I. COVERSHEET FOR ENVIRONMENTAL MITIGATION PLAN & REPORT
(UMBRELLA EMPR: POTABLE WATER AND SANITATION)

USAID MISSION SO # and Title: _____

Title of IP Activity: _____

IP Name: __ _____

Funding Period: FY_____ - FY_____

Resource Levels (US$): _____

Report Prepared by: Name:_____ Date: _____

Date of Previous EMPR: _____ (if any)

Status of Fulfilling Mitigation Measures and Monitoring:

_____ Initial EMPR describing mitigation plan is attached (Yes or No).

_____ Annual EMPR describing status of mitigation measures is established and attached (Yes or No).

_____ Certain mitigation conditions could not be satisfied and remedial action has been provided within the EMPR (Yes or No).

USAID Mission Clearance of EMPR:

Contracting Officer's Technical Representative:_____ Date: _____

Mission Environmental Officer: _____ Date: _____
( )

Regional Environmental Advisor: _____ Date: _____
( )

***List of CHF Haiti projects covered in this UEMPR* (Potable Water and Sanitation):**

1. Background, Rationale and Outputs/Results Expected:

There is a great need throughout Haiti for improved sanitary facilities and access to potable water. According to the CIA world fact book, Haiti has an infant mortality rate of 59.69 deaths per 1000 live births, with 10% of these deaths attributed to dehydration. There is a high risk for bacterial and protozoal diarrhea resulting from drinking contaminated water, which leads to severe dehydration, and often death without proper treatment. Furthermore, the life expectancy for the population of Haiti is 60.78 years, the 181st earliest life expectancy out of the 224 total countries in the world.

Without the resources to treat or boil water, many Haitians must take the risk of drinking whatever water is available, which often means drinking water containing human pathogens and bacteria, as there is also a severe lack of adequate sewage disposal and treatment in urban neighborhoods.

The following is an excerpt from a PBS report on potable water in Haiti in 2004 by Shoshana Guy. "CAMEP is responsible for providing water in the Port-au-Prince metropolitan area, whereas Service National d'Eau Potable (SNEP) is supposed to provide water nationally. But neither agency has been able to maintain or update their equipment and water lines, adapt to changes in population, or respond to the country's environmental crisis. Estimates on the percentage of metropolitan Port-au-Prince that is being serviced by CAMEP vary from 20 percent to 30 percent. However, these figures are difficult to quantify because CAMEP's service is intermittent, their metering system is inconstant, and people often break their pipes and steal the water to sell for a profit…According to the Haitian Institute for Statistics and Information, SNEP is only serving 16 percent to 24 percent of the population."

The lack of available potable water sources impels women to travel further, and devote more of their time to water collection. Without greater access to potable water, women will continue to spend hours of their days walking, collecting and washing, diverting time away from other activities, such as schooling, attending to children and other activities that can spur a better standard of living.

CHF's USAID/KATA program is an $81 million, 4-year program that is designed to:

- Enable access to economic opportunities that provide people with dignity, income and the chance to contribute to the economic development of their country
- Enhance the government's ability to effectively respond to the needs of its constituents
- Provide improved access to capital, market linkages and investments for Haiti's micro, small and medium enterprises
- Increase access to social and productive infrastructure.

Through the Potable Water and Sanitation projects, CHF hopes to achieve the following goals:

1) Increase rural and urban access to clean drinking and washing water
2) Encourage community responsibility for maintenance, upkeep and water testing/treatment

3) Decrease water-borne diseases and encourage good hygienic practices among urban and rural communities in Petit Goâve, Port-au-Prince, Saint Marc, Gonaïves and Cap Haïtien.

2. Activity Description:

This EMPR covers all activities directly related to the construction and/or rehabilitation of potable water and sanitation infrastructure and distribution networks. This includes:

- spring cap systems
- water distribution networks
- community fountains
- community hand/clothes washing stations
- showers
- hand pump well construction
- pit latrines
- septic systems
- Non-potable water (washing water) systems

Certain activities are common throughout all different types of potable water and sanitation projects. The following are common activities throughout many of these projects:

1. Site selection and hydrology/water table study
2. Construction material sourcing
3. General construction activities
4. Educational/training programs on sanitation and water treatment

However, depending on the sub-type of potable water and sanitation project, there may be different project activities.

Activities specific to spring capping and water distribution network projects:

a) Studies specific to particular spring cap taking into account projected water-use
b) Laying pipes underground for water distribution network

Activities specific to pit latrines include:

a) Site selection
b) Excavation of pit
c) Construction of slab and walls
d) Maintenance of latrine

Activities specific to sanitary block construction projects most often include:

a) Site selection and design of sanitary block
b) Construction of sanitary block and/or septic system
c) Creation of a maintenance committee to perform routine cleanings
d) Creation of a waste management plan, assigning responsibility to a particular party

Activities specific to hand pump wells rehabilitation/ installation of new hand pump wells:

a) Well site selection
b) Bore hole drilling and well construction
c) Training on the maintenance and use of the well

Activities specific to community hand and clothes washing/shower stations (non-potable water systems):

a) Site selection and design of non potable water system
b) Creation of a gray water disposal/treatment plan
c) Training on the use and maintenance of the washing stations

3. Environmental Baseline:

Project will be implemented in 5 departments of Haiti, Petit Goâve, Port-au-Prince, Saint Marc, Gonaïves and Cap Haïtien. Most infrastructure projects rehabilitate old facilities, buildings or roads; however, when a project will take place on a new site, or will include an alteration of land, an Environmental Assessment (EA) will be carried out.

Due to the increase of hurricane activity in recent years and the severe damages and loss of life that have resulted, the USAID/KATA program focuses much of its activity on watershed management and infrastructure improvement/rehabilitation activities. In USAID's 2007 report "Environmental Vulnerability in Haiti," Glenn Smucker and team point out that many of the environmental problems in Haiti can be attributed to, "acute poverty, rapid population growth and unplanned urbanization"(Smucker, iii). These factors have created a much higher and concentrated demand for firewood and charcoal among other natural resources and services in and around urban centers.

Not only does the indoor burning of charcoal worldwide account for the death of nearly 800,000 children and 500,000 women annually (WHO, 2006), but it is a main factor driving the deforestation of hill and mountainsides in Haiti. According to Richard Haggerty's country study on Haiti from 1989, in 1925, Haiti had 60% of its original forest covering the country. Since then, the population has cut down all but an estimated 2% of its original forest cover, and in the process has destroyed fertile farmland soils, contributing to desertification. Most important is hillside deforestation, which has caused a slew of flooding and mudslide problems for cities and other communities located in watershed and flood plain areas.

During the hurricane seasons of both 2004 and 2008, the flooding and mudslides in Gonaives provide examples of the types of indirect problems that result from hillside deforestation and poor watershed management. According to earthobservatory.nasa.gov, "in September 2004, more than 2,500 people died when Tropical Storm Jeanne unleashed torrential rain on northeastern Haiti…The disaster was repeated in September 2008, when a string of storms—Gustav, Hanna, and Ike—drenched Haiti. Though the resulting floods were as extensive as in 2004, the death toll was not as great. As of September 15, 423 people had been reported dead, 50 were missing, and more than 100,000 were in shelters, said the United States Agency for International Development (USAID)."

The mudslides and flooding in Gonaives serve as a grim warning to the possibilities of what could be in the nation's capital, Port-Au-Prince, as both cities are located in large watersheds. Such floods and mudslides can contribute to a slew of other health, social and environmental problems ranging from road blockage, to drinking water contamination and disease spread.

The average annual rainfall is 140 to 200 centimeters, but it is unevenly distributed. Heavier rainfall occurs in the southern peninsula and in the northern plains and mountains. Rainfall decreases from east to west across the northern peninsula. The eastern central region receives a moderate amount of precipitation, while the western coast from the northern peninsula to Port-au-Prince, the capital, is relatively dry. Some regions have two rainy seasons, lasting from April to June and from August to October, whereas other regions experience rainfall from May to November. Annual variations of precipitation can cause droughts, widespread crop failures, and famine.

Temperatures are almost always high in the lowland areas, ranging from 15° C to 25° C in the winter and from 25° C to 35° C during the summer. Haiti is located on the leeward side of Hispaniola, which means that the influence of humid trade winds is not as great as in The Dominican Republic. The more humid districts are found on the northern and eastern slopes of the mountains.

Only 54% of the population in Haiti has broad definition access to potable water, while only 30% have access to sanitation coverage, according to a WHO/UNICEF report in 2006.

According to CIA world fact book, about 66% of all Haitians work in the agricultural sector, which consists mainly of subsistence farming on a small scale. Mangoes and coffee are the country's most important exports, however, agriculture only makes up 30% of the country's GDP.

In order to alleviate the pressures put upon the Haitian population due to the level of environmental degradation in the country, as well as promote long-term sustainable development as to allow for reforestation and environmental recuperation, development agencies must, "be part of an integrated approach, directly linking natural resource management with other pertinent sectors such as early warning, urban planning, reproductive health, and job creation programs" (Smucker, v).

4. Evaluation of Environmental Impact Potential of Activities (Table 2):

Increase in the incidence of water-borne illness, such as diarrhea or malaria:
Potable water supply improvement projects implemented under the program may become contaminated or create standing water, leading to an increase in the incidence of water-borne disease if infrastructure is not properly designed and maintained. Additionally, in Haiti, improper containers such as oil jugs are often used for water collection, causing disease at the household level regardless of how clean the source is.

Depletion of surface and groundwater:

In particularly dry areas and/or large water supply projects have the potential to deplete surface and groundwater, causing water shortages during the dry season, limiting available water for agriculture and damaging aquatic and terrestrial ecosystems.

Contamination of surface and groundwater with fecal coliform bacteria:
Sanitation infrastructure improvements, such as pit latrines or septic systems, have the potential to leak or leach into nearby surface and groundwater and potable water sources.

Erosion and ecosystem damage at construction material borrow pits:
Improper sand extraction (e.g. from riverbeds or hillsides) can cause erosion, sedimentation of water bodies such as rivers, and destabilization of river beds and banks.

5. Environmental Mitigation Actions (Tables 2 & 3) (this section is part of the annual EMR, but not the initial):

CHF will implement the following strategies to mitigate the potential impacts described above:

- Ensure that potable water and sanitation infrastructure improvements adhere to national and international technical design standards;
- Conduct water quality testing of potable water sources;
- Determine current and future water demands and evaluate capacity of potential sources during dry and rainy seasons and extreme conditions;
- Establish and build capacity of local water management committees on water quality testing and infrastructure maintenance;
- Link potable water supply with sanitation projects and raise awareness of water-borne illness and best practice at the community level through hygiene campaigns;
- Ensure sound construction practices and rehabilitation of borrow pits.
- Carry out Environmental Assessments for any water supply or sanitation projects that are large in scale, that potentially require alteration of rivers such as small dams, or that are to be located in otherwise sensitive areas.
- Monitor water supply and sanitation projects during construction and after completion, and make adjustments to the mitigation plan when unforeseen impacts arise or when mitigation measures are insufficient to reduce impacts.

Tables 2 and 3 provide additional detail on the mitigation measures and monitoring strategy to be implemented by CHF Haiti.

III-A. Environmental Screening Form (Table 1):
*A screening form will be filled out for each individual project that falls under this UEMPR

III-B. Identification of Mitigation Plan (Table 2)

Activity/Impact/Mitigation Table (USAID/KATA) - POTABLE WATER SUPPLY AND SANITATION			
Project Type	**Activity**	**Description of Impact**	**Prescribed mitigation measures**
A. Potable water system improvement	i. Site/source selection and design	1. Increased risk of water pollution, change groundwater flow, deplete available resources, create saltwater intrusions, etc. or render the improvement useless	a. Calculate yield and extraction rates in relation to other area water uses to avoid depletion of the resource or damage to aquatic ecosystems or communities downstream. These calculations should take into account historic and projected upstream and downstream supply and demand for water
			b. Gather and analyze data on soil type, slope and topography to determine the potential for significant erosion
			c. Construct potable water improvement system at least 30 meters away from a sump, latrine or any other potential source of ground water pollution
			d. In coastal areas, keep withdrawals within safe yield limits to avoid overdrawing, possible salt water intrusion and contamination of the well

			e. Use fencing or equivalent that will prevent livestock form grazing uphill or up gradient of the water supply improvement. Fence around community water supply to keep livestock away.
		2. Standing water provides breeding grounds for mosquitoes and other water-borne diseases	a. Ensure adequate drainage around water supply improvement is incorporated into design.
	ii. Sourcing of construction materials	3. Improper construction material extraction can cause soil and riverbank destabilization, erosion and/or sedimentation	a. Use available local materials first, but only if they provide durable materials.
			b. Locate borrow pits and earth piles away from water bodies
			c. Backfill and re-vegetate borrow pits when no longer needed
			d. Do not permit sand extraction from riverbeds, riverbanks, or slopes.
	iii. Construction/ rehabilitation of potable water improvement system	4. Land destabilization, erosion and/or sedimentation due to excavation/leveling of site or other construction activities	a. Limit earth moving to dry seasons
			b. Minimize use of heavy machinery
			c. Remove or bury all abandoned construction materials, wastes and rubble
			d. Provide potable water, adequate protective gear, appropriate sanitary and solid waste disposal facilities for use by construction workers
			e. Avoid damaging vegetation, but if damaged, re-vegetate with appropriate species of soil-holding vegetative cover

	iv. Maintenance and use of potable water system	5. Cracks or leaks in well heads, spring cap systems, etc;	a. Finalize maintenance agreements with local communities before beginning construction to monitor and repair leaks from cracked containment structures, broken pipes, faulty valves, keep drains clear of waste and debris and maintain all sections of livestock fencing. All parties must clearly understand and be committed to terms of the agreement
			b. Work with local authorities and community-based groups to: 1) establish and manage potable water system user fee and budget; 2) identify and train responsible parties to maintain/clean reservoir and fountains and carry out periodic water testing at community fountains and reservoir; 3) establish linkages with water testing equipment and repair equipment providers; 4) establish water testing schedule; and 5) develop monitoring tools
			c. Provide training and educational materials to community members (especially women and children) on hygiene and proper water use, and use of appropriate water containers (bidons). Assist in procurement of safe water containers if not available locally.
B. Construction of pit latrines	i. Site selection and design of pit latrines	6. Contamination of drinking, ground and surface water and/or aquatic ecosystems	a. Identify and eliminate social and gender based barriers to latrine use. Ensure that siting allows for adequate access and use according to social/cultural context
			b. Do not site latrine in wetlands or next to a stream, river, lake or up-gradient from a potable water source

			c. Use ventilated improved pit latrine design that traps disease vectors. Encourage users to add dirt and organic material such as leaves occasionally to minimize odor and insects.
	ii. Sourcing of construction materials	7. Improper construction material extraction can cause soil and riverbank destabilization, erosion and/or sedimentation	a. Use available local materials first, but only if they provide durable materials.
			b. Limit earth moving to dry seasons
			c. Locate borrow pits and earth piles away from water bodies
			d. Backfill and re-vegetate borrow pits when no longer needed
	iii. Construction of pit latrines (pit digging and slab construction)	8. Environmentally irresponsible construction practices can cause siltation due to erosion, eco-systemic damage, air pollution, and/or health problems	a. Limit earth moving/construction to dry seasons
			b. Minimize usage of heavy machinery
			c. Remove or bury all abandoned construction materials, wastes and rubble
			d. Provide potable water, adequate protective gear, appropriate sanitary and solid waste disposal facilities for use by construction workers
	iv. Maintenance of pit latrine	9. Cracks or leaks in latrine slab contaminates nearby water sources or creates standing water	a. Establish and train local committee or community members to monitor and repair latrines
		10. Disease transmission from lack of good hygiene practices such as hand washing	a. Develop a hygiene awareness-raising and educational strategy to promote good practices such as hand-washing.
C. Construction of	i. Site selection	11. Contamination of drinking, ground and	a. Ensure capacity of septic system meets demand

Sanitary Block including toilets and septic tank	and design of septic system	surface water and/or aquatic ecosystems	b. Avoid direct discharge of effluent to waterways. Work with septic waste removal company, or if not available, install secondary treatment, such as passing effluent through an anaerobic filter, followed by discharge to an absorption field or constructed wetland
	ii. Sourcing of construction materials	12. Soil and riverbank destabilization, erosion and/or sedimentation	a. Use available local materials first, but only if they provide durable materials.
			b. Limit earth moving to dry seasons
			c. Locate borrow pits and earth piles away from water bodies
			d. Backfill and re-vegetate borrow pits when no longer needed
	iii. Construction of septic system	13. Erosion, eco-systemic damage, air pollution, and/or health and safety issues	a. Limit earth moving/construction to dry seasons
			b. Minimize usage of heavy machinery to prevent erosion, noise and air pollution
			c. Remove or bury all abandoned construction materials, wastes and rubble
			d. Provide potable water, adequate protective gear, appropriate sanitary and solid waste disposal facilities for use by construction workers
	iv. Maintenance and waste management of latrine and/or septic system	14. Contamination of water supplies, damage water quality and/or transmit disease at other locations if waste is not properly handled and treated during or after servicing	a. Contract a septic sludge removal service. Check and test tanks for leaks and seepage.
		15. Disease transmission from lack of good hygiene practices such as hand washing	a. Develop a hygiene awareness-raising and educational strategy to promote good practices such as hand-washing.

D. Construction of non-potable water facilities to aide in cleaning/washing	i. Site selection and design of non-potable water system	16. Improper siting of cleaning facility could prevent equal access to wash water source and lack of sanitation in areas of building	a. Site source, and when necessary multiple sources, in central locations to allow equal access and maximize sanitation of work facilities
		17. Contamination of drinking, ground and surface water and/or aquatic ecosystems	a. Ensure capacity of grey water drainage system meets demand
			b. Avoid direct discharge of grey water upstream of potential drinking water sources. Incorporate drainage system into drainage canals or direct discharge to an absorption field or constructed wetland
		18. Excessive use of water for cleaning purposes can deplete water sources	a. Install high pressure nozzles to minimize water use
		19. Health risk resulting from drinking water intended strictly for cleaning	a. Install clear signage at water source prohibiting drinking of non-potable, cleaning water

III-C. Environmental Monitoring and Evaluation Tracking Table (Table 3).

Environmental Monitoring and Evaluation Report (USAID/KATA) - Potable Water Supply and Sanitation									
Impact No.	Description of Mitigation Measure	Responsible Party	Monitoring Methods			Results			Recommended Adjustments
			Indicators	Methods	Frequency	Dates Monitored	Problems Encountered	Mitigation Effectiveness	
A. Potable water system improvement									
1	a. Calculate yield and extraction rates in relation to other area water uses to avoid depletion of the resource or damage to aquatic ecosystems or communities downstream. These calculations should take into account historic and projected upstream and downstream supply and demand for water		Y/N Water users report insufficient flow or quantity from source	Household survey	Semi-annually (at least once during dry season)				
	b. Gather and analyze data on soil type, slope and topography to determine the								

	potential for significant erosion								
	c. Construct potable water improvement system at least 30 meters away from a sump, latrine or any other potential source of ground water pollution		Y/N Presence of sanitation infrastructure such as latrine within 30 m of potable water source	Field survey	Semi-annually (at least once during dry season)				
	d. In coastal areas, keep withdrawals within safe yield limits to avoid overdrawing, possible salt water intrusion and contamination of the well		Y/N Water users report salty taste of water	Household survey	Semi-annually (at least once during dry season)				
	e. Use fencing or equivalent that will prevent livestock from grazing uphill or up gradient of the water supply improvement Fence around community water supply to keep livestock away.		Y/N Animal presence near potable water source	Field survey	Once every 3 months				

2	a. Ensure adequate drainage around water supply improvement is incorporated into design.		Y/N Standing water observed around potable water source(s)	Visual inspection					
3	a. Use available local materials first, but only if they provide durable materials.		Y/N signs of erosion around construction and/or borrow pit sites	Construction site survey	Weekly during construction and every 3 months for 1 year after construction				
	b. Locate borrow pits and earth piles away from water bodies								
	c. Backfill and re-vegetate borrow pits when no longer needed								
	d. Do not permit sand extraction from riverbeds, riverbanks, or slopes.								
4	a. Limit earth moving to dry seasons								
	b. Minimize use of heavy machinery								
	c. Remove or bury all abandoned construction materials, wastes and rubble		Y/N presence of construction waste at site	Field Visit	Once at project Completion				

	d. Provide potable water, adequate protective gear, appropriate sanitary and solid waste disposal facilities for use by construction workers		Y/N reported accidents or complaints from workers	Survey of workers/ construction supervisors	Weekly during construction				
	e. Avoid damaging vegetation, but if damaged, re-vegetate with appropriate species of soil-holding vegetative cover		Number of trees planted/number of trees surviving	Field Survey (transect)	Quarterly				
5	a. Finalize maintenance agreements with local communities before beginning construction to monitor and repair leaks from cracked containment structures, broken pipes, faulty valves, keep drains clear of waste and maintain livestock fences. All parties must clearly understand and be committed to terms of the agreement		Y/N presence of broken, damaged or clogged water distribution or drainage structures, and intact livestock fencing	Visual inspection	Monthly				

	b. Work with local authorities and community-based groups to: 1) establish and manage potable water system user fee and budget; 2) identify and train responsible parties to maintain/clean reservoir and fountains and carry out periodic water testing at community fountains and reservoir; 3) establish linkages with water testing equipment and repair equipment providers; 4) establish water testing schedule; and 5) develop monitoring tools		Periodic water testing results available and negative for *E. coli.* No visual deterioration of fountains or reservoir.	Water testing/ maintenance monitoring report	Quarterly				
	c. Provide training and educational materials to community members (especially women and children) on hygiene and proper water use, and use of appropriate water containers (bidons). Assist in procurement of safe								

	water containers if not available locally.								
B. Construction of pit latrines									
6	a. Identify and eliminate social and gender based barriers to latrine use. Ensure that siting allows for adequate access and use according to social/cultural context		Y/N Community residents report latrine usage by women and children	Household Survey	Semi-annually for first year after project completion				
	b. Do not site latrine in wetlands or next to a stream, river, lake or up-gradient from a potable water source		Y/N existence of appropriate soil/hydrology and waste removal considerations in project design	Project design review	Once before project implementation				

	c. Use ventilated improved pit latrine design that traps disease vectors. Encourage users to add dirt and organic material such as leaves occasionally to minimize odor and insects.		Y/N Complaints of odors or insects from latrine users	Household survey	Semi-annually				
7	a. Use available local materials first, but only if they provide durable materials.		Y/N signs of erosion around construction and/or borrow pit sites	Construction site survey	Weekly during construction and every 3 months for 1 year after construction				
	b. Limit earth moving to dry seasons								
	c. Locate borrow pits and earth piles away from water bodies								
	d. Backfill and re-vegetate borrow pits when no longer needed								
8	a. Limit earth moving/construction to dry seasons								
	b. Minimize usage of heavy machinery								
	c. Remove or bury all abandoned construction materials, wastes and rubble		Y/N Construction waste present at site	Field Visit Report	Once at completion of construction				

	d. Provide potable water, adequate protective gear, appropriate sanitary and solid waste disposal facilities for use by construction workers		Y/N reported accidents or complaints from workers	Survey of workers/ construction supervisors	Weekly during construction				
9	a. Establish and train local committee or community members to monitor and repair latrines		Y/N latrine slabs appear cracked or damaged or show leaks	Visual inspection	Semi-annually				
10	a. Develop a hygiene awareness-raising and educational strategy to promote good practices such as hand-washing.		Y/N Users report or are observed washing hands after using latrine	Household survey	Semi-annually for first year after project completion				
C. Construction of Sanitary Block including toilets and septic tank									
11	a. Ensure capacity of septic system meets demand		Y/N Septic effluent is leaking into nearby water bodies or foul odor is noted	Field survey	Every 3 months after project completion				
	b. Avoid direct discharge of effluent to waterways. Work with septic waste removal company, or if not available, install secondary treatment, such as passing effluent through an anaerobic filter,								

	followed by discharge to an absorption field or constructed wetland								
12	a. Use available local materials first, but only if they provide durable materials.		Y/N signs of erosion around construction and/or borrow pit sites	Construction site survey	Weekly during construction and every 3 months for 1 year after construction				
	b. Limit earth moving to dry seasons								
	c. Locate borrow pits and earth piles away from water bodies								
	d. Backfill and re-vegetate borrow pits when no longer needed								
13	a. Limit earth moving/construction to dry seasons								
	b. Minimize usage of heavy machinery to prevent erosion, noise and air pollution								

	c. Remove or bury all abandoned construction materials, wastes and rubble								
	d. Provide potable water, adequate protective gear, appropriate sanitary and solid waste disposal facilities for use by construction workers		Y/N reported accidents or complaints from workers	Survey of workers/ construction supervisors	Weekly during construction				
14	a. Contract a septic sludge removal service. Check and test tanks for leaks and seepage.		Y/N Septic effluent is leaking into nearby water bodies or foul odor is noted	Site visit report	Annually				
15	a. Develop a hygiene awareness-raising and educational strategy to promote good practices such as hand-washing.		Y/N Facility users are observed or report washing hands after using the toilet.	Facility users survey	Semi-annually for first year after project completion				
D. Construction of non-potable water facilities to aide in cleaning/washing									
16	a. Site source, and when necessary multiple sources, in central locations to allow equal access and maximize sanitation of work facilities		Y/N facility users complain about lack of access to water source	Facility users survey	Once at project Completion				

17	a. Ensure capacity of grey water drainage system meets demand b. Avoid direct discharge of grey water upstream of potential drinking water sources. Incorporate drainage system into drainage canals or direct discharge to an absorption field or constructed wetland		Y/N Standing water observed around facility or discharge of greywater into drinking water source	Field Visit Report	Once every 3 months				
18	a. Install high pressure nozzles to minimize water use		Y/N high pressure nozzles are installed at end of hoses	Field Visit Report	Once at project Completion				
19	a. Install clear signage at water source prohibiting drinking of non-potable cleaning water		Y/N facility users report people are drinking from non-potable water source	Facility users survey	Once every 3 months				

References for UEMPR tables:

Bickel Stephen E. (lead author with 6 others). “Environmental Guidelines for Development Activities in Latin America and the Caribbean.” USAID Latin America Bureau Publication, July 2006.

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