

# **SUSTAINABLE ENVIRONMENTAL PRACTICES AND POLICIES (SEPP)**



**Wadi jezzine wastewater treatment plant**

## **NINTH QUARTERLY NARRATIVE REPORT**

**Reporting Period  
August 1, 2005 – October 30, 2005  
Date: December, 2005**

**YMCA**

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## INTRODUCTION:

The YMCA of the USA and the YMCA of Lebanon signed a cooperative agreement on July 15, 2003 with the U.S. Agency for International Development (USAID) to undertake an integrated environment program initiative - *Sustainable Environmental Practices and Policies Program (SEPP)* - whose aim was to improve environmental practices and policies for the management of both solid waste and water waste in rural Lebanon.

The environment program will ultimately benefit 98 communities throughout the country – with the establishment of **3 solid waste treatment centers** that process waste from 88 villages, and **9 wastewater treatment centers** that treat wastewater from 10 villages. Combined, their facilities will cover the areas of the Bekaa (South-West Rachaya), Nabatieh (Arabsaleem), and South Lebanon (Tyre Caza<sup>†</sup>). In addition, the YMCA will conduct a **comprehensive environmental educational program** that builds on the knowledge-base of the local communities with a component on waste management practices overall. The program targets women and students and also seeks to strengthen the capacity of local municipalities and communities in an effort to implement an all-inclusive, comprehensive, sustainable, environmental management program in the region. In an effort to influence and educate communities on sound environmental policies and practices, the YMCA of Lebanon provides training, education, technical resources, materials and practical solutions to improving waste management in the rural areas.

This report will detail the activities and events that have taken place during the ninth quarter of the program. Key activities have included the following:

- Monitoring of sewerage networks
- Installation and selection of the most appropriate technologies for both wastewater and solid waste treatment plants for the selected communities
- Building the capacity of the team selected to implement the awareness campaigns
- The analysis and revision of the lessons-learned from earlier wastewater and solid waste treatment YMCA projects.

During the ninth quarter, five (5) wastewater treatment plants began their operations, one (1) will be operational next quarter and three (3) are currently under construction and progressing as scheduled, and within the projected time-line. Local municipalities were able to secure the participation of, and contributions from, the Ministry of Energy and Water Resources in these projects. Three agreements were signed between the YMCA and the local communities to carry out the construction of the three (3) solid waste facilities - two of which are already in the excavation-works phase.

Activities under this program are grouped into three components as follows:

- 1. Dissemination of information** on environmental management practices.
- 2. Physical infrastructure development** for solid waste and wastewater management.
- 3. Engaging in dialogue and influencing policy** on environmental management.

This quarterly narrative report will describe the activities achieved to date by each component.

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<sup>†</sup> Caza refers to a district

## **COMPONENT 1**

### **Dissemination of knowledge on environment management practices**

The YMCA is partnering with ECODIT to promote better environmental management practices and to evaluate the operations of existing solid waste management (SWM) facilities and wastewater treatment (WWT) plants. ECODIT prepared and submitted the final draft last quarter of the *Lessons Learned* report on WWT plants and SWM facilities.

Over a period of several field visits, the ECODIT team closely monitored the operations of SWM and WWT facilities to identify both the successes and the challenges facing the day-to-day operations of the facilities. The team also identified and assessed the opinions and attitudes of the local authorities and beneficiaries toward the already existing SWM and WWT projects. Recognizing the challenges allowed them to identify strategies to address, or avoid altogether. It also allowed them to identify similar challenges and barriers we may face during our implementation phase.

The results of the investigations were subsequently discussed and analyzed with YMCA's technical staff over several meetings. The outcome of those meetings produced the two *Lessons Learned* reports.

The recommendations from these lessons learned will be discussed in the next quarter with all the concerned ministries such as ministry of Environment, public works, water and power, and education.

During the ninth quarter, ECODIT launched a high-level, targeted, policy dialogue on solid waste and wastewater management. The dialogue involves a wide range of stakeholders who have been, or should be, involved in the planning, construction, and/or operation and maintenance of small-scale wastewater and solid waste treatment facilities in Lebanon. In consultation with the YMCA Chief Executive Officer, Mr. Ghassan Sayah, and the SEPP Program Director, Mr. Joseph Kassab, ECODIT drafted a statement informing the appropriate stakeholders about the policy dialogue, including its objectives and the program. The objective behind the dialogue is to:

1. Highlight key issues relating to the planning, construction and operation of small-scale waste management facilities in the country
2. Discuss options and solutions to improving the performance of existing/prospective small-scale waste management facilities
3. Formulate agreed-upon guiding principles and/or laws and regulations for small-scale wastewater and solid waste management in rural communities in Lebanon

The policy dialogue will include four key events. They are as follows:

1. One-on-one meetings with core stakeholders in the policy dialogue. The purpose behind the meetings is to obtain input and feedback on the proposed objectives and the program of the policy dialogue. Each meeting will outline the policy dialogue and content, discuss the objectives as well as include a set of topics that relate to the stakeholders in their jurisdictions, and the role they can play to affect and improve rural waste management concerns overall. Meetings will be held with target stakeholder groups (see tentative list in Table X) where audience-specific discussion points will be raised.
2. An orientation session for high-level policy makers and key stakeholders, including USAID, key ministries (Ministers or Director Generals), Federations of Municipalities (Mayors), PVOs, other donors, and a selection of NGOs and waste management contractors. During the two-hour meeting, ECODIT will outline key lessons learned as they relate to the planning, construction and operation of small-scale SW and WW treatment plants in the country, explain and establish a consensus with all the attendees on the objectives of the policy dialogue and the program as a whole.
3. Two full-day site visits to give the people in attendance a clearer understanding of both the technical and logistical issues facing waste management in the country overall. On the first day, the participants will visit three (3) wastewater facilities in the West Bekaa region (Yanta, Ain Horsha and Rachaya). On the second day, they will visit three (3) solid waste treatment plants in the South (Bint Jbail, Mays El Jabal, and Tyre).
4. Two roundtable workshops to discuss key planning, construction, operation and management issues relating to solid waste and wastewater. The goal is to develop a draft document of common understanding on the roles and the responsibilities among the stakeholders in order to maintain the operations of existing small-scale waste management facilities and to implement future plants. Workshops will be supplemented with follow-up activities in order to improve the planning and performance of small-scale waste management initiatives.

All the above referenced events will be implemented by April 2006.

## COMPONENT 2

### **Physical infrastructure development for solid and wastewater management**

As part of the SEPP program, the YMCA proposed building **12 waste facilities** around Lebanon: **Three (3) solid waste treatment centers** to improve the waste management of 88 villages and **9 wastewater treatment centers** to improve the sanitation and wastewater conditions of 10 villages. Over 98 communities and 1,953,500 persons will benefit from the improved waste practices, including safer disposal practices and treatment of solid waste and wastewater and the protection of natural resources (water and soil). The YMCA's proposed solid waste facilities will also convert part of the collected waste stream into valuable by-products by turning it into compost - a high-value soil conditioner. And the wastewater that had been deposited raw and untreated will, once it is processed, serve as an important source of water for the irrigation of trees especially during the summer months.

The YMCA has identified three new technologies that will be applied to managing the larger amounts of solid waste collected daily. This technology will utilize:

- Aerobic composting methods with rows of open concrete tunnels, windrow piles and/or sealed composters.
- Ventilation pipes and electrical blowers to provide the needed air for the composting system.
- A turner mixing system to homogenize and mature the compost.
- New equipment for the measurement and registration of compost temperatures and humidity.

The treatment centers idea was initially met with resistance from the community leaders due to the negative opinions people held of the potential impacts of the facilities. The misperceptions included: fear of offensive odors and fumes, concern with leachate getting into the soil, mismanagement of operations, and a general concern about accumulation of waste from other villages.

The YMCA proposed that townhall meetings be arranged within the individual communities. In those meetings, the new technologies being proposed were described in detail and all questions and concerns were answered and apprehensions allayed. Because of the meetings, the plans for the Arabsaleem, Rachayah and Ain Baal SWM centers are now being implemented. Jezzine and Zawtar el Gharbieh SWM plants have been replaced by the Ain Baal Center because their presiding municipalities could not afford the facilities at this time.

Significant progress has been made in building the sewerage networks and WWT plants; five (5) of the 9 plants are already operational and one (1) other will be operational by next quarter and the three (3) remaining plants are under construction. All of the WWT facilities' locations have been secured. Most of the sewerage networks have been completed, and ground has been broken on all the WWT plants and two (2) of the SWM facilities.

## **SOLID WASTE TREATMENT CENTERS (3 CENTERS):**

### **1. AIN BAAL CENTER (150 TONS/DAY)**

The Ain Baal Center received USAID's approval to replace the Jezzine and Chkeef Centers. Ain Baal will serve almost all the villages of the Tyre caza.

YMCA signed a contract to partner with the Union of Tyre Municipalities (UTM) on this particular project. UTM has agreed to assume all costs associated with land leveling, the construction of the buildings and even the coverage of some equipment for the facility. The YMCA has agreed to assume all costs associated with the purchase of equipment, dividing the cost-sharing responsibilities equally between the two partners - YMCA and UTM.

The same quotes were used from those prepared for the Chkeef Centers (processing 150 tons per day) and a contract was signed with Grossimex LLC, to equip and provide advice on the general layout of the Center. Excavation and design plans are currently being prepared. And a public hearing was conducted at UTM's headquarters for all the mayors in the Tyre caza to attend.

The Environmental Impact Assessment has been prepared and submitted to the Ministry of Environment and the Ministry of Administrative Reform. Topographic work has also been completed. Land levels have been determined. The specifications of the excavation works have been specified and approved by the UTM Council and the local governor.

The bid for excavation works has been launched, opened and subcontracted out in October 2005. Excavation works started and are projected to be completed by the end of 2005.



**Excavation works on the Ain Baal site.**

**Progress under Component 2**

<b>Village Served</b>	<b>Number of Households</b>	<b>Number of individuals</b>	<b>Altitude in meters</b>
<b>Abassieh</b>	2500	20,000	3 m – 160 m
<b>Ain Baal</b>	1000	8,000	75 m – 150 m
<b>Al Batoulieh</b>	625	5,000	120 m
<b>Al Bayad</b>	150	1,200	430 m
<b>Al Borgholieh</b>	700	5,500	72 m
<b>Al Boustan</b>	300	2,300	450 m
<b>Al Haloussieh</b>	420	3,000	275 m
<b>Al Henieh</b>	220	1,500	100 m – 110 m
<b>Al Houmairy</b>	200	1,650	350 m
<b>Al Jabeen</b>	450	3,600	400 m – 425 m
<b>Al Mansoury</b>	620	5,000	200 m
<b>Al Ramadieh</b>	250	2,080	375 m
<b>Al Shaaytieh Wamalikiyat Al Sahel</b>	300	2,750	275 m
<b>Alma El Shaab</b>	500	4,000	365 m
<b>Arzoun</b>	120	1,070	320 m
<b>Ayteet</b>	500	4,000	250 m
<b>Bafilieh</b>	425	3,000	250 m
<b>Bariech</b>	430	3,500	650 m
<b>Bazourieh</b>	880	7,000	150 m
<b>Bedyass</b>	220	1,500	180 m
<b>Bestyat</b>	125	1,000	400 m
<b>Borj Rahal</b>	610	4,250	120 m
<b>Borj Shemaly</b>	1900	15,000	60 m
<b>Chahour</b>	1000	8,000	350 m
<b>Chamea</b>	450	3,500	420 m
<b>Debaal</b>	280	2,500	270 m

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<b>Deir Amess</b>	435	3,500	450 m
<b>Village Served</b>	<b>Number of Households</b>	<b>Number of individuals</b>	<b>Altitude in meters</b>
<b>Deir Kanoun El Ain</b>	625	5,000	150 m
<b>Deir Kanoun El Naher</b>	900	7,000	276 m
<b>Deir Kifa</b>	430	3,000	350 m-550 m
<b>Derdaghaya</b>	140	1,200	450 m
<b>El Dhaira</b>	100	800	600 m
<b>Genata</b>	120	912	210 m- 220 m
<b>Henaweh</b>	440	3,500	210 m
<b>Jibal al Boutom</b>	250	1,900	450 m
<b>Jouaya</b>	2000	15,000	400 m
<b>Kalileh</b>	800	6,000	25 m – 125 m
<b>Kana</b>	2000	14,000	250 m – 300 m
<b>Kenaysseh</b>	280	2,500	150 m
<b>Maarakeh</b>	1200	9,200	256 m – 280 m
<b>Maaroub</b>	700	5,500	320 m – 340m
<b>Mahrouneh</b>	450	3,500	400 m
<b>Majdelzoun</b>	500	4,000	350 m – 415 m
<b>Marwaheen</b>	430	3,000	650 m
<b>Mazraat Meshref</b>	430	3,000	425
<b>Mejadel</b>	640	4,500	350 m
<b>Nakoura</b>	640	4,500	0 m – 300 m
<b>Nefakhyeh</b>	10	50	350 m
<b>Rechknanieh</b>	130	1,235	450 m
<b>Salaa</b>	450	3,500	450 m
<b>Samayeh</b>	200	1,500	50 m
<b>Sedikeen</b>	630	4,500	370 m

SUSTAINABLE ENVIRONMENTAL PRACTICES AND POLICIES (SEPP)

<b>Shayhine</b>	220	1,800	480 m
<b>Shebreeha</b>	160	1,250	50 m
<b>Village Served</b>	<b>Number of Households</b>	<b>Number of individuals</b>	<b>Altitude in meters</b>
<b>Shehabieh</b>	920	7,000	450 m
<b>Sour/Tyre</b>	15000	120,000	10m-18m
<b>Sreifa</b>	1000	8,000	400 m – 450m
<b>Teir Deba</b>	815	6,500	185 m
<b>Teir Felseye</b>	600	4,620	270 m- 300 m
<b>Teir harfa</b>	280	2,500	500
<b>Toura</b>	950	7,500	125 m
<b>Wadi Jillo</b>	100	800	160 m
<b>Yanouh</b>	200	1,500	210 m – 220 m
<b>Yarine</b>	800	6,000	500 m
<b>Zaloutieh</b>	40	300	600 m
<b>Zebkeen</b>	300	2,700	460 m
<b>66Villages</b>	<b>51,490</b>	<b>402,667</b>	

Note: 25% percent of the populations referenced above live outside their villages either in Lebanon or abroad. The villages are hardly ever at maximum capacity.

## **2. RACHAYA CENTER (15 TONS/DAY)**

The Rachaya Municipality Council (RMC) purchased the land for the SWT facility. According to the signed contract, the RMC will assume all costs associated with the excavation and building of the facility. YMCA will assume all costs associated with the needed equipment.

A contract with the company Advanced Environmental Systems (ADENSYS) was signed to equip and advise-on the general layout of the Center. Excavation plans for the facility were submitted by ADENSYS to YMCA and RMC on October 15, 2004. RMC has put out a request for quotes for the execution of the excavation plans.

The Environmental Impact Assessment has been submitted to the municipality. Topographic work has been completed. And land levels have been determined.

The excavation works of the Rachaya site started in October 2005 and are expected to be completed by end of December 2005.



**The excavation works of the Rachaya site.**

Village served	# of households	# of individuals	Altitude (m)
<b>Rachaya</b>	1,200	7,000	1,250
<b>Ayha</b>	500	3,000	1,250
<b>Mhaisseh</b>	300	1,800	1,200
<b>Daher El Ahmar</b>	500	3,000	1,150
<b>Ain Atta</b>	400	2,400	1,400
<b>Tannoura</b>	200	1,000	1,000
<b>Ain Harcha</b>	200	1,000	1,050
<b>Beit Lahia</b>	100	600	1,000
<b>Kfarmichki</b>	160	1,000	1,250
<b>Al Hosh</b>	100	600	800
<b>AlAakaba</b>	350	2,100	850
<b>Kawkaba</b>	170	1,000	1,000
<b>Majdel Balhis</b>	240	1,500	1,350
<b>Bakkifa</b>	160	1,000	950
<b>14 villages</b>	<b>4,580</b>	<b>27,000</b>	

### **3. ARABSALEEM CENTER (15 TONS/DAY)**

The Arabsaleem Center received USAID’s approval to replace the Rihan Center. The Arabsaleem Municipality proposed a location for the new facility. There were no complaints on the decision within the community.

A contract was signed between the Arabsaleem Municipality and the YMCA. The Municipality will assume all costs associated with land leveling and building construction and also the purchase of some equipment for the facility. The YMCA has agreed to assume all costs associated with the equipment, dividing the cost-sharing responsibilities equally between the two partners - YMCA and the Arabsaleem Municipality.

The same quotes were used as those presented for the Rachaya Centers (processing 15 organic tons of organic waste per day) and a contract was signed with Globex, Inc. to equip and provide expertise on the general layout of the Center. Excavation and design plans are being prepared.

A public hearing was held in the village for all the local citizens. The Environmental Impact Assessment has been prepared and submitted to the municipality and presented to the ministry of Environment. Topographic work has been completed. Land levels have also been determined and excavation works began on July 25, 2005.

In August, 2005, two major problems arose:

1. The municipality could not afford its share in implementing the facility.
2. Some complaints were lodged against the project from the local community.

Efforts are being made by the YMCA and the municipality to resolve the matter by the end of the year otherwise the project will have to be halted and moved to another community.

<b>Village served</b>	<b># of households</b>	<b># of individuals</b>	<b>Altitude (m)</b>
<b>Arabsaleem</b>	1,000	8,000	650
<b>Houmin Fawka</b>	650	5,000	300
<b>Sarba</b>	150	750	600
<b>Roumine</b>	300	2,500	400
<b>Jarjouh</b>	625	5,000	950
<b>Mlikh</b>	200	1,000	750
<b>Lwayzeh</b>	300	2,400	800
<b>El Jarmak</b>	100	600	500
<b>8 villages</b>	<b>3,325</b>	<b>25,250</b>	

## **WASTEWATER NETWORKS AND TREATMENT CENTERS:**

The design of all the centers takes into account the fact that the villages referenced do not have consistent population numbers throughout the year. They are all popular summer resort villages. The number of residents during the summer months increases - proportionally elevating the flow of wastewater.

### **A. SOUTH LEBANON CENTERS (5 CENTERS)**

#### **1) WADI JEZZINE CENTER:**

<b>VILLAGE NAME</b>	<b>WADI JEZZINE</b>
Range of population served (capita)	<b>600-1200</b>
Forecast population served (capita)	<b>1500</b>
Altitude (m above sea level)	<b>750</b>
Wastewater treatment plant (m <sup>3</sup> )	<b>150</b>
New sewer network length (m)	<b>2000</b>

The wastewater treatment plant was completed ahead of schedule. House connections are currently being installed and linked into the network. The plant was expected to be operational by the end of December 2004 but because of the inclement weather, the network connections to the homes were delayed getting to the actual WWT plant. Operations had to be postponed until June 2005. The Environmental Impact Assessment was submitted.

The operator of the plant, identified by the municipality, was trained on plant upkeep and monitoring. A public workshop for community members took place, as scheduled, for September 2005 to raise awareness on the new sewerage network, the wastewater treatment plant and the positive impact the facility will have on the community on all levels and in the long-run. A fence and open channels were built around the plant.

All water-proofing works are complete and the plant is now fully operational. One effluence test has been conducted and another will be made prior to the handing over of responsibilities to the local municipality in order to ensure that the plant – at the time of hand-over – was functioning optimally.



**Public workshop in Wadi Jezzine**



**Wastewater plant in Wadi Jezzine**

2) **HAYTOURA CENTER:**

VILLAGE NAME	HAYTOURA
Range of population served (capita)	600-800
Forecast population served (capita)	1000
Altitude (m above sea level)	1000
Wastewater treatment plant (m <sup>3</sup> )	100
New sewer network length (m)	400

As referenced in the previous report, the Haytoura Center received USAID approval to replace the Jezzine Center.

YMCA proposed to the Haytoura Municipality, that a 100 cubic meter daily capacity WWT plant go in for their existent sewerage network with an added 400m channel that connects from the original discharge point of the sewerage network into the treatment plant.

The contract between the YMCA and the Mayor of Haytoura has been finalized and the land secured. The YMCA has put out a request for quotes for construction of the plant which was open for bidding beginning on August 02, 2005. In September 2005, work on the sewerage network was fully installed. The Environmental Impact Assessment of the plant was submitted to the municipality on September 10, 2005. The construction work on the plant began in October, 2005 and is scheduled to be completed by the end of February 2006.



Haytoura Wastewater Treatment plant (Construction and Excavations)

3) **SNAYYAH CENTER:**

VILLAGE NAME	SNAYYAH
Range of population served (capita)	400-500
Forecast population served (capita)	600
Altitude (m above sea level)	800
Wastewater treatment plant (m <sup>3</sup> )	60
New sewer network length (m)	2040

The project requires the installation of 2,040m of sewerage networks and the building of a 60 m<sup>3</sup>/day capacity treatment plant. The sewerage network is complete and the Environmental Impact Assessment has been submitted. The plant is also complete. It has been fully operational since June 2005. Ninety percent of the village homes have been connected to the sewerage network.

A public workshop for community members was originally scheduled for September 2005 but was postponed until January 2006. The workshop will provide information about the new sewerage network and the wastewater treatment plant and the positive impact the facility will have on the community on all levels and in the long-run. The drainage open channel that has been excavated near the plant, to prevent any flooding in the future, is working properly. Several effluence tests will be conducted prior to the handing over of responsibilities to the local municipality in order to ensure that the plant – at the time of hand-over – was functioning at optimal levels.



**Open channel and open ponds next to the WWT plant in Snayyah**

**4) AYCHIYYEH CENTER:**

VILLAGE NAME	AYCHIYYEH
Range of population served (capita)	<b>700-1250</b>
Forecast population served (capita)	<b>1500</b>
Altitude (m above sea level)	<b>750</b>
Wastewater treatment plant (m <sup>3</sup> )	<b>150</b>
New sewer network length (m)	<b>3588</b>

## SUSTAINABLE ENVIRONMENTAL PRACTICES AND POLICIES (SEPP)

This project requires the installation of 3,588m of sewerage networks and the building of a 150 m<sup>3</sup>/day capacity treatment plant.

New houses were constructed in the village requiring an additional 80m of sewerage pipes which the Municipality assumed responsibility for. The construction of the facility is now complete and it is fully operational. The sewerage network is also complete and the Environmental Impact Assessment submitted.

A public workshop for community members was conducted as scheduled in September 2005 to raise awareness on the new sewerage network, the wastewater treatment plant and the positive impact the facility will have on the community on all levels and in the long-run. Several effluence tests will be conducted prior to the handing over of responsibilities to the local municipality in order to ensure that the plant – at the time of hand-over – was functioning optimally.



**Awareness campaign Session in Aychiyeh**

5) **AL GHOBATTIEH CENTER:**

VILLAGE NAME	MACHMOUCHEH	BENWATI	AL GHOBATTIEH	TOTAL
Range of population served (capita)	300-400	1750-1800	200-250	<b>2300- 2450</b>
Forecast population served (capita)	500	2000	300	<b>2800</b>
Altitude (m above sea level)	950	800	700	
Wastewater treatment plant (m <sup>3</sup> )	0	0	250	<b>250</b>
New sewer network length (m)	Executed	Executed	5500	<b>5500</b>

This project requires the installation of 5,500m of sewerage networks and the building of a 250 m<sup>3</sup>/day capacity treatment plant.

Machmoucheh’s existing sewerage network currently feeds into the Benwati village sewerage network. Benwati, in turn, discharges its untreated, raw sewage directly into the forest surrounding the villages. The Ministry of Water and Energy agreed to fund the 5,500m of sewerage network that was needed to connect the village’s sewerage system to the WWT plant located on the outskirts of Benwati - at the Ghobattieh section of the village.

Al Gobbattieh is a section/subdivision of the Benwati village. It is located at the lowest elevation point of the village thus making it the ideal site for the treatment plant. The YMCA team selected the International Business Consultants (IBC) company for the construction of the WWT plant from the list of bidders who had submitted their proposals. All execution plans were submitted and the excavation of the site is now complete.

Because the Ministry of Water and Energy has the assemblage of the sewerage network tied into its 2005 budget, work on the network has not yet begun. The Environmental Impact Assessment study was completed and submitted to the municipality for submission to the Ministry of Environment.

Due to the sandy, and potentially unstable, nature of the soil at the site where the WWT plant was to be built initially, a soil sample needed to be taken in order to assess its stress bearing capacity. The test results indicated that deeper excavation was needed in order to reach “higher capacity” soil – the kind able to withstand the weight of the structure. New soil tests were then taken from the new location – eight meters below the original site. The results came back

positive, reflecting good stress-bearing soil. IBC is now modifying the plant plans to meet the new specifications.

Final execution plans for the structures were drawn and construction works started in very hard conditions (deep foundation, risk of land sliding, water accumulation, limited stocking area for materials and sandy soil). The construction works are supposed to be completed by the end of March 2006.



**Construction at the Gobattieh wastewater treatment plant**

**B. BEKAA CENTERS (4 CENTERS).**

**1) RACHAYA CENTER:**

VILLAGE NAME	RACHAYA
Range of population served (capita)	<b>4000-6000</b>
Forecast population served (capita)	<b>6000</b>
Altitude (m above sea level)	<b>1250</b>
Wastewater Treatment plant (m <sup>3</sup> )	<b>600</b>
New Sewer Network Length (m)	<b>11288</b>

This project requires the installation of 11,288m of sewerage networks and the building of a 600 m<sup>3</sup>/day capacity treatment plant.

The YMCA visited and approved the new site for the plant. Due to environmental restrictions – natural springs and cultivated fields in close proximity to the original site - the decision was

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made to move farther away from both the original site and the village thus increasing the sewerage network from 8,000m to 11,288m.

The contract between YMCA and the Municipality was signed. YMCA has agreed to assume responsibility for all costs associated with the purchase of sewer pipes and manhole covers and the construction of the plant itself. The Municipality, in turn, has agreed to assume responsibility for all costs associated with the installation of the sewerage network and securing the land for the plant.

The Municipality has requested quotes for the installation of the sewerage network. The YMCA received bids for construction of the plant on November 25, 2004. The bids were reviewed and a contract with the Grossimex, LLC was signed to equip and advise-on the general layout of the Center. Due to the cold weather, excavation works had to be postponed until August 10, 2005.

All of the 11,288m of PVC piping, and all the manhole covers are already on site. Network trenches and 8,000m, out of the 11,288m, of the network have been installed. The excavation works of the WWT plant have been completed; the construction works started and supposed to be completed at the end of March 2006



**Construction works of the Rachaya Wastewater plant**



**Wastewater network in Rachaya**

**2) AL HOSH CENTER:**

VILLAGE NAME	AL HOSH
Range of population served (capita)	400-600
Forecast population served (capita)	1000
Altitude (m above sea level)	850
Wastewater treatment plant (m <sup>3</sup> )	100
New sewer network length (m)	4000

The project requires the installation of 4,000m of sewerage networks and the building of a 100m<sup>3</sup>/day capacity treatment plant.

The contract between the Mayor of Al Hosh and the YMCA was signed. The Mayor succeeded in securing funding from the Ministry of Water and Energy to install 4,000m of sewerage

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networks. The land for the plant was also secured. The same quotes as those used for construction of the Bakka plant will be used as they are both the same in capacity size. The YMCA, the Mayor of Al Hosh, and the contractor International Business Consultants signed the contract agreement to build the WWT plant, and the construction began on December 1, 2004. But due to the cold and rainy weather, the excavation works were postponed until July 1, 2005.

The Environmental Impact Assessment study was completed and submitted to the municipality for submission to the Ministry of Environment.

The excavation works are complete and the foundation works are underway. The sewerage network installation that is to be installed by the Ministry of Water and Energy has not begun as of yet due to the delay of the national budget for the year 2005.

The construction works started last quarter and will be completed by the end of 2005.



**The construction works of WWT plant in Al Hosh.**

**3) BAKKA 1 CENTER (EASTERN SLOPE):**

VILLAGE NAME	<b>BAKKA</b>
Range of population served (capita)	<b>600-800</b>
Forecast population served (capita)	<b>1000</b>
Altitude (m above sea level)	<b>1200</b>
Wastewater treatment plant (m <sup>3</sup> )	<b>100</b>
New sewer network length (m)	<b>4370</b>

The project requires the installation of 4,370m of sewerage networks and the building of a 100m<sup>3</sup>/day capacity treatment plant.

The Environmental Impact Assessment was submitted and the construction of the plant is complete. The house connections to the sewerage network have also almost been completed. The final connection between the plant and the network is installed and all the water proofing works are also complete. The plant has been operational since May 2005.

A public workshop for community members took place in September 2005. Its purpose was to raise awareness on the new sewerage network, the benefits of the wastewater treatment plant and the positive impact the facility will have on the community on all levels and in the long-run. Several effluence tests will be conducted prior to the handing over of responsibilities to the local municipality in order to ensure that the plant – at the time of hand-over – was functioning optimally.



**Awareness Campaign on the wastewater treatment plant in Bakka.**

**4) BAKKA 2 CENTER (WESTERN SLOPE):**

VILLAGE NAME	BAKKA
Range of population served (capita)	200-400
Forecast population served (capita)	600
Altitude (m above sea level)	1200
Wastewater treatment plant (m <sup>3</sup> )	60
New sewer network length (m)	2000

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The project requires the installation of 2,000m of sewerage network and the building of a 60m<sup>3</sup>/day capacity treatment plant.

Pipes and manhole covers were purchased using the same quotes as the Bakka 1 Center and 2,000m of the sewerage networks have been completed. A contract was drawn and signed with the contractor IBC for the construction of the plant using the same quotes as those for the Snayyah Center. Excavation of the plant is complete and all the reinforced concrete foundations are also finished. Due to the wet conditions of the 2004 winter, the main access-road to the WWT plant was rendered inaccessible. Work on the WWT plant was postponed until August 1, 2005. Construction of the plant reservoirs is currently underway and will be completed before the end of 2005.



**WWT plant on the western slope of Bakka**

### COMPONENT 3

#### **Engaging in dialogue and influencing policy on environmental management**

The YMCA will dedicate much of its efforts to engaging in dialogue and in influencing policies with key stakeholders, including the Government of Lebanon (GoL), Parliament, municipalities, local NGOs and local communities.

The YMCA will design and implement a high-visibility policy dialogue plan, the objective of which is to influence national policies on waste management, overall. The goal is to move away from the current centralized approach to more cost-effective technologies that can easily be adopted by the local communities.

Through a combination of seminars and guided tours to select waste management facilities, the YMCA plans to engage high-level policy makers and the media in dialogue about current waste management practices and how, collectively, we can affect real change. The YMCA anticipates that, as a result of this sustained high-level awareness campaign and policy dialogue, there will have to be a paradigm shift within the Government. That shift has started to take root in different governmental circles and municipalities – away from centralized waste treatment technologies and approaches and towards decentralized, better-suited-for-Lebanon treatment technologies and approaches for rural areas. The YMCA anticipates that the GoL will pass, and implement, solid waste and wastewater decrees that stem from the *Lessons-Learned* and policy recommendations of the YMCA team.

## **AWARENESS CAMPAIGNS:**

### **REGION OF SOUR/TYRE**

Community training is being implemented in several villages within the Sour/Tyre Union. The sessions target women mainly. Their turn-out is often high and they show a lot of interest in the subject, especially after they learn about how they can help protect the environment and their families' health. They all express a willingness to separate out their waste into divided piles - organic and non-organic from the source – for recycling and reusing purposes.



**Community Training in Burj Rahhal Village**



**Community Training in Hanaway Village**



**Community Training in Nakoura Village**

Arrangements for awareness sessions in the schools are being made also. Contacts are being established with the head of the municipalities in the Tyre Region and with the principles of the schools to arrange for dates for the trainings. Materials for the training are also being prepared and they will be finished by the end of December 2005.