If your answer to question 4-N is "agree" how much would you agree to pay per month?	Record amount in Liberian Dollar	
4P. If your household can be provided with public taps in 500 meter or less from your house, would you agree/disagree to pay additional cost to your present water tariff? (if option 2 skip to 4R)	Agree = 1 Disagree = 2	
4Q. If your answer to question 4-P is "agree" how much would you agree to pay per month?	Record amount in Liberian Dollar	
4R. If your household can be provided with public taps over 500 meter from your house, would you agree/disagree to pay additional cost to your present water tariff? (if option 2 skip to 4T)	Agree = 1 Disagree = 2	
4S. If your answer to question 4-R is "agree" how much would you agree to pay per month?	Record amount in Liberian Dollar	
4T. If your household can be provided with hand pump in 500 meter or less from your house, would you agree/disagree to pay additional cost to your present water tariff? (if option 2 skip to 4V)	Agree = 1 Disagree = 2	
4U. If your answer to question 4-T is "agree" how much do you agree to pay per month?	Record amount in Liberian Dollar	



4V. If your household can be provided with hand pump over 500 meter from your house, would you agree/disagree to pay additional cost to your present water tariff? (if option 2 skip to 4X)	Agree = 1 Disagree = 2	
4W. If your answer to question 4-V is "agree" how much would you agree to pay per month?	Record amount in Liberian Dollar	
4X. If your household can be provided with water by means of trucking, would you agree/disagree to pay additional cost to your present water tariff? (if option 2 skip to 4Z)	Agree = 1 Disagree = 2	
4Y. If your answer to question 4-X is "agree" how much would you agree to pay per month?	Record amount in Liberian Dollar	
4Z. Are you willing to participate in activities such as management of public taps of hand pumps?	Yes = 1 No = 2	

## Section 5: SANITATION

5A. Which type of toilet does your household use currently?	Flush toilet = 1 Pour = 2 Pit latrine = 3 Ventilated improved pit = 4 Others = 5 None = 6	
5B-a. Where is the location of the toilet?	Inside house private = 1 Inside house public = 2 outside the house (private) = 3 outside the house (public) = 4	
5B-b. If your answer to 5B-a is inside house public, how many households use it?	Please enter number of households	
5C. Which types of sanitation system do you have?	Sewer connection = 1 Septic tank = 2 Pit latrine = 3 No sanitation facilities = 4	
5D. Do you think the water source should be maintained?	Yes = 1 No = 2	
5E. If question 5-D is yes, do you think the sewer system or septic tank should be established or improved for water conservation?	Yes = 1 No = 2	

5F. How much does your household pay for waste water disposal per month?	Record amount in Liberian Dollar	
5G. Are you currently satisfy/dissatisfy with the access of the sewerage and septic tank facilities in your area? (if satisfy skip to 5I)	Satisfied = 1 Not satisfied = 2	
5H. If the answer to question 5-G is "dissatisfy", why are you dissatisfy?	Long distance = 1 Untidiness = 2 Other = 3	
5I. If LWSC provides sewerage and it maintenance service; would you like to use it? (if No skip to 5K)	Yes = 1 No = 2	
5J. Even if Liberia Water and Sewer Corporation (LWSC) increases your sewerage tariff, would you like to use it?	Yes = 1 No = 2	
5K. If "No", and LWSC provides septic tanks and its maintenance services to you, would you like to use the septic tank? (if No skip to 5M)	Yes = 1 No = 2	
5L. Even if LWSC increases your tariff for septic-tanks, would you like to use it? (if Yes skip to 5N)	Yes = 1 No = 2	
5M. If "No to question 5-L", and LWSC provides pit latrine and its maintenance services to you, would you like to use it? (if No skip to 5O)	Yes = 1 No = 2	
5N. Even if LWSC increase the tariff for pit latrine would you be willing to use it?	Yes = 1 No = 2	
5O. If your household can be provided with sewerage and maintenance services would you agree/disagree pay for it? (if disagree skip to 5Q)	Agree = 1 Disagree = 2	
5P. If answer to question 5-O is "agree", how much would you be willing to pay monthly for wastewater disposal?	Record amount in Liberian Dollar	
5Q. If your household can be provided septic-tank and its maintenance services would you agree/disagree to pay for it? (if Disagree skip to 5S)	Agree = 1 Disagree = 2	
5R. If your answer is "agree" to question 5-Q, how much would you be willing to pay?	Record amount in Liberian Dollar	
5S. If your household can be provided pit-latrine	Agree = 1	

and its maintenance services would you agree/disagree to pay for it? (if Disagree skip to 5U)	Disagree = 2	
---	--------------	--

5T. If your answer is "agree" to question 5-S, how much would you be willing to pay?	Record amount in Liberian Dollar	
--	----------------------------------	--

5U. If public toilet is constructed in your area, will you be willing to use it?	Yes = 1	No = 2	
--	---------	--------	--

5V. Are you willing to participate in the management activities of public sanitation facilities?	Yes = 1	No = 2	
--	---------	--------	--

### Section 6: WATER BORNE DISEASES AND MEDICAL EXPENSES

6A. Has anybody suffered from any disease due to drinking water in your household in the past six months? (if No skip to 7A)	Yes = 1	No = 2	
--	---------	--------	--

6B. If "yes", which disease (s) did they suffer from? (multiple response)	Diarrhea	= 1	
	Dysentery	= 2	
	Skin disease	= 3	
	Malaria	= 4	
	Cholera	= 5	
	Enteric fever	= 6	
	Dengue	= 7	
	Others specify	= 8	

6C. If your answer to 6-A is yes, how much medical expenses did your household spend in the past 6 months?	Record amount in Liberian Dollar	
--	----------------------------------	--

### Section 7: HOUSEHOLD INCOME AND EXPENDITURE

7A. How many people in your household earn wages/salary?		
--	--	--

7B. How much money comes in your household within a month?	Record amount in Liberian Dollar	
--	----------------------------------	--

7C. From the household monthly income, how much does your household save in a month?	Record amount in Liberian Dollar	
--	----------------------------------	--

7D. From the household monthly income, how much did you pay back on loan for any of	Record amount in Liberian Dollar	
---	----------------------------------	--

your household members in a month?		
------------------------------------	--	--

7E. From the household monthly income, how much does your family spend for food in a month?	<i>Record amount in Liberian Dollar</i>	
---	---	--

7F. From the household monthly income, how much does your family spend for water in a month?	<i>Record amount in Liberian Dollar</i>	
--	---	--

7G. From the household monthly income, how much does your family spend on wastewater disposal in a month?	<i>Record amount in Liberian Dollar</i>	
---	---	--

7H. From the household monthly income, how much does your family spend on education in a month?	<i>Record amount in Liberian Dollar</i>	
---	---	--

7I. From the household monthly income, how much does your family spend on transportation in a month?	<i>Record amount in Liberian Dollar</i>	
--	---	--

7J. From the household monthly income, how much does your family spend on health in a month?	<i>Record amount in Liberian Dollar</i>	
--	---	--

7K. From the household monthly income, how much does your family spend on house rent in a month?	<i>Record amount in Liberian Dollar</i>	
--	---	--

7L. From the household monthly income, how much does your family spend on Clothing in the last six (6) months?	<i>Record amount in Liberian Dollar</i>	
--	---	--

7M. From the household monthly income, how much does your family spend on leisure in a month?	<i>Record amount in Liberian Dollar</i>	
---	---	--

ADMINISTRATIVE ITEMS:

ENUMERATOR'S NAME: \_\_\_\_\_ SIGNATURE: \_\_\_\_\_

SUPERVISOR'S NAME: \_\_\_\_\_ SIGNATURE: \_\_\_\_\_