

## Water Vending in Nigeria - A Case Study of Festac Town, Lagos, Nigeria

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**Abstract** In most developing countries, it has been recognized that conventional water utilities have fallen short in providing adequate water services to populations. Festac Town, Lagos, Nigeria is a typical community that is presently not being serviced by such water utilities due to the inability of the Water Supply Agency (WSA) in supplying water to the area. Households therefore seek other alternative sources including water vending. This paper examined the role of water vending in household water supply delivery in this community. It identified the sources of water supply by the vendors, assessed their level of patronage among households and identified the problems associated with their operations. For the study, a total number of 1,139 and 57 households and vendors were selected by simple random sampling respectively. The result showed that there are two main categories of water vending namely; formal and informal vendors. All formal vendors obtain their supplies from improved sources while most informal vendors obtain theirs from unimproved sources. Majority of the households consider vended water as a coping strategy since they are aware of the safety implications. Therefore, most households are willing to pay for water services. The paper canvassed the need for government to recognize the role of water vending in water delivery. It advocated for a secondary level of supply mechanism among vendors in a bid to ensure quality water supply. The paper concluded that the most sustainable strategy would be to resuscitate the moribund piped water supply system earlier initiated by the WSA.

**Keywords:** water vending, formal water vendor, informal water vendor,

### 1. Introduction

At the U.N. Millennium Summit in 2000 and subsequently at the Johannesburg Earth Summit in 2002, world leaders agreed to a set of time-bound and measurable development targets—widely known as the Millennium Development Goals for 2015—which include a commitment to halve the proportion of people without access to safe drinking water (UNDP, 2003). From a total access of 77% in 1990, today, the World population's access to improved water has increased to 87% (WHO and UNICEF, 2010). Paradoxically, in Nigeria, only 58% access to improved water is currently recorded. This represents a slight growth in access from 1990 when the proportion was 47% (WHO and UNICEF, 2010). It has been confirmed that not all improved sources of water are safe. In general, only piped water is usually regarded as safe (Sullivan, et al, 2003). When this factor is considered only 30% of the world population has access to safe source of water. Ironically, in Nigeria, only 6% of the population has access to such source (WHO and UNICEF, 2010). In this country, rapid population growth has not been accompanied by an increase in the delivery of essential urban services including water. Thus, there has been a widespread recognition and acceptance that conventional water utilities have fallen short in providing adequate water services to populations especially the urban poor. In general, most communities in the country are presently not serviced or at best under-serviced by water utilities due to the inability of the designated WSA to meet their needs. Households therefore seek other alternative sources which in most cases are unsafe. Prominent among these sources is water vending.

Water vending is usually formal or informal. It is formal when it is undertaken by formal bodies, such as water utilities themselves or registered associations, or by small scale informal supplies. Formal vendors generally supply water in tankers and the water is obtained either from treated utility supplies or from registered sources. On the other hand, informal vendors obtain water from many different sources, protected and unprotected and deliver small quantities of water for domestic use in a variety of ways ranging from carts and cycles to containers or wheel barrows, trolleys and animal-drawn or mechanized carts and tanker trucks.

The most important advantage of informal water vending is that households who are unable to buy water connections and set aside larger quantities of money to pay bills are able to purchase small quantities of water on a daily basis according to what they can afford. On the other hand, informal vending draws attention to the deficiencies of public utilities and emphasizes the failure of these utilities to meet the water need of the population. In general, vended water is common in many parts of the world where scarcity of supplies or lack of infrastructure limits access to suitable quantities of drinking-water (WHO and UNICEF, 2000). However, the greatest challenge to water service delivery through this mode is the quantity and quality of supplies. Vended water has been associated with outbreaks of diarrhea disease as some of the vended water is obtained directly from unprotected source such as unprotected wells and surface water including rivers/streams, ponds and canals etc (WHO, 2006).

Whittington et al (1989), in a study of water vending in Onitsha, Nigeria, observed that most households obtains their water supplies from well-organized water vending system that is operated by the private sector. In this city, on annual basis, households pay water vendors over twice the cost of piped water. A similar study carried out in Kaduna and Katsina, Nigeria shows that vendors charge as much as 20 times the unit rate of the respective State Water Agencies (FRN, WSS, 2000). In general, the poorest families pay more per month than some of the richest who can afford a connection to their compound or house. The amount, for a very limited volume of supply from private water vendors, can be four to ten times that of one month's continuous tap supply from the utility (Whittington et al, 1989). Adekalu et al (2002) in a study of four cities in southwest Nigeria observed that the adoption of other main sources of households including vended water is a means of supplementing the inadequacy arising from the failed piped water system. Akpan (2005) observed that most households in Apapa/Iganmu, Alimosho, Shomolu and Ajeromi/Ifelodun areas in Lagos depend on vended water. Specifically, in Ajeromi/Ifelodun with a population of over one million, 83% of the households rely on vended water. Since it is becoming obvious that it is unlikely that water agencies will succeed in providing adequate and safe water to households, Ishaku (2010) calls for independent surveillance to ensure the safety of vended water. To implement this, he advocated for official registration of all vendors.

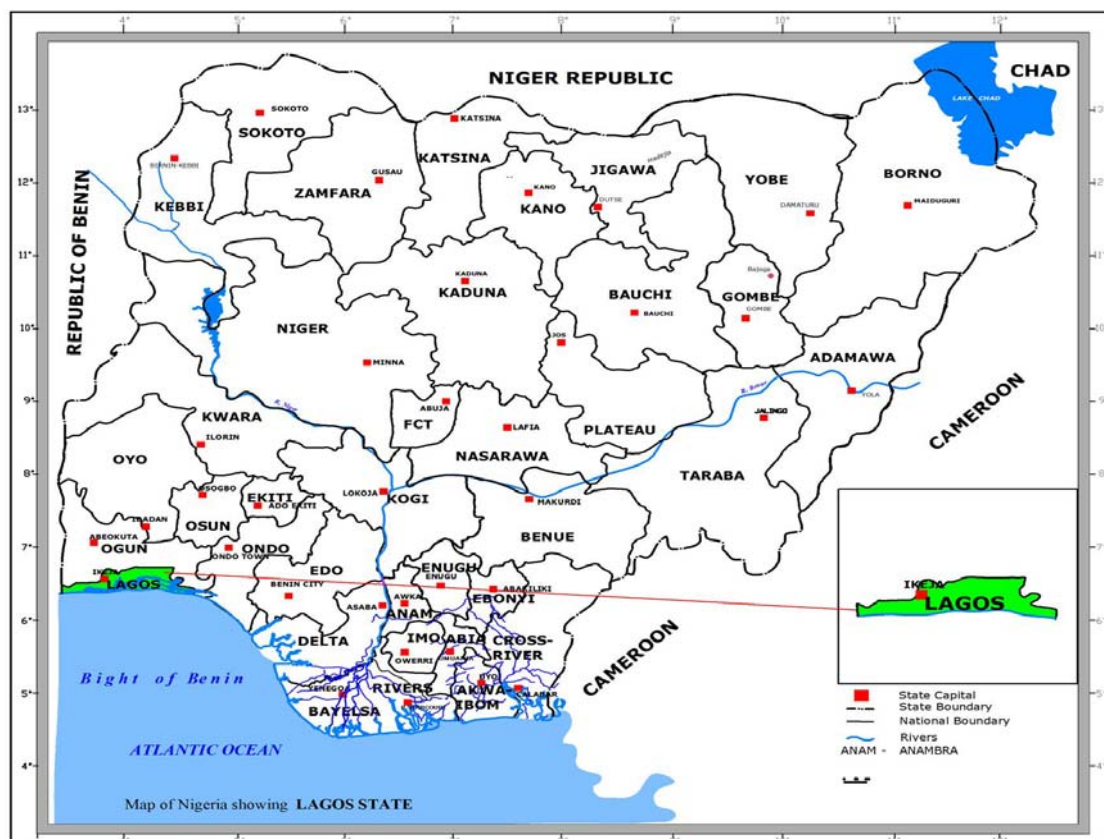
The research examined the activities of water vendors in Festac Town, Lagos, Nigeria; a community that is completely not currently being served by public water services being provided by the WSA. It is envisaged that the community might have to wait more than expected before it could access water facility being provided by this agency. It therefore becomes imperative for the water vendors to be strengthened for improved service delivery. Consequently, the study identified the source of water supply by the vendors, assessed the level of patronage of vended water and identified the problems associated with water vending.

## **2. Material and Method**

The study area, Festac Town, Lagos, Nigeria is roughly defined by UTM-31 coordinates 533409E, 713989N; 531727E, 718231N; 527512E, 718017N; and 528295E, 713512N (Fig. 1). It is located some 10 km south west of Central Lagos. Its name was derived from the acronym FESTAC which stands for Second World African Festival of Arts and Culture that was held in 1977. Specifically, the Town was designed as a residential estate to house the participants of the festival (Apter, 2005). Coastal Nigeria is made up of two sedimentary basins: The Benin basin and the Niger Delta basin. Festac Town falls within the Benin basin.

With its high water table level, the basin is usually associated with salt water intrusion. Such intrusion from the Atlantic Ocean has caused untold hardship to habitats and inhabitants of the coastal areas of the country. Lagos has a tropical savanna climate that is associated with double maxima rainfall from April to

**Fig. 1. Lagos State in Nigeria**



July and October to November. Dry season is accompanied by harmattan winds from the Sahara Desert, which occurs between December and early February. The average temperature in January is 27°C (79°F) and for July it is 25°C (77°F). On average the hottest month is March; with a mean temperature of 29°C (84°F); while July is the coolest month. Again, there is an increasing pressure on the ground water reserves of the state as a result of massive influx of people from other parts of Nigeria to Lagos metropolis.

The research population is the total number of households and water vendors in FESTAC Town. The town has an estimated population of 372,205 as projected from the 2006 figure of 328,975 (Nigerian Population and Housing Census, 2006). It has 7 major Avenues. Considering the homogeneity of the population, the Town was stratified for sampling purpose in accordance with the existing Avenues. Therefore, 3 Avenues were randomly chosen for the study. It is also assumed that each Avenue has equal population. This puts the population of each Avenue at 53,172. For the 3 chosen Avenues, the population is estimated at 159,516. An average family size in Nigeria has been estimated at 7 (Fasakin, 2000; Olajuyigbe, 2010). This implies that there are 22,788 households in the 3 Avenues. For this research, a sample size of 1,139 amounting to 5% of the total number of households in the 3 Avenues were considered. A simple random sampling technique was adopted in the choice of households to be interviewed in each Avenue respectively. In the case of water vendors, 10 out of the 27 registered vendors were selected for the study.

From our interaction with some informal vendors, it was gathered that there are about 135 informal vendors in the study area out of which 47 were selected. To further avoid bias, questionnaires were administered on these randomly selected water vendors in all the major avenues in the study area.

**Fig. 2. The various Avenues in Festac Town, Lagos, Nigeria**



The Lagos State Water Corporation is saddled with the task of meeting the water supply needs of the inhabitants of Lagos State, including Festac Town. Although linked with the water main from this Corporation, water release to the community has ceased several years back. Most people therefore rely on other sources of water supply. Prominent among these sources is the vended water source. The implications of this on human health are obvious.

### 3. Results and Discussion

Two main categories of water vendors were identified in the study area. They include formal and informal vendors. Formal vendors are licensed by the National Agency for Food and Drug Administration and Control (NAFDAC). They are more organized in the delivery of their services. To obtain operating license from NAFDAC, they pay about USD1,3000. Water produced by these vendors is usually treated in a decent environment. Apart from supplying water for commercial and domestic uses, they are also involved in the production of bottled and sachet water. In addition, they have lined up taps where individuals and some informal vendors fetch water on a commercial basis. They also have tanker trucks that convey water to other end users. The source of their water is not affected by variation in season as they largely depend on boreholes. On the other hand, the informal vendors are characterized of poor capital outlay. Their main source of water supply is usually from the unimproved sources. Supplies are done with the aid of carts and hand held cans. However, another emerging category of distributors are the re-distributors to formal vendors. They are easily identified by their 2,000-litre blue or black plastic tanks. The tanks are either single or double stationed at residential locations. For the purpose of this study, this category of vendors is considered as informal.





**Plate 1:** A typical sales point of a formal water vendor



**Plate 2:** An overhead water tank servicing the a formal water vendor



**Plate 3:** A typical 1-tank re-distributor sales point



**Plate 4:** A typical 2-tank re-distributor sales point

All the formal vendors obtain their water from boreholes (100%) which are more secured and hygienic (Table 1). They get it delivered using organized tankers that delivered water to sales point. Households come to buy the water from these sales points. Formal vendors have their individual connection and do not rely on supply from any government agencies. On the other hand, 66.0% of informal vendors obtain their water from unprotected surface wells and get it delivered through the use of carts and shoulder held cans. 2.1% relies on water from utility pipes from neighboring communities. This source is generally inefficient as supplies from them are unreliable. 4.2% and 8.5% depend on boreholes and tanker trucks from the formal vendors. These sources attract payment of fees. The concern here is the large proportion of the informal vendors that obtain their water from uncovered well which had been defined as unimproved source (WHO and UNICEF, 2010). Consumers patronizing these vendors are therefore susceptible to water borne diseases.

**Table 1. Vendors' main source of water supply**

| Source         | Formal    |     | Informal  |      |
|----------------|-----------|-----|-----------|------|
|                | Frequency | %   | Frequency | %    |
| Covered well   | 0         | 0   | 9         | 19.1 |
| Uncovered well | 0         | 0   | 31        | 66.0 |
| Borehole       | 10        | 100 | 2         | 4.2  |
| Piped water    | 0         | 0   | 1         | 2.1  |

|                                 |           |            |           |              |
|---------------------------------|-----------|------------|-----------|--------------|
| Surface water                   | 0         | 0          | 0         | 0.0          |
| Tanker truck<br>(Formal source) | 0         | 0          | 4         | 8.5          |
| <b>Total</b>                    | <b>10</b> | <b>100</b> | <b>47</b> | <b>100.0</b> |



**Plate 5:** A typical uncovered well from where informal vendors obtain water



**Plate 6:** An informal vendor with his shoulder held cans



**Plate 3:** A typical cart that are deployed by informal water vendors to distribute water



**Plate 4:** Informal vendors collecting water from a formal vendor

In the study area, most households (90.6%) depend on vended water for their needs. Only insignificant proportion (9.4%) depends on other sources such as wells and boreholes. A further breakdown revealed that informal vendors provide the largest percentage (74.9%) of the household water needs in this community. This is explained by the fact that they are in close proximity to the residents. They provide door to door services and are usually conversant with the water needs of the residents. However, as valuable as this group of service providers is, it should be realized that most (66.0%) of them obtain water from uncovered wells. Thus, there is an apparent danger of this source exposing households to water-borne diseases.



**Table 2. Main source of domestic water used by households**

| Source           | Frequency | Percentage |
|------------------|-----------|------------|
| Own Source       |           |            |
| • Uncovered well | 60        | 5.2        |
| • Covered well   | 18        | 1.6        |
| • Borehole       | 29        | 2.6        |
| Formal source    | 179       | 15.7       |
| Informal source  | 853       | 74.9       |
| Total            | 1,139     | 100        |

The survey revealed that most households (51%) preferred piped water as they considered the adoption of vended water as a mere coping strategy arising from the failure of the WSA at meeting their needs (Table 3). There is also an apparent awareness of the danger inherent in the use of unsafe water among these households. Again, 26% of them prefer borehole (Table 3). This relatively high proportion of households that prefers borehole is explained by the apathy of most Nigerians towards public water supplies as they are generally inefficient especially with respect to regularity. These households also believed that borehole is more hygienic because there is less exposure between points of discharge to points of usage compared with piped water system in the country that is usually characterized of leakages arising from pipe breakdowns. No doubt, this constitutes a formidable source of water contamination. However, 8% still prefer covered wells. Confirming the high awareness on water quality among households is the fact that only 15% of the households prefer sources that are considered unimproved. Specifically, only 8% of the households still prefer vended water (Table 3).

**Table 3. Household Preference for Water Source**

| Source               | Frequency | Percentage |
|----------------------|-----------|------------|
| Pipe Water           | 581       | 51         |
| Borehole             | 296       | 26         |
| Covered Well         | 91        | 8          |
| Uncovered Well       | 23        | 2          |
| Protected Spring     | 0         | 0          |
| Unprotected Spring   | 0         | 0          |
| Vended Water         | 91        | 8          |
| Stream/River/Lagoon  | 23        | 2          |
| Bottled/Sachet Water | 34        | 3          |
| Total                | 1139      | 100        |

The commonly reported water borne diseases by respondents in the study area are stomach ache (9.2%); cholera (6.1%); diarrhea (10.2%); typhoid (18.6). No doubt, these proportions are high and call for concern. Only 55.9% of the respondents have not been afflicted with one or more water borne diseases in the recent time (Table 4). It is apparent that this high incidence of diseases cannot be unconnected with the fact that vended water is usually unsafe since it is usually susceptible to contamination arising from poor sources and exposure during haulage.

**Table 4. Types of Water borne Disease observed**

| Disease      | Frequency | Percentage |
|--------------|-----------|------------|
| Stomach Ache | 103       | 9.2        |
| Cholera      | 69        | 6.1        |
| Diarrhea     | 116       | 10.2       |
| Guinea Worm  | 0         | 0          |
| Typhoid      | 212       | 18.6       |
| None         | 639       | 55.9       |
| Total        | 1139      | 100        |

It is imperative to consider the observation in Table 2 with households' income. 8.3% of the respondents earn less than USD65 monthly while 29.6% earn between USD65 and USD130. This means 37.9% earn less or slightly above the minimum wage prescribed by the government for civil servants in Nigeria which is USD117. In general, this category of earners is either comprised of retirees, lower level civil servants or petty traders. 52.7% earn between USD131 and USD325 while only 9.4% earn above USD325 (Table 5). The last category of income earners are either higher level civil servants or business men. In Nigeria, a covered well costs about USD3247. Given the above income profile, it becomes evident that most residents might not have sufficient fund to construct their own water source. This explains the high level of patronage of water vendors as there are little or no other means of getting domestic water in this community.

**Table 5. Level of income**

| Income (USD)         | Frequency   | Percentage |
|----------------------|-------------|------------|
| Less than 65         | 95          | 8.3        |
| 65 – 130             | 337         | 29.6       |
| 131 – 195            | 247         | 21.7       |
| 196 – 260            | 180         | 15.8       |
| 261 – 325            | 173         | 15.2       |
| <b>More than 325</b> | <b>107</b>  | <b>9.4</b> |
|                      | <b>1139</b> |            |

The quantity of water delivered and used by households is an important aspect of domestic water supplies as it influences hygiene and therefore public health. Consequently, a relationship exists between access component and quantity of water available per person per day. Such relationship measures the adequacy or otherwise of the supply of domestic water from the main source among households. WHO and UNICEF (2000) describe reasonable access as being 'the availability of at least 20 litres per person per day from a source within one kilometre of the users dwelling'. However, it should be noted that this definition relates primarily to access and should not necessarily be taken as evidence that 20 litres per capita per day is a recommended quantity of water for domestic use. In realisation of this, Gleick (1996) suggested that the international community should adopt a figure of 50 litres per capita per day as a basic water requirement for domestic water supply. For this study, a minimum of 50 litres per capita per day was adopted. Based on this, only 21.4% of the households could be said to have adequate access with respect to quantity. This could be explained by the limited capacity of the vendors at meeting the water needs of these households.



**Table 6. Water per Capital Use in liters**

| Quantity (L) | Frequency | Percentage |
|--------------|-----------|------------|
| 0 – 9        | 26        | 2.3        |
| 10 – 19      | 65        | 5.7        |
| 20 – 29      | 300       | 26.3       |
| 30 – 39      | 354       | 31.1       |
| 40 – 49      | 150       | 13.2       |
| 50 – 59      | 98        | 8.6        |
| 60+          | 146       | 12.8       |
|              | 1139      | 100.0      |

The level of satisfaction derived by respondents from the water supplied was also gauged. Most households (58.6%) are unsatisfied for their dependence on vended water as their main source of domestic water. They considered this as a mark of social exclusion by government. However, 29.8% considered it as fairly satisfactory. This category of respondents regarded this source as the only coping strategy for their community. On the other hand, 11.6% judged the source as satisfactory. They deemed the source as sufficient as they were able to meet their daily water needs. In addition, the water is considered as always available at beck and call. However, irrespective of these conclusions, there is still a need to provide public enlightenment on the danger of using this source of water since it is highly susceptible to contamination.

**Table 7. Level of satisfaction of vended water among households**

| Level               | Frequency   | Percentage   |
|---------------------|-------------|--------------|
| Satisfactory        | 132         | 11.6         |
| Fairly satisfactory | 339         | 29.8         |
| Not satisfactory    | 668         | 58.6         |
| <b>Total</b>        | <b>1139</b> | <b>100.0</b> |

Most respondents felt that the water supplied by both formal and informal vendors is unsafe as it contains some pollutants. 50.3% adduced such pollution to poor handling by vendors while 24.5% attributed it to loading, transportation and offloading operations. In addition, 25.1% opined that the pollution might be as a result of the poor condition at the sources of water supply available to vendors. These observations constitute great challenge to the health of this community.

**Table 8. Means of water pollution as perceived by the households**

| Pollution source              | Frequency   | Percentage   |
|-------------------------------|-------------|--------------|
| During loading and offloading | 280         | 24.6         |
| Poor handling of the vendors  | 573         | 50.3         |
| Pollution at sources of water | 286         | 25.1         |
| <b>Total</b>                  | <b>1139</b> | <b>100.0</b> |

In a bid to eliminate water borne diseases, it is desirable to treat water especially when taken from raw source. Effort was made to investigate this practice among water vendors in the study area. Table 9 revealed that 85.1% of the informal vendors never treat their water. Such water is usually obtain from the well and supplied to the households for consumption. Only those that receive their water from formal vendors obtain treated water. However, 70% of the formal vendors treat their water always while 30% treat quite often. In general, water from this source is usually well treated in a decent environment.

**Table 9. Water treatment habit of the vendors**

| Treatment      | Formal vendors |            | Informal vendors |             |
|----------------|----------------|------------|------------------|-------------|
|                | Frequency      | Percentage | Frequency        | Percentage. |
| No, never      | -              | -          | 40               | 85.1        |
| Yes, rarely    | -              | -          | 6                | 12.8        |
| Yes, sometimes | -              | -          | -                | -           |
| Yes, often     | 3              | 30         | 1                | 2.1         |
| Yes, always    | 7              | 70         | -                | -           |
| <b>Total</b>   | <b>10</b>      | <b>100</b> | <b>47</b>        | <b>100</b>  |

Since willingness to pay for urban services is often regarded as a means of ensuring the long term sustainability of such services, attempt was made in this study to gauge the willingness of the households to pay for water service. Against the backdrop that most of them are not satisfied with their present situation with respect to water source, a significant proportion (68.1%) of the households are willing to pay for water services if supplied by government supported WSAs. However, 25.7% believed it should be government responsibility. Such opinion must have been informed by the usual tradition in the country that made domestic water provision a welfare service. Only 6.2% was not willing to pay for water services. The implication of these findings is that maintenance and improvement of any public water services if provided for the community would be feasible thereby enhancing sustainability of the system.

**Table 10. Willingness to pay for water services**

| Willingness                         | Frequency   | Percentage   |
|-------------------------------------|-------------|--------------|
| Willing                             | 776         | 68.1         |
| Should be government responsibility | 293         | 25.7         |
| Not willing                         | 70          | 6.2          |
| <b>Total</b>                        | <b>1139</b> | <b>100.0</b> |

#### 4. Conclusion

In the face of absolute neglect by the government with respect to water provision, the trauma that households would have passed through would have been enormous without the intervention of the water vendors. No doubt, this source is defined as unsafe, yet it is unlikely that in the immediate future WSA will succeed in providing adequate and safe water supply to most urban centres in Nigeria. The greatest concern in this regard is the informal water vendors that largely obtain their supplies from unsafe sources. Despite the fact that NAFDAC is giving licenses to formal vendors, sustainable solutions need to be developed especially in the area of developing mechanisms to incorporate informal water vendors that have been making significant contributions to water provision. The starting point in this process is that government should recognize the role of these small-scale water providers in water delivery and offer them necessary support that could enhance their performance. Since the formal water vendors obtain their supplies from improved water sources, a secondary level of water supply mechanism could be developed by progressively linking the informal vendors with the formal vendors. This would involve formal registration of the informal vendors by NAFDAC. A major issue would be finance since informal vendors usually obtain their water free of charge. With such registration, it is canvassed that government should assist them with soft loans that would enable them obtain their supplies from the formal vendors. Such modality would assure quality control.

However, the most sustainable strategy would be to resuscitate the moribund water supply system (piped water) earlier initiated by the Lagos State WSA in Festac Town. This would involve the replacement of the damaged pipes and further reticulation of the otherwise un-served areas. At the inception, the project must

also provide for multi-prong water faucets from where the vendors could obtain their supplies. Following the full completion of the WSA initiated water projects, water vending should be prohibited. A maximum number of five years is suggested to achieve this goal.

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